Long-term economic evaluation of resectoscopic endometrial ablation versus hysterectomy for the treatment of menorrhagia

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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
Two treatments for women with menorrhagia were examined, resectoscopic endometrial ablation and hysterectomy. Patients undergoing endometrial ablation were given a single 3.75 mg dose of leuprolide acetate (Depolupro), 4 weeks before surgery. Endometrial ablation was carried out with a standard 26F gynecologic resectoscope (Karl Storz, Tuttlingen, Germany) with a rollerball under video control.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population consisted of women with menorrhagia, aged 50 years or younger. Women with a uterine size exceeding 14 weeks, uterine weight greater than 300 g, vaginal repairs, significant uterine prolapse or ovarian pathology, endometriosis or neoplasia were excluded.

Setting
The setting was a multispecialty group practice. The economic study was carried out in Worcester (MA), USA.

Dates to which data relate
The effectiveness and resource use data were gathered from May 1992 to December 1994 for patients in the ablation group, and from January 1990 to December 1992 for patients in the hysterectomy group. The price year was not reported.

Source of effectiveness data
The effectiveness evidence came from a single study.

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

Study sample
Power calculations were not reported to have been performed. Eligible patients undergoing one of the two treatments during the study period at the authors’ institution were enrolled in the study. It was not stated whether any patients refused to participate in the study or were excluded from the initial study sample. There were 64 women in the ablation
group and 46 women in the hysterectomy group. The mean age was 41 years in both the ablation group (age range: 27 - 50) and the hysterectomy group (age range: 26 - 51).

**Study design**
This was a prospective cohort study, which was carried out in a single centre. The follow-up lasted for at least 3 years after primary surgery. The mean length of follow-up in the ablation group was 48.5 months (range: 36 to 60). Only one patient in the ablation group was lost to follow-up.

**Analysis of effectiveness**
Only patients who completed the treatment and provided outcome data were included in the analysis of effectiveness. The primary health outcomes used in the analysis were operating time, hospital stay, length of convalescence, number of additional admissions or surgeries, and intraoperative and postoperative complications. Menstrual outcomes (rates of amenorrhoea, oligomenorrhoea and eumenorrhoea), therapy failure and satisfaction with the treatment (evaluated using a questionnaire) were measured in the ablation group only. The two groups were comparable with respect to their age and parity at baseline, but differed statistically in terms of their weight and uterine size. The exclusion criteria (see Study Population) were used specifically to obtain the best match between the two groups.

**Effectiveness results**
The operating time was 38 minutes (range: 12 - 78) in the ablation group and 107 minutes (range: 50 - 165) in the hysterectomy group, (p<0.001).

The length of hospital stay was 0.5 days (range: 0.5 - 1) in the ablation group and 2.8 days (range: 1 - 9) in the hysterectomy group, (p<0.001).

The length of convalescence was 5 days (range: 2 - 9) in the ablation group and 32 days (range: 7 - 84) in the hysterectomy group, (p<0.001).

There were 8 (12.5%) additional admissions or surgeries in the ablation group and 7 (10.9%) in the hysterectomy group, (non significant).

There was 1 (1.6%) intraoperative complication in the ablation group and 2 (4.3%) in the hysterectomy group, (non significant).

There were 4 (6.3%) postoperative complications in the ablation group and 10 (21.8%) in the hysterectomy group, (p<0.001).

In the ablation group, there was a 49% rate of amenorrhoea, 30% rate oligomenorrhoea, and 8% rate of eumenorrhoea.

Therapy failure was observed in 8 patients (12%) in the ablation group.

Fifty-one (85%) patients in the ablation group for whom the treatment was successful were satisfied with the results of treatment. The eight patients in the ablation group who failed the treatment were considered unsatisfied.

**Clinical conclusions**
The effectiveness analysis showed that resectoscopic endometrial ablation reduced the length of hospitalisation and convalescence, and reduced the occurrence of complications among women with menorrhagia.

**Measure of benefits used in the economic analysis**
The health outcomes were left disaggregated and no summary benefit measure was used. A cost-consequences analysis was therefore carried out.
Direct costs
Discounting appears to have been relevant since the costs were incurred during a 3-year period, but it was not performed. This means that future benefits were not adjusted (reduced) for the time period in which they were incurred, thus creating a bias against treatments that generate costs over a longer time horizon. The unit costs were not reported separately from the quantities of resources. Also, a detailed breakdown of the costs was not provided. The health services included in the economic analysis were surgeon time, hospital services, anaesthesia, leuprolide and office charges for gynaecologic care (for 3 years). The cost/resource boundary adopted in the economic analysis of the direct costs was that of society.

