The efficacy of percutaneous cholecystostomy in critically ill patients

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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**
Percutaneous cholecystostomy (PC) in critically ill patients with acute cholecystitis.

**Type of intervention**
Treatment; Diagnosis.

**Economic study type**
Cost-effectiveness analysis.

**Study population**
Critically ill patients with acute cholecystitis.

**Setting**
University of North Carolina Hospitals. The economic study was conducted in North Carolina, USA.

**Dates to which data relate**
Effectiveness data were collected between July 1988 and February 1994. Resource use and cost data were from the same years. The price year was not clearly stated.

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

**Link between effectiveness and cost data**
For the PC option only, costing was undertaken retrospectively on the same patient sample as that used in the effectiveness study.

**Study sample**
The study comprised 33 critically ill patients undergoing PC for suspected acute cholecystitis with a mean age of 52 years (range 5-87). No power calculations were reported.

**Study design**
Retrospective case series from a single centre. The duration of follow-up was until hospital discharge.

**Analysis of effectiveness**
The analysis of effectiveness was based on treatment completers only. The main health outcomes used in the review were survival/mortality rates, improvement rates, and the need for further surgical intervention.

**Effectiveness results**

From a total of 33 patients, 22 (66%) improved, 17 (52%) survived, and 8 (24%) required surgery. PC delayed definitive operation in 2 patients. Failure to improve within 24 hours was associated with increased mortality (p=0.02). Favourable prognosticators for survival included gallbladder dilatation (p=0.01), pericholecystic fluid (p=0.01), and absence of a pulmonary artery catheter (p=0.02). Predictors of improvement included gallbladder nonvisualisation on hepatobiliary scan (p=0.047), positive bile cultures (p=0.017), and initial drainage of <= 100 cc (p=0.009).

**Clinical conclusions**

PC was technically successful in all patients with no direct mortality or major complications. The involvement of a general surgeon was important to ensure that those patients who did not improve within 24 hours received early surgical intervention and to provide long term definitive care for those patients with cholelithiasis.

**Methods used to derive estimates of effectiveness**

The estimates of risks of complications and morbidity associated with the procedure were derived from authors' opinion.

**Estimates of effectiveness and key assumptions**

The authors stated that "open cholecystostomy requires laparotomy under general or local anaesthesia and carries significant risk in critically ill patients for whom the biliary tract may or may not be the source of sepsis. PC is a less invasive procedure, having the advantage of ultrasound to assess biliary pathology and to guide catheter placement."

**Measure of benefits used in the economic analysis**

Reduced risk of complications and morbidity.

**Direct costs**

Quantities of resource use were not analysed separately from the costs. Direct health service costs were considered in the analysis such as: radiologist's fee, use of angiography suite, catheter and related supplies, ultrasound guidance with professional interpretation (for percutaneous cholecystostomy) and surgeon's fee, use of the operating room with supplies, and the anaesthesiologist's fee (for open cholecystostomy). Although the cost data related to the study period, the price year was not clearly reported.

**Currency**

US dollars ($).

**Sensitivity analysis**

A sensitivity analysis was not performed.

**Estimated benefits used in the economic analysis**

Without stating figures, the authors considered the PC option to have a lower risk of complications and morbidity than the open procedure.

**Cost results**
During the study period, the cost of PC was $1,620 and the cost of open cholecystostomy was $3,155.

**Synthesis of costs and benefits**
Incremental costs were shown to be negative, while incremental benefits were considered to be positive by the authors (PC was the dominant strategy).

**Authors' conclusions**
PC is a safe, cost-effective, minimally invasive procedure which has diagnostic and therapeutic value in critically ill patients with acute cholecystitis.

**CRD Commentary**
The main problem with this study is the absence of a comparator in the effectiveness study. Although open cholecystostomy is stated as being the alternative therapy for critically ill patients with acute cholecystitis, it is used as a comparator for costs only, thus rendering the study’s conclusions debatable.

**Source of funding**
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