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.

CRD summary
This study assessed the cost-effectiveness of endoscopic retrograde cholangiopancreatography (ERCP) and laparoscopic common bile duct exploration (LCBDE) for the treatment of choledocholithiasis discovered at the time of laparoscopic cholecystectomy and intraoperative cholangiogram. The study showed the superior clinical and economic profile of ERCP, which was both more effective and less expensive than LCBDE from the perspective of a large medical centre. Caution will be required when considering the authors’ conclusions, owing to the limited reporting, particularly on the clinical side.

Type of economic evaluation
Cost-utility analysis

Study objective
The objective was to determine the cost-effectiveness of two strategies, endoscopic retrograde cholangiopancreatography (ERCP) and laparoscopic common bile duct exploration (LCBDE), for the treatment of incidental choledocholithiasis discovered at the time of laparoscopic cholecystectomy and intraoperative cholangiogram (LC/IOC).

Interventions
The interventions studied were LCBDE during LC/IOC and ERCP with drainage procedure performed after LC/IOC.

Location/setting
USA/hospital.

Methods
Analytical approach:
A decision analytic model was developed in order to assess the costs and benefits of the two treatments. The time horizon of the analysis was 1 year. The authors stated that the perspective of the medical centre was adopted in the study.

Effectiveness data:
The clinical data were derived from a selection of known relevant studies. Details of the sources and their characteristics were not given, although the values used for each model parameter were reported. Key clinical estimates were the rates of success with the treatment strategies. Some simplifying assumptions were also made. For example, it was assumed that all patients survived for an entire year after treatment. Procedural death was, therefore, not considered. Also, only mild and severe pancreatitis and bile leak were considered as possible complications (for ERCP and LCBDE, respectively).

Monetary benefit and utility valuations:
Utility valuations were derived from published studies (details not given).

Measure of benefit:
The summary benefit measure was the quality-adjusted life-years (QALYs). These were determined using the modelling framework.

Cost data:
The cost items associated with the two procedures were not broken down. It seems that procedural costs and hospital stays were the main categories of costs. The costs and quantities were mainly derived from two key sources: a published cost-effectiveness study and a national database (the Nationwide Inpatient Sample). Since the latter (the database) used charges, costs were derived by applying Medicare cost-to-charge ratios. The price year was 2004. The costs were in US dollars ($).

Analysis of uncertainty:
Univariate and multivariate sensitivity analyses were carried out in order to deal with the uncertainty surrounding model inputs and to identify the most influential parameters. A Monte Carlo simulation was used to assess the overall uncertainty in the model results. Triangular probabilistic distributions were assigned to all model inputs.

Results
The expected 1-year costs were $24,300 with ERCP and $28,400 with LCBDE (difference $4,100).

The expected QALYs were 0.90 with ERCP and 0.88 with LCBDE (difference 0.02).

Average cost-utility ratios were $27,000 with ERCP and $32,300 with LCBDE.

The incremental analysis showed the dominance of ERCP, which generated more benefits at lower costs.

The sensitivity analyses generally corroborated the dominance of ERCP over LCBDE. The exception was one scenario, in which the opportunity cost of LCBDE was $3,100 or less and the cost of ERCP hospitalisation was $18,000 or more. The robustness of the base-case findings was further demonstrated in the Monte Carlo simulation.

Authors' conclusions
The authors concluded that, from the perspective of the medical centre, ERCP was more effective and less expensive than LCBDE for the treatment of choledocholithiasis.

CRD commentary
Interventions:
The choice of treatments under examination was appropriate and is likely to be relevant in other health care settings.

Effectiveness/benefits:
Limited reporting characterised the estimation of clinical estimates used in the analysis. The authors did not describe the approach used to identify primary studies and details of these studies, in terms of design, patient population and follow-up, were not given. The main source of treatment effectiveness appears to have been a randomised clinical trial, which should ensure high internal validity. However, given the lack of details of other sources, it is difficult to assess the validity of the clinical evidence. A similar limitation applies to the derivation of the benefit measure. It was not stated whose preferences were used to elicit the quality-of-life valuation or which instruments were used.

Costs:
A detailed breakdown of the cost categories was not provided. The costs were presumably relevant to the study perspective but there was no information on single items or quantities of resources used. The authors discussed the use of specific sources, especially the use of the national database. However, details of the published economic evaluation used to derive some specific cost categories were not provided. The price year was reported. In general, the analysis of the costs was not presented clearly.

Analysis and results:
The results of the base-case analysis were reported clearly and the dominance of one treatment over the other precluded the need for an incremental analysis. The issue of uncertainty was appropriately addressed in the sensitivity analysis, the findings of which were also presented clearly. The authors acknowledged some limitations of their study, such as the use of a short time-horizon and the use of triangular distributions for the probabilistic sensitivity analysis. It should be noticed that several assumptions were made, and that the results were sensitive to the opportunity cost assumed for LCBDE (and not for ERCP) and the 100% success rate assumed for a “rescue” ERCP.
Concluding remarks:
The study was characterised by limited reporting of the clinical and economic sources, so an objective assessment of the authors’ conclusions is difficult, especially in terms of the clinical estimates.

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Bibliographic details

Other publications of related interest


Indexing Status
Subject indexing assigned by NLM

MeSH
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