Resource use was estimated using data prospectively collected on the basis of the charts of the women involved in the effectiveness study. The data were collected from May 1992 to December 1994 for patients in the ablation group, and from January 1990 to December 1992 for patients in the hysterectomy group. The unit costs were estimated from the billing database of the study hospital and group practices. The costs of readmissions due to treatment failure were accounted for in the analysis. The price year was not reported.

Statistical analysis of costs
Analyses were carried out to test the statistical significance of differences in the estimated costs.

Indirect Costs
Discounting of the indirect costs was not relevant because the productivity losses occurred over a short time. The indirect costs were included since a societal perspective was adopted in the study. These costs were based on convalescence days, which were assessed by telephone interviews. The indirect costs were derived from published studies. The price year was not reported.

Currency
US dollars ($).

Sensitivity analysis
Sensitivity analyses were not reported.

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

Cost results
The estimated total costs per case were $5,959 (range: 3,648 - 20,819) in the ablation group and $11,777 (range: 7,402 - 42,505) in the hysterectomy group, (p<0.001).

Synthesis of costs and benefits
Not relevant as a cost-consequences analysis was conducted.

Authors' conclusions
Resectoscopic endometrial ablation was more effective than traditional hysterectomy in reducing the length of both hospitalisation and convalescence. This resulted in a cost-saving for society.

CRD COMMENTARY - Selection of comparators
The authors compared the long-term costs and clinical outcomes of resectoscopic endometrial ablation and
hysterectomy. The rationale for the choice of the comparator was clear. Resectoscopic endometrial ablation had already been proven to reduce the costs and complications in the short term.

**Validity of estimate of measure of effectiveness**
The analysis of effectiveness used a prospective cohort study, which was appropriate for the study question. The study sample was representative of the study population. The length of and loss to follow-up were reported. The sample was selected on the basis of the patients receiving one of the two treatments during the reported time horizon, although it was unclear whether all of the eligible patients were enrolled in the study. Power calculations were not reported. Therefore, the authors did not provide evidence that the sample size was of sufficient size to answer the study question. The authors attempted to match the two study groups, but differences in weight and uterine size were observed at baseline. No formal analyses were reported to assess the impact of these confounding factors. However, the authors did report that five of eight patients, whose endometrial ablations failed, had enlarged cavities, and that this may have contributed to the failure. In addition, the authors did not acknowledge that the different dates, over which observations for the two groups were taken, may have impacted on the results. These issues tend to limit the internal validity of the analysis.

**Validity of estimate of measure of benefit**
No summary benefit measure was used in the economic analysis. The analysis was therefore categorised as a cost-consequences study. The use of a summary benefit measure reflecting quality of life issues might have been useful.

**Validity of estimate of costs**
The economic analysis was carried out from a societal perspective. It appears that all the relevant categories of costs have been included in the analysis. However, the unit costs and the quantities of resources used were not reported separately and the price year was not reported. This makes it difficult to reproduce the results of the study. The direct costs were estimated from actual data, whereas the indirect costs were estimated from published studies. Resource use was derived from data collected alongside the effectiveness study. Discounting was relevant but was not applied. The costs were specific to the study setting and, although no sensitivity analyses were reported, the authors conducted statistical analyses to demonstrate significant differences between the total costs of the two treatments.

**Other issues**
The authors made some comparisons of their findings with those from other studies, indicating similarities between the cost estimates. However, the authors did not address the issue of the generalisability of the study results to other settings. In addition, sensitivity analyses were not reported, thus reducing the overall external validity of the analysis. The study included women with menorrhagia and this was accurately reflected in the conclusions of the study.

**Implications of the study**
The study results suggest that resectoscopic endometrial ablation is more efficient than hysterectomy for the treatment of women with menorrhagia. It leads to cost-saving (above all in terms of reduced productivity losses) and is associated with a lower rate of complications. There were no suggestions for further work resulting from this study.

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None stated.

**Bibliographic details**
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Other publications of related interest


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