Symptomatic gallbladder stones: cost-effectiveness of treatment with extracorporeal shock-wave lithotripsy, conventional and laparoscopic cholecystectomy

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
Extracorporeal shock-wave lithotripsy (ESWL), conventional cholecystectomy (CC) and laparoscopic cholecystectomy (LC) for symptomatic cholelithiasis.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Patients with symptomatic cholelithiasis.

Setting
Hospital. The economic study was carried out in Utrecht and Maastricht, The Netherlands.

Dates to which data relate
Effectiveness and resource data were collected between 1989-1990. Price dates were not 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 study.

Study sample
The study sample comprised 55 patients treated by ESWL, 45 patients who had CC and 47 patients treated by LC. The mean age and male/female ratio were similar across the 3 groups.

Study design
Retrospective case series.

Analysis of effectiveness
The analysis of the clinical study was based on treatment completers only. The primary health outcomes used in the analysis were classified as:

objective: absence of stones, complications that needed additional treatment (obstructive jaundice, acute pancreatitis, biliary colic, skin hematoma, macroscopic hematuria and bradycardia, incisional hernia)

subjective: remaining persistent complaints after treatment (type 1 - abdominal pain, biliary colic), new complaints that emerge after and possibly as a result of treatment (type 2 - diarrhea, discomfort at the abdominal scar) and patient appreciation of treatment. Subjective health outcomes were evaluated by means of a questionnaire sent to all patients.

Effectiveness results
After ESWL, 35% of the patients were free of stones, 23% had fragments <5mm, and 42% had fragments >5mm at 1 year follow-up. None of the patients from the LC group had stones after a follow-up of at least 6 months. Persistent complaints were reported by 59% after ESWL, 11% after CC and 14% after LC (p<0.001). New complaints arose in 12% after ESWL, 11% after CC and 5% after LC. Patient appreciation scores were highest for LC and lowest for ESWL.

Clinical conclusions
LC was the most effective treatment for the large majority of patients with symptomatic cholelithiasis. ESWL should only be considered in the case of a solitary, small, completely radiolucent stone.

Measure of benefits used in the economic analysis
Subjective and objective health benefits were measured.

Objective health outcomes: absence of stones, complications that needed additional treatment.

Subjective health outcomes: remaining persistent complaints after treatment, new complaints that emerged after/as a result of the treatment, patient appreciation of treatment.

Direct costs
Direct health service costs were considered: costs for diagnosis and selection, treatment costs, costs of hospital stay, follow-up costs and additional cost of complications. Quantities and costs were not reported separately. The hospital costs per diem were estimated on the basis of the National Health Sick Fund rates. The derivation methods for other costs were not specified. Costs were not discounted.

Statistical analysis of costs
Statistical analysis was performed by unpaired T-test, one way ANOVA or Chi-square tests. A p value < 0.05 was considered statistically significant.

Currency
US dollars ($).

Estimated benefits used in the economic analysis
After ESWL 35% of the patients were free of stones, 23% had stones <5mm, and 42% had fragments >5mm at 1 year follow-up. None of the patients from the LC group had residual stones after a follow-up of at least 6 months. Persistent complaints were reported by 59% after ESWL, 11% after CC and 14% after LC. New complaints arose in 12% after ESWL, 11% after CC and in 5% after LC. Patient appreciation scores were highest for LC and lowest for ESWL. Benefits were not discounted.
Cost results
The overall costs of treatment were: $5066 for ESWL, $5893 for CC and $3317 for LC.

Synthesis of costs and benefits
Incremental benefits for LC were positive while costs were shown to be negative: LC was the dominant strategy.

Authors' conclusions
LC had excellent objective and subjective health outcomes and was the least expensive mode of treatment. Therefore, LC was the most cost-effective therapy for the large majority of patients with gallbladder stones.

CRD Commentary
This study compared CC, ESWL and LC techniques. Comparators were explicitly stated and their choice was sensible. Effectiveness data were based on a retrospective case series study. The patient selection criteria were not described and differences between patient groups were not investigated. Therefore, clinical data may involve potential bias. It is difficult to assess the quality of the cost data as the derivation method was not reported. Although identified, patients’ costs were not considered in the economic analysis. The economic analysis did not include any cost-per-outcome assessment which further limits the validity of the study conclusions.

Source of funding
The ESWL study was financially supported by the Dutch Prevention Fund and Taramedico.

Bibliographic details

Indexing Status
Subject indexing assigned by NLM

MeSH
Adult; Aged; Cholecystectomy /economics; Cholecystectomy, Laparoscopic /economics; Cholelithiasis /economics /therapy; Cost-Benefit Analysis; Female; Humans; Length of Stay; Lithotripsy /economics; Male; Middle Aged; Netherlands; Research Support, Non-U.S. Gov't; Treatment Outcome

AccessionNumber
21995000100

Date bibliographic record published
31/03/1998

Date abstract record published
31/03/1998