Hysterectomy outcomes in patients with similar indications

Kovac S R

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
The technology examined was the use of vaginal hysterectomy in women with uteri weight less than 280g and benign diseases confined to the uterus.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised women who were to have hysterectomies. Women were included in the analysis if their uterine weight was less than 280g; if they had an AH, an LAVH, or a VH; and if they had benign disease that did not extend beyond the uterus (leiomyomas, adenomyosis, abnormal uterine bleeding, cervical carcinoma in situ, or prolapse). Women who had oophorectomies concurrently with hysterectomies were included. Women were excluded if their primary diagnoses were related to cancer or pregnancy; if secondary diagnoses suggested extrauterine disease such as endometriosis, pelvic inflammatory disease, adnexal pathology, or chronic pelvic pain; or if other procedures, such as urinary incontinence surgery, vaginal repairs, or appendectomies, were carried out concurrently with the hysterectomy.

Setting
The setting was hospital. The economic analysis was carried out in St Louis, Missouri, USA.

Dates to which data relate
The effectiveness data were collected between 1988 and 1993. The resources quantities were obtained during the same period from the medical records department. The price year was not reported.

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

Link between effectiveness and cost data
The costing was undertaken prospectively on the same patient sample as that used in the effectiveness study.

Study sample
No power calculations were performed to determine the sample size. All women who had hysterectomies during the study period were analysed. When comparing the study sample with hysterectomy patients identified in the 1997 National Hospital Discharge Survey (in whom disease was confined to the uterus), differences in age, race, and disease
were manifested depending on the route of intervention performed. Among 4,609 women who had hysterectomies at this hospital, 1,427 patients met the study criteria. 70 out of 126 gynaecologic surgeons performed the interventions on these 1,427 patients. AH was performed in 33% of the interventions; LAVH in 3.9%; and VH in 63.1%. The ratio of AH to VH in the study population was 1:2 compared with the 1997 National Hospital Discharge Survey for the same patient population.

Study design
This was a prospective cohort study using the medical records of a single institution. Only the author was aware of the planned analysis. Therefore, it was assumed that the results showed actual practice at the hospital.

Analysis of effectiveness
The analysis of effectiveness was based on intention to treat. All the patients included in the study that met the criteria were accounted for in the analysis. The outcomes compared were length of stay and complication rates associated with AH, LAVH, and VH. The number of LAVH was calculated as a proxy by means of the combination of the procedure codes for laparoscopy and hysterectomy. The investigator used International Classification of Diseases, 9th revision (ICD-9) codes to assign complications to one of seven categories: haemorrhage; acute myocardial infarction; postoperative fever or infection; intestinal obstruction; urinary complications; injury to the bladder or ureter; or accidental perforation of a blood vessel, nerve or organ.

In terms of baseline comparisons between groups, there were significant differences within the sample population between the characteristics of the different subgroups associated with each route of hysterectomy. The mean uterine weight of those women having VH was significantly smaller (123.5 +/- 47.8 g) than those who had either LAVH (139.2 +/- 51.8 g) or AH (147.2 +/- 59.7 g), (p<0.001). The AH, (p=0.006) and LAVH, (p=0.005) included a higher percentage of women with leiomyomas than the VH, while the VH had the highest percentage of women with prolapse, (p=0.001). Among women who did not have oophorectomies, those having VH were on average more than 3 years older than those having AH, (p<0.005).

Effectiveness results
The overall complication rate after AH (9.3%) was significantly higher than the overall complication rates for LAVH (3.6%; p<0.001) and VH (5.3%; p<0.001).

The 95% CI corresponding to the overall complication rates were: 6.7% to 12.0% for AH, and 3.9% to 6.8% for VH. The upper bound for LAVH was 6.9%.

Among women who did not have oophorectomies the VH patients were in the hospital a full day less than the AH patients, (p<0.005) although the VH patients were older.

Clinical conclusions
VH seems to be the best route in terms of smaller complication rates and shorter sojourns for women who meet the study criteria. The complication rates were lower for women who had VH in comparison with those who had AH. Moreover, the sojourn was shorter for women with VH who did not have oophorectomies.

Measure of benefits used in the economic analysis
A cost-consequences analysis was performed. Therefore, no summary measure of benefit was used in the economic analysis.

Direct costs
The costing was performed prospectively using resource quantities collected from the medical records department of the hospital during the same period. Resource quantities and costs were not reported separately. The direct costs
reported were the hospital charges, which were not discounted. The costs were measured as the actual amount that the hospital billed women or insurers, and these data were obtained from the medical records department. The price year was not given.

