Intraoperative cholangiography in laparoscopic cholecystectomy: a review of 734 consecutive cases

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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
Intraoperative cholangiography in laparoscopic cholecystectomy.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Patients undergoing laparoscopic cholecystectomy. The mean age of patients was 48.1 years in the routine and 49.1 years in the selective group respectively. 73.6% of the routine group and 84.2% of the selective group were female.

Setting
The setting was Saint Barnabas Medical Centre, a suburban hospital in Livingston, New Jersey, USA.

Dates to which data relate
Effectiveness and resource data were collected between January 1, 1991 and December 31, 1993. Cost dates were not clearly stated.

Source of effectiveness data
Single study.

Link between effectiveness and cost data
Costing was undertaken retrospectively on the same patient sample as that used in the effectiveness analysis.

Study sample
734 consecutive cases of laparoscopic cholecystectomy were reviewed. The Routine Group of 276 cases, performed by 3 surgeons practising routine cholangiography, was compared to the Selective Group of 458 cases, performed by 16 surgeons practising selective cholangiography. The groups were similar in terms of age, sex and extent of the disease. No power calculation determined the sample size.

Study design
The study was a retrospective case series. Follow-up was by review of medical records and included the period between
discharge and May 1995. No loss to follow-up was stated.

**Analysis of effectiveness**
This was based on treatment completers only. The main health outcomes used in the review were the numbers of successful cholangiograms, filling defects, intraoperative and postoperative complications and conversions to open cholecystectomy. Groups were comparable in terms of sex, age and severity of disease.

**Clinical conclusions**
Intraoperative cholangiography should be used selectively where choledocholithiasis is suspected or biliary anatomy is unclear.

**Measure of benefits used in the economic analysis**
The numbers of successful cholangiograms, filling defects, intraoperative and postoperative complications and conversions to open cholecystectomy. As benefits in the two groups were shown to be the same, only costs were calculated.

**Direct costs**
Costs were not discounted. Costs and quantities were not reported separately. Direct health service costs were considered: radiology department fees, surgeons' fees, additional operating time, radiologist reading fees, cholangiocatheter, Hypaque 30%, fluoroscope head cover. Price dates were not stated. Costs were calculated by reviewing hospital charges and interviewing individual surgeons' billing clerks.

**Statistical analysis of costs**
Data were analysed using chi-squared and Fisher's exact test.

**Currency**
US dollars ($).

**Sensitivity analysis**
No sensitivity analysis was carried out

**Estimated benefits used in the economic analysis**
79.95% cholangiograms were successful in the Routine Group (187 of 234 attempted), compared to 73.6% (78 of 106 attempted) in the Selective Group (p=0.245). The number of intraoperative complications was 7 (2.5%) in the Routine Group and 15 (3.3%) in the Selective Group and the number of postoperative complications 18 (6.5%) vs. 37 (8.1%) (p=0.528). None of the differences were statistically significant. There were 19 (6.5%) indications for conversion to open cholecystectomy in the Routine Group, against 15 (3.3%) in the Selective Group (p=0.038). The number of filling defects was also similar in both groups: 6.4% for the Routine Group against 3.8% for the Selective Group (p=0.564). No confidence intervals were reported. Benefits were not discounted over the study period.

**Cost results**
A cholangiogram added 14 minutes to the average duration of surgery and $737 to the average cost.

**Synthesis of costs and benefits**
Benefits were shown to be similar for both procedures, with increased cost associated with the routine approach.
Authors’ conclusions
Routine cholangiography did not increase common duct stone detection, did not decrease common duct injury, and did not increase technical skill. However, it did increase cost. The authors felt that intraoperative cholangiography should be used selectively where choledocholithiasis is suspected or where biliary anatomy is unclear.

CRD COMMENTARY - Selection of comparators
Both routine and selective cholangiography are widely used techniques in the authors’ setting.

Validity of estimate of measure of benefit
Data do not appear to have been used selectively to prove a particular point and the choice of health outcomes was justified.

Validity of estimate of costs
Adequate details of quantity/cost estimation were given and no important cost items were omitted.

Other issues
Cost data may not be generalisable to other settings/countries.

Source of funding
None stated.

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