Concurrent hysterectomy at bilateral salpingo-oophorectomy: benefits, risks, and costs

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
Concurrent hysterectomy at bilateral salpingo-oophorectomy (BSO) for benign ovarian disease in peri- and postmenopausal women.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
A hypothetical cohort of 10,000 women aged 45 or 55 years undergoing surgery for benign adnexal disease. No further details were given.

Setting
Hospital. The economic study was carried out in San Francisco, California, USA.

Dates to which data relate
The main effectiveness data were taken from previously published studies dated 1979-95. Resource and cost data were mainly derived from 1992-95 sources. The price year was 1995.

Source of effectiveness data
The probabilities for events (mortality of hysterectomy over BSO, morbidity of hysterectomy over BSO, risks of future benign gynecologic disease requiring surgery, risks of cervical cancer, risks of uterine cancer, hyperplasia and abnormal bleeding requiring evaluation) were derived from a review of previously completed studies.

Modelling
A decision tree was used to compare the health outcomes and economic costs of performing BSO with concurrent hysterectomy versus BSO alone. The complete tree used in the analysis included a Markov model.

Outcomes assessed in the review
The outcomes assessed were the probabilities for the following events: mortality of hysterectomy over BSO, morbidity of hysterectomy over BSO, risks of future benign gynecologic disease requiring surgery, risks of cervical cancer, risks of uterine cancer, hyperplasia and abnormal bleeding requiring evaluation.
Study designs and other criteria for inclusion in the review
No specific study designs were stipulated by the authors.

Sources searched to identify primary studies
The National Hospital Discharge Database, National Cancer Institute SEER Program, California State Discharge Database, Medicare and "the literature" were searched.

Criteria used to ensure the validity of primary studies
Not stated.

Methods used to judge relevance and validity, and for extracting data
Not stated.

Number of primary studies included
30

Methods of combining primary studies
Not stated.

Investigation of differences between primary studies
Not stated.

Results of the review
The mortality of hysterectomy over BSO was estimated at 5/10,000 at age 45 and 15/10,000 at age 55. The morbidity of hysterectomy over BSO was: abscess 0.3%, bladder laceration 0.3%, cuff cellulitis 3%, transfusion 4%, ureteral injury 0.2%, urinary fistula 0.4%, wound infection 4%, net rehospitalization 3% and net reoperation 1.5%. The risk of future benign gynecologic disease requiring surgery was 3/10,000 at age 85 and 73/10,000 at age 50. The risks of cancer in situ were 4-51 per 100,000, 16-19 per 100,000 for cervical cancer and 5-14 per 100,000 for mortality from cervical cancer. The risks of uterine cancer were 22-110 per 100,000 and for mortality from uterine cancer were 1-31 per 100,000. The annual incidence of hyperplasia ranged from 0.38% at age 45 to 0.098% at age 80. The incidence of abnormal bleeding requiring evaluation varied from 6% at age 45 to 0.9% at age 65.

Measure of benefits used in the economic analysis
The measure of benefit was the net increase in undiscounted average life expectancy.

Direct costs
The cost for total abdominal hysterectomy and complications resulting in repeat hospitalization or reoperation were included in the analysis. The quantities were reported separately from the prices. The quantity/cost boundary adopted was the hospital. The costs were not discounted (even though a 3% discount was calculated and resulted in a reduction in the net average life expectancy). The price year was 1995.

Statistical analysis of costs
Not stated.
Currency
US dollars ($).

Sensitivity analysis
A one-way sensitivity analysis was carried out on input probabilities.

Estimated benefits used in the economic analysis
A net increase in undiscounted average life expectancy was estimated to be 0.071 years (26 days) when concurrent hysterectomy was performed at age 45; at age 55 it added 0.026 years.

Cost results
The costs for initial treatment, follow-up and terminal care of cervical cancer patients were $10,810, $4,748 and $19,762, respectively while those for uterine cancer were $11,149, $1,531 and $21,217, respectively.

Synthesis of costs and benefits
The net increase in undiscounted average life expectancy resulted in savings of $1,913 per patient at age 45 and $1,112 at age 55. A 3% discount on life decreases the net gain in life expectancy for concurrent hysterectomy from 0.071 to 0.029 year at age 45 and from 0.025 to 0.008 at age 55. An incremental analysis was performed. The outcome of the analysis is sensitive in terms of cost-effectiveness to one cost variable, the baseline cost of BSO relative to total abdominal hysterectomy-BSO.

Authors' conclusions
Concurrent hysterectomy causes short-term morbidity but seems to increase average life expectancy among perimenopausal women and is cost-saving.

CRD COMMENTARY - Selection of comparators
The reason for the choice of the comparator is clear. Hysterectomy has been suggested to have excessive short-term risks and only theoretical long-term benefits. You, as a user of this database, should consider whether these are widely used health technologies in your setting.

Validity of estimate of measure of benefit
The estimate of measure of benefit used in the economic analysis is likely to be internally valid. The data have not been used selectively. However, only short-term data for the complications of hysterectomy were used.

Validity of estimate of costs
Resource quantities were reported separately from the prices. Adequate details of the methods of quantity/cost estimation were given. Important cost items do not appear to have been omitted.

Other issues
The authors' conclusions are likely to be justified given the uncertainties in the data. The effects of hysterectomy on sexual function were not modelled. The issue of generalisability to other settings or countries was not addressed. However, appropriate comparisons were made with other studies particularly in terms of increased life expectancy, short-term risks and additional surgery. Results do not appear to have been presented selectively.

Implications of the study
More research is required into long-term complications of hysterectomy and effects of hysterectomy on sexual function.

Source of funding
None stated.

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