Laparoscopic vs. laparotomic ovarian cystectomy in reproductive age women: an economic evaluation

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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
Ovarian cystectomy, using laparoscopy, in reproductive age women.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Women of reproductive age who were hospitalised for ovarian cysts which had persisted for at least 3 months, or which were noted to have a volume increase detected on consecutive ultrasound investigations. Inclusion criteria were: no previous pelvic surgical interventions, cyst diameter less than 10cm by ultrasound, liquid content, thin walls without septa, and unilocular cysts without irregular solid parts inside the cyst.

Setting
Hospital. The economic study was set in Rome, Italy.

Dates to which data relate
Effectiveness, resource use, and cost data were collected between January 1992 and November 1994. The price year was 1993.

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

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

Study sample
The study sample was 68 women of reproductive age who were hospitalised for benign ovarian cysts which had persisted for at least 3 months, or which were noted to have a volume increase detected on consecutive ultrasound investigations. The patients were randomised to laparoscopic cystectomy (n=34) and laparotomic cystectomy (n=34). No power calculations were reported.
Study design
This was a prospective, randomised, controlled trial carried out at a single centre. Patients were followed up for 1 year. No patients were lost to follow-up.

Analysis of effectiveness
The analysis of the clinical study was based on intention to treat. The primary health outcomes included the duration of the intervention, body temperature, ultrasound follow-up, drugs, laboratory tests, and recurrence rate at 12 months. At analysis, groups were shown to be comparable in terms of age, dimensions of cysts, and histology.

Effectiveness results
The duration of the intervention was 74 (+/- 29) minutes for laparoscopy and 83 (+/- 28) minutes for laparotomy. Three laparotomy patients and two laparoscopy patients had a body temperature of more than 38 degrees C for two to three days. Ultrasound follow-up showed recurrence in one laparotomy patient and one laparoscopy patient. In the post-operative period, laparoscopy patients required fewer intravenous solutions (1,661 +/- 294 ml versus 6,088 +/- 358 ml, p<0.001), fewer antibiotics (ceftriaxonum 0.7 +/- 1 g versus 1.7 +/- 2.8 g, p<0.002), fewer laboratory investigations (12 +/- 4 versus 32 +/- 9, p<0.0001), and a decreased post-operative stay (1.6 +/- 8 days versus 1.8 +/- 1.4 days, p<0.001). Recurrence rate at 12 months was 29% (one patient in each group).

Clinical conclusions
Removal of benign ovarian cysts can be performed by laparotomy or laparoscopy with the same level of safety and efficacy. Laparoscopy offers clinical advantages in the improved general condition of postoperative patients and in the lesser external surgical insult involved. The social advantage is shorter convalescence.

Measure of benefits used in the economic analysis
The authors reported only individual clinical outcomes and, in design, this was therefore a cost-consequences analysis.

Direct costs
Direct costs were not discounted due to the short time horizon of the study (less than 1 year). Quantities and costs were reported separately. Direct costs related to the costs of surgical treatment including hospital costs, operating room costs, nursing care, clinical examinations, and drugs. The quantity/cost boundary adopted was that of society. The estimation of quantities and costs was based on actual data. Costs and quantities were collected from medical records and hospital records. With regard to investment costs, a 5-year depreciation time and 5% interest rate were assumed. The price year was 1993.

Statistical analysis of costs
Mann-Whitney U tests were used.

Indirect Costs
Indirect costs were not discounted due to the short time horizon of the study (less than 1 year). Quantities and costs were not reported separately. Indirect costs related to the time lost by the patient undergoing treatment. The estimation of quantities and costs was based on actual data. Indirect costs were estimated using the per capita mean added value. The price year was 1993.

Currency
US dollars ($).
Sensitivity analysis
No sensitivity analysis was reported.

Estimated benefits used in the economic analysis
Not applicable.

Cost results
Pre-operative costs totalled $1,361 (95% CI: 1,361 - 1,361) with laparotomy and $1,361 (95% CI: 1,361 - 1,361) with laparoscopy. Intra-operative costs were $776 (95% CI: 733 - 819) with laparotomy and $1,113 (95% CI: 1,068 - 1,158) with laparoscopy. Post-operative costs totalled $2,099 (95% CI: 1,894 - 2,305) with laparotomy and $717 (95% CI: 590 - 845) with laparoscopy. Total direct costs were $4,236 (95% CI: 3,987 - 4,485) with laparotomy and $3,191 (95% CI: 3,019 - 3,364) with laparoscopy.

Synthesis of costs and benefits
Costs and benefits were not combined into cost-effectiveness ratios.

Authors' conclusions
Ovarian cysts can be as well treated using laparoscopic access as with laparotomy, but with an average cost reduction of 28% for the former.

CRD COMMENTARY - Selection of comparators
A justification was given for the comparator used, namely traditional treatment. You, as a user of this database, should decide if this health technology is relevant to your setting.

Validity of estimate of measure of benefit
The analysis was based on a randomised study, which was appropriate for the study question. However, it is not clear whether the sample provided adequate power for the study. Patient groups were shown to be comparable at analysis. The analysis of effectiveness was handled credibly. The authors did not derive a summary measure of health benefit. The analysis was therefore of cost-consequences design.

Validity of estimate of costs
Adequate details of the methods of costing were given. The authors adopted a societal perspective and all relevant direct and indirect cost categories were included. Moreover, statistical analysis was conducted on costs, the price year was reported, and quantities and costs were reported separately. However, no sensitivity analyses were reported on quantities or costs.

Other issues
The authors did not make appropriate comparisons of their findings with those from other studies and did not address the issue of generalisability to other settings. The authors did not present their results selectively. The study examined women of reproductive age with benign ovarian cysts and this was reflected in the authors' conclusions.

Implications of the study
The authors suggest that the removal of benign ovarian cysts can be performed by laparotomy or laparoscopy with the same level of safety and efficacy. Laparoscopy offers clinical advantages in the improved general condition of postoperative patients and in the lesser external surgical insult. The social advantages are shorter convalescence and earlier return to normal activities and employment. Ovarian cysts can be as well treated using laparoscopic access as
with laparotomy, but with an average cost reduction of 28% for the former.

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