The cost effectiveness of self-expanding metal stents in the management of malignant left-sided large bowel obstruction

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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.

CRD summary
The study evaluated the cost-effectiveness of self-expanding metal stents to treat acute left-sided large bowel obstruction in colorectal carcinoma. The authors concluded that stenting showed reduction in hospital stay and costs, but further analysis was necessary due to small sample size. The level of bias was likely to have been high and scope of the economic analysis limited. However, as indicated by the authors, results are suggestive of stenting being cost-effective and further research is warranted.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
The study evaluated the cost-effectiveness of self-expanding metal stents to treat acute left-sided large bowel obstruction in colorectal carcinoma.

Interventions
Two interventions were compared: self-expanding metal stents and standard surgical decompression techniques. Self-expanding metal stents were used to relieve acute colorectal obstruction for palliation and as a preliminary procedure prior to delayed elective surgery. In patients receiving standard surgical decompression, a two-stage Hartmann’s operation or defunctioning caecostomy were performed.

Location/setting
UK/in-patient

Methods
Analytical approach:
The economic evaluation was based on a 26 patient observational study. The study was conducted between April 1997 and April 1998, in a single hospital where a single surgeon saw all included patients. The study perspective was not explicitly stated, but only costs for the hospital were included, which implied a hospital perspective.

Effectiveness data:
The study was a retrospective observational. Between April 1997 and April 1998, 16 patients were admitted and treated with a self-expanding stent. An unselected group of 10 patients admitted under the same consultant during the preceding 12 months provided the comparator group. Limited baseline characteristics were presented, such as age range, mean age and male to female ratio. The primary outcome was hospital length of stay. In addition, primary stenting success rate and mortality were also reported.

Monetary benefit and utility valuations:
Not relevant.

Measure of benefit:
A summary measure of benefit was not presented.

Cost data:
Costs included in the evaluation were calculated according to NHS rates from the study hospital’s finance department. Cost analysis included total hospital stay, radiology, surgery, and equipment and running costs. The price year was not stated. All costs were reported in pounds sterling.

**Analysis of uncertainty:**
No analysis of uncertainty was conducted, no variances reported and no statistical comparison undertaken. A subgroup analysis of patients who had curative treatment by anterior resection in the stenting group, or had undergone an initial Hartmann's operation followed by reversal, in the standard surgical decompression group, was conducted.

**Results**
The mean length of stay for stented patients was 2.5 days while the length of stay was 13.5 days in the standard surgical compression group. Of the 16 patients in the stenting group, 10 were palliative, five had later surgeries and one stenting failed. Of the 10 patients in the surgical compression group, three were palliative and the rest were having curative surgery.

Costs for each category of expenditure were reported categorically and in aggregate. The mean total cost for stenting was £1,445, while the cost for standard surgical decompression was £3,205. The mean savings per patient in the stenting group was £1,760.

Five of the 16 patients in the stenting group were readmitted four to six weeks later for a planned curative anterior resection; these patients were compared with six patients in the surgical decompression group who had undergone an initial Hartmann's operation followed by reversal. In this subgroup, the mean costs were £5,305 for stenting patients and £5,720 for standard surgical decompression patients, a difference of £685 in favour of stenting.

**Authors’ conclusions**
The authors concluded that stenting showed a reduction in hospital stay and costs, but that further analysis was necessary due to the small study size.

**CRD commentary**

**Interventions:**
The interventions in each group appeared reasonable, and appeared relevant to the population being evaluated.

**Effectiveness/benefits:**
The study was retrospective, with unclear patient selection methods, no randomisation and no blinding; all factors that could bias results of the study. While length of stay was a valid measure of benefit, it was a limited one. Length of stay would not capture quality of life improvements for patients for either intervention. In 10 out of 16 patients in the stenting group the treatment was palliative, while seven out of 10 patients in the surgical decompression group received curative treatment. The two groups may be similar in age and diagnosis, but the intent of treatment between the two groups appeared different. It was likely that the level of bias was high. There was not evaluation or comparison of the health benefits associated with these interventions.

**Costs:**
Costs were reported in sufficient detail, although details of resource use were not presented. The perspective was not reported, but as only hospital costs were included this should be considered the perspective. However, it was clear the patients undergo further hospital and primary care treatment depending on the interventions and the purpose of the treatment. The exclusion of these costs limits the overall cost-effectiveness results, as not all costs and consequences of the interventions have been captured.

**Analysis and results:**
Length of stay was clearly reported for the base case analysis and for subgroup analysis. Costs were clearly reported for the base case and subgroup analysis. No variance statistics, measures of statistical significance, or other analyses of uncertainty were reported. It was unclear what effect uncertainty would have on the results.

**Concluding remarks:**
The level of bias is likely to be high and the scope of the economic analysis limited. However, as indicated by the
authors the results are suggestive of stenting being cost-effective and further research is warranted.

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