**Statistical analysis of costs**
Charges were summarised using the first, 25th, 75th and 99th percentiles and the median, and nonparametric median test was used to compare them for each route of hysterectomy.

**Indirect Costs**
Indirect costs were not reported.

**Currency**
US dollars ($).

**Sensitivity analysis**
No sensitivity analysis was reported.

**Estimated benefits used in the economic analysis**
See effectiveness results above.

**Cost results**
The median charges were as follows: AH $5,604, LAVH $7,132 and VH $4,166.

The median charges for AH and for LAVH were 34.5% and 72% higher than for VH respectively, differences that were statistically significant, (p<0.001).

The additional charge for an oophorectomy was $2 for AH, (although this difference was non significant; p>0.500), $123 for LAVH, (p=0.004), and $705 for VH, (p<0.001).

**Synthesis of costs and benefits**
Costs and benefits were not combined due to the cost-consequences approach undertaken.

**Authors' conclusions**
The author stated that VH should be the choice for women with benign diseases confined to the uterus, such as leiomyomas, abnormal uterine bleeding, adenomyosis, cervical carcinoma in situ, prolapse, and uterine weight less than 280g. The vaginal approach might greatly decrease hospital stay, lower hospital charges, and reduce complications, even when limited to the specific population described in the study.

The author found differences in approaches when there appeared to be no contraindications to VH based on uterine weight and lack of extrauterine disease. Therefore the suggestion was made that training and personal surgical preference remain important determinants of physicians' decision making.

**CRD COMMENTARY - Selection of comparators**
The reason for the choice of the comparators was clear. They were chosen because they represented the actual practice in the chosen setting.
Validity of estimate of measure of effectiveness
The analysis was based on a single cohort study that was appropriate for the study question. However, the study sample was not representative of the study population (when compared with patients reported in the 1997 National Hospital Discharge Survey). Moreover, patient groups were not shown to be comparable at analysis (significant differences in uteri weight, age and diseases were found among the three subgroups of patients). These features of the study design introduce potential bias and confounding variables, indicating that a degree of caution is necessary in terms of the reliability of the effectiveness results. The analysis of effectiveness was handled credibly in the sense that only the author was aware of the planned analysis. The author warned that the validity of the database depended on complete and accurate reporting by physicians and coding by medical record personnel. Another limitation of the study was that only one institution was studied.

Validity of estimate of measure of benefit
The author did not derive a summary measure of health benefit. The analysis was therefore categorised as a cost-consequences study.

Validity of estimate of costs
As the perspective adopted was that of the hospital, the only costs considered were the charges that the hospital billed to women or insurers. Moreover, only charges were reported and not quantities. Therefore, no statistical analysis of quantities was performed. This introduces uncertainty into the reliability of the conclusions. Moreover, charges do not reflect opportunity costs, which weaken the generalisability of the results. Additionally, a lack of price year also hinders reflation exercises to other settings.

Other issues
As only one institution was studied, within the context of a small segment of hysterectomies, the author recommended the application of the results only to the specific segment considered in the study. The author also cautioned that the data did not include any primary patient sources or outcomes after the patients were released from the hospital. The author mentions other studies suggesting the benefits of VH in terms of lower complication rates, shorter lengths of stay and convalescence, lower hospital charges, and more favourable quality of life, including reduced mortality.

Implications of the study
The study confirmed a marked variation in health care for alternative hysterectomy procedures. The author's recommendation is to carry out further studies to identify the clinical factors that are valid indicators of the route in order to confirm a particular route of hysterectomy appropriate for each indication for hysterectomy.

Source of funding
Statistical analysis supported in part by an unrestricted educational grant from Ethicon Endo-Surgery, Cincinnati, Ohio.

Bibliographic details

PubMedID
10831967

Other publications of related interest

Summitt R L Jr, Stovall T G, Steege J F, Lipscomb G H. A multicenter randomized comparison of laparoscopically assisted vaginal hysterectomy and abdominal hysterectomy in abdominal hysterectomy candidates. Obstetrics and


**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Adult; Aged; Female; Humans; Hysterectomy; Hysterectomy, Vaginal; Laparoscopy; Leiomyoma /surgery; Length of Stay; Middle Aged; Organ Size; Ovariectomy; Postoperative Complications; Prospective Studies; Treatment Outcome; Uterine Diseases /surgery; Uterine Neoplasms /surgery; Uterus /physiopathology

**Accession Number**
22000001025

**Date bibliographic record published**
31/10/2002

**Date abstract record published**
31/10/2002