Factors influencing wound dehiscence after midline laparotomy

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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
Use of internal retention sutures in midline laparotomy.

Type of intervention

Economic study type
Cost-effectiveness analysis.

Study population
Patients undergoing midline laparotomy.

Setting
Hospital. The economic study was carried out in Oulu, Finland.

Dates to which data relate
Effectiveness data were collected between January 1989 and December 1992. Resource use data were not reported. September 1994 costs were used.

Source of effectiveness data
Effectiveness data were derived from a 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
Power calculations were not used to determine the sample size. 48 patients with midline abdominal wound dehiscence with a mean (SD) age of 66 (12) years were compared with 48 control patients standardised by sex, age, and operative indication with a mean (SD) age of 64 (12) years.

Study design
This was a retrospective cohort study, carried out in a single centre. The duration of follow up was 30 and 90 days after discharge. No loss to follow up was reported.
Analysis of effectiveness
The principle (intention to treat or treatment completers only) used in the analysis of effectiveness was not explicitly specified. The main health outcomes used in the analysis were preoperative and postoperative risk factors, 30-day and 90-day mortality rates, and incidence of postoperative incisional herniations. The patients in the two groups were matched by sex, age, and operative indication.

Effectiveness results
The 30-day mortality in the dehiscence and control groups was 2 of 48 (4%) and 0 of 48 (0%), respectively. The 90-day mortality was 5 of 48 (10%) and 1 of 48 (2%), respectively. Postoperative incisional herniations developed significantly more often after wound dehiscence, 7 of 48 (15%) versus 0 of 48 (0%), respectively, (p=0.006). The variables that were significantly associated with wound dehiscence included hypoalbuminemia, anaemia, malnutrition, chronic lung disease, and emergency procedure. The additional postoperative factors that were found to be significant were vomiting, prolonged intestinal paralysis, repeated urinary retention, and increased coughing. The number of wound dehiscences increased significantly (p=0.0001) when the number of risk factors increased from 0 to 5.

Clinical conclusions
In this analysis, no significant differences could be demonstrated between the different techniques of abdominal fascia closure, and a separate closure of the peritoneum did not influence the rate of wound dehiscence. The most important cause of wound rupture was cutting through the tissue.

Measure of benefits used in the economic analysis
No summary benefit measure was identified in the economic analysis, and only separate clinical outcomes were reported.

Direct costs
Costs did not require discounting because of the short time frame adopted for the follow up period. Quantities of resource use were not fully reported separately from the costs. Direct health service costs were used in the analysis, i.e. mean daily cost on the hospital ward. The perspective adopted in the cost analysis was not explicitly specified. The source of cost data was the study institution. 1994 prices were used.

Indirect Costs
Not considered.

Currency
US dollars ($).

Sensitivity analysis
Not conducted.

Estimated benefits used in the economic analysis
Not applicable.

Cost results
The mean hospital stay in the dehiscence group (25 +/- 15 days) was significantly longer than in the control group (11 +/- 6 days), (p=0.0001). The mean total cost of the primary hospital treatment was $10,523 (range: $4,102 - $16,406) in the dehiscence group and $4,512 ($2,051 - $6,973) in the control group.
Synthesis of costs and benefits
Not applicable.

Authors' conclusions
The authors recommended the use of internal retention sutures for patients who have three or more risk factors.

CRD COMMENTARY - Selection of comparators
The reason for the choice of the comparator was clear.

Validity of estimate of measure of benefit
The internal validity of the effectiveness results may be weakened by the use of a retrospective design.

Validity of estimate of costs
Quantities were not fully reported separately from the costs and insufficient details of the methods of cost estimation were provided. The study lacked a prospective cost analysis.

Other issues
Given the lack of a prospective study design, sensitivity analysis, and statistical analysis of the costs, the results may need to be treated with some caution. The issue of generalisability to other settings or countries was not addressed.

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None stated

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