Costs and charges associated with three alternative techniques of hysterectomy

Dorsey J H, Holtz P M, Griffiths R I, McGrath M M, Steinberg E P

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
Three techniques of hysterectomy: laparoscopically assisted vaginal hysterectomy, total abdominal hysterectomy and total vaginal hysterectomy.

Type of intervention
Elective surgery.

Economic study type
Cost-effectiveness analysis.

Study population
Patients undergoing hysterectomy for benign conditions.

Setting
Community teaching hospital. The economic analysis was carried out in the USA.

Dates to which data relate
Effectiveness data related to 1993-1994. Costs and price dates are not clearly stated.

Source of effectiveness data
Single study. Computerised databases and patients' hospital records were used for extracting data.

Link between effectiveness and cost data
Costing was undertaken retrospectively on the same patients sample as that used in the effectiveness analysis.

Study sample
1420 patients who underwent hysterectomy in 1993 and 1994 were initially identified. A total of 371 patients were excluded from the study: 182 patients who had undergone one or more major secondary procedures unrelated to hysterectomy, 45 for undergoing radical or subtotal hysterectomy, 39 for whom no medical records were available and an additional 105 because their hysterectomies had been performed to treat cancer. Thus, 1049 patients (74% of the initial group) were included in the analysis. 273 patients (26%) underwent laparoscopically assisted vaginal hysterectomy, 566 (54%) abdominal hysterectomy, and 210 (20%) vaginal hysterectomy.

Study design
Case series.
Analysis of effectiveness
The analysis was based on treatment completers only. The main health outcomes observed were intraoperative complications. The invasiveness of the procedures and the length of hospital stay were also mentioned as proxies for health outcomes.

Effectiveness results
Intraoperative complications occurred in 6% of patients undergoing laparoscopically assisted vaginal hysterectomy, 2% of those undergoing vaginal hysterectomy, and 4% for those undergoing abdominal hysterectomy (p=0.02 for the comparison of the first and second groups, and p=0.10 for the comparison of the first and third groups). 12% of laparoscopically assisted vaginal hysterectomies were converted to open laparotomy, as compared to 2% of total vaginal hysterectomies (p<0.001).

Clinical conclusions
Laparoscopically assisted vaginal hysterectomy was less invasive and resulted in a shorter hospital stay (although leading to a slightly higher rate of intraoperative complications) than vaginal or abdominal hysterectomy.

Measure of benefits used in the economic analysis
Intraoperative complications were observed.

Direct costs
Direct health service costs were considered. Data on hospital charges and cost-to-charge ratios for 64 hospital cost centres were used to assess charges and costs for specific resources as well as hospitalisation overall. Some quantities and costs were reported separately, but the year of prices was not stated.

Statistical analysis of costs
Pairwise comparisons were performed by student's t-test (for continuous variables), or the chi-square test (for categorical variables). Separate multi-variate linear regression analyses were performed for three categories: all patients, those with no related secondary procedures, and those who underwent salpingectomy, oophorectomy, or both.

Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was carried out.

Estimated benefits used in the economic analysis
Intraoperative complications occurred in 6% of patients undergoing laparoscopically assisted vaginal hysterectomy, 2% of those undergoing vaginal hysterectomy, and 4% for those undergoing abdominal hysterectomy (p=0.02 for the comparison of the first and second groups, and p=0.10 for the comparison of the first and third groups). It seems that health benefits were not discounted.

Cost results
The average hospital stays were 2.6 days for laparoscopically assisted vaginal hysterectomy, 3.9 days for abdominal hysterectomy, and 2.9 days for vaginal hysterectomy. The mean total charges (facility charges plus professional fees) for the hospitalisations were $6116, $5084 and $4221, respectively (p<0.001 for the comparison of the laparoscopic
technique with both other techniques). The mean facility costs were $4914, $3954, and $3116, respectively (p<0.001 for the same comparison). It seems that costs were not discounted.

**Synthesis of costs and benefits**
Laparoscopically assisted vaginal hysterectomy was a more expensive procedure ($6,116) than abdominal hysterectomy ($5,084) or vaginal hysterectomy ($4,221) and it led to a slightly higher rate of intraoperative complications (6%) than the comparators with 4% and 2% respectively. However, laparoscopically assisted vaginal hysterectomy was a less invasive procedure and required a shorter hospital stay.

**Authors’ conclusions**
Despite shorter hospital stays, the in-hospital charges and costs for laparoscopically assisted vaginal hysterectomy were higher than for either alternative procedure, because of the disposable supplies that are typically used and the longer operating-room time.

**CRD Commentary**
This was a good study, although with little emphasis on the effectiveness side of the three procedures. The authors were working on a prospective study that would evaluate the patients’ quality of life, ability to return to work, and productivity after hysterectomy, to clarify the relative benefits and cost-effectiveness of the laparoscopic and abdominal procedures.

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