Cost-effective management of complicated choledocholithiasis: laparoscopic transcystic duct exploration or endoscopic sphincterotomy

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
Laparoscopic cholecystectomy (LC) plus either laparoscopic transcystic common bile duct exploration (LTCBDE) or Endoscopic Sphincterotomy (ES).

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Patients with cholecystitis, common bile duct stones and positive preoperative endoscopic retrograde cholangiograms who had a laparoscopic cholecystectomy.

Setting
Inpatient. The study was carried out in Los Angeles, California, USA.

Dates to which data relate
The effectiveness and cost data were collected from June 1991 to September 1994. The prices used were not reported as belonging to any specific date.

Source of effectiveness data
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
The study included 76 patients overall. 59 patients underwent LC plus LTCBDE (a subset of 21 of these were urgent cases), and 17 underwent LC plus ES. The sample size was not determined by power calculations.

Study design
Single centre retrospective cohort study. The duration of follow up was not reported. There was no loss to follow up.
Analysis of effectiveness
The primary health outcome used was morbidity. The groups were shown to be comparable at baseline for age and comorbid illnesses. The subset of urgent cases of LC plus LTCBDE was more comparable to the LC plus ES group having more fever, leukocytosis and pre-existing disease.

Effectiveness results
The complication rate of patients in the LC plus LTCBDE group was 12% compared to 41% for the LC plus ES group (p<0.04). The complication rate for the LC plus LTCBDE sub group of urgent cases was 10%. The rate of retained stones was similar at around 12% in all groups.

Measure of benefits used in the economic analysis
The primary outcome used was morbidity, as measured by the complication rate. This was determined by direct measurement. The values used were those of the clinicians.

Direct costs
Length of hospital stay was reported. The costs measured included overhead costs, operating costs and costs of complications. The cost boundary was the hospital. The estimation of quantities and costs was based on actual data. The source of costs was the cost accounting department of the hospital where the study was carried out. The quantities were collected from June 1991 to September 1994. The dates the price data refer to were not reported. Costs were not reported as reflated/deflated.

Statistical analysis of costs
The statistical significance of differences in costs between groups was calculated.

Currency
US dollars ($).

Sensitivity analysis
None conducted.

Estimated benefits used in the economic analysis
The complication rate of patients in the LC plus LTCBDE group was 12% and for those in the LC plus ES group was 41% (p<0.04). The complication rate for the LC plus LTCBDE sub-group of urgent cases was 10%.

Cost results
The total hospital cost per patient for the LC plus LTCBDE group was $14,732 and for the LC plus ES group was $21,125 (p<0.05). The total hospital cost per patient for urgent cases receiving LC plus LTCBDE was $15,150. These cost differences were mainly due to significantly reduced hospital lengths of stay in the LTCBDE group (p<0.001).

Synthesis of costs and benefits
The LC plus LTCBDE treatment strategy was shown to be dominant being both cheaper and more effective.

Authors' conclusions
Patients undergoing attempted LC plus LTCBDE for CBDs, whether urgently or electively, have markedly decreased length of hospital stay and a significantly decreased total hospital cost when compared with patients undergoing LC plus
ES.

CRD COMMENTARY - Selection of comparators

The comparison with endoscopic sphincterotomy is sensible since it appears to be the most common endoscopic alternative. A comparison with open surgery however, would also have been useful since it may also be commonly performed for complicated cholecystitis.

Validity of estimate of measure of effectiveness

The retrospective non-randomised study is potentially biased. Patients are likely to be different (LC + ES more severe) and the surgeons may be different. The study was quite small, especially the ES group, and the high rate of complications in this group, mainly due to the laparoscopic cholecystectomy, may be a chance occurrence.

Validity of estimate of costs

No details of the costing methods were provided. The advantage of LTCBDE appears to be mainly due to the reduced length of stay because of reduced complications - and so depends on the validity of the clinical comparison.

Other issues

The sensitivity analysis should have been carried out It is not clear if these results are in accordance with the experience of other hospitals.

Source of funding

None stated.

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