Management outcomes in splenic injury: a statewide trauma center review

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
Nonoperative versus operative methods of management as initial therapeutic options for the management of patients with splenic injury.

Type of intervention
Diagnosis; treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Patients aged 17 years or older, with splenic trauma.

Setting
Hospital. The economic study was carried out in North Carolina, the USA.

Dates to which data relate
The effectiveness and resource utilisation data were collected between 1988 and 1993. The price year was not clearly reported.

Source of effectiveness data
The evidence for the final outcomes was derived from a single study.

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

Study sample
Power calculations were not used to determine the sample size. The study sample consisted of 1,255 patients who had splenic injuries among 22,488 patients entered on the statewide trauma registry in the study sites.

Study design
The study was a retrospective cohort study, and included the medical and surgical records of patients from eight state-designated trauma centres. The duration of follow-up was not clearly reported.
Analysis of effectiveness
The principle (intention to treat or treatment completers only) used in the analysis of clinical study was not clearly reported. The primary health outcomes were the frequency of use of different methods of management of splenic injuries, and mortality. The nonoperative group had similar trauma scores but lower injury severity scores than the SP group. The latter group was twice as likely to be in shock on admission. The injury severity was similar between the no spleen operation (NO) and SPOR groups. The SPOR with SP group had in turn a higher rate of shock and mean injury severity score at admission than the other groups.

Effectiveness results
Of 1255 patients who had splenic injuries, 499 had no spleen operation (NO); 596 patients had splenectomy (SP) as initial therapy; 150 underwent splenorrhaphy (SPOR), with an additional 10 patients undergoing splenorrhaphy initially and later requiring splenectomy (SPOR/SP). Overall, the percentage of patients treated with NO was 40%. The rate of mortality by group was reported as follows: NO group, 12.7%; SPOR, 5%; SP only, 14.8%; SPOR/SP 20%. Statistical testing showed that there was no significant difference between the NO and SP groups in terms of mortality rate (P = 0.32). The overall rate of mortality was 13%.

Clinical conclusions
The study revealed a moderate overall decrease in mortality in the nonoperative group.

Measure of benefits used in the economic analysis
No summary benefit measure was identified in the economic study and only separate outcomes (effectiveness) were reported.

Direct costs
Hospital length of stay data were analysed separately from the costs. The costs associated with each study group were summarized in 'hospital charges'. No details about the elements included in such a measure were provided. It can be inferred from the term 'hospital charges' that the cost calculations were performed from the patients' perspective, but no explicit information was given in this regard. The source of the cost data was study hospitals. The price year was not clearly reported.

Indirect Costs
Not reported.

Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was reported.

Estimated benefits used in the economic analysis
No summary benefit measure was reported.

Cost results
The mean hospital charges were reported as follows:

NO group, $31,141 (+/- $48,938);
SPOR group, $38,149 (+/- $54,014);
SP, $47,278 (+/- $64,093);
SPOR/SP, $76,153 (+/- $55,973).
Overall, the mean charges were $39,913 (+/- $57,690).

Synthesis of costs and benefits
Costs and benefits were not combined.

Authors' conclusions
Nonoperative management represents the prevailing method of splenic preservation in both the adult and geriatric population in North Carolina trauma centre hospitals. Satisfactory outcomes and economic advantages accompany nonoperative managements in the adult population.

CRD COMMENTARY - Selection of comparators
The choice of the comparator was implicitly justified by the authors. SP was considered as the historically universal method of management for splenic injury.

Validity of estimate of measure of benefit
The internal validity of the effectiveness results is questionable, due to lack of randomisation and the retrospective design used.

Validity of estimate of costs
Although some quantities of resource utilisation were reported separately from the costs, the analysis lacked adequate details of the cost analysis. The internal validity of the cost results cannot be assessed since the cost items were not reported in detail. The price date was not clearly reported.

Other issues
A synthesis of cost and benefits was required due to the lack of a dominant strategy, however this was not provided by the authors. Given the lack of randomisation, sensitivity analysis and statistical analysis of the costs, the results need to be treated with some caution. The issue of generalisability to other settings or countries was not addressed.

Implications of the study
As the authors made clear in their conclusions, further studies are needed in order validly to assess the cost-effectiveness of splenic preservation techniques for patients with splenic injury.

Source of funding
None stated.

Bibliographic details