Inoperable adenocarcinoma of the oesophagogastric junction: a comparative clinical study of laser coagulation versus self-expanding metallic stents with special reference to cost analysis

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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
Two palliative treatments for patients with obstructive adenocarcinomas of the oesophagogastric junction (OAOJ) were examined. The two treatments were self-expanding metallic stents (SEMS, endoscopic approach) and Nd-YAG laser (ablation technique).

Type of intervention
Palliative care.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised patients who were suffering from advanced OAOJ. Further inclusion and exclusion criteria were not reported.

Setting
The setting was a hospital. The economic study was carried out in Finland.

Dates to which data relate
The effectiveness and resource use data were gathered from January 1990 to December 1998. No price year was reported.

Source of effectiveness data
The effectiveness evidence came from a single study.

Link between effectiveness and cost data
The costing was performed retrospectively on the same sample of patients as that used in the effectiveness study.

Study sample
Power calculations, if conducted, were not reported. The method of sample selection was unclear. However, the study retrospectively identified patients who underwent palliative treatment due to advanced stage of the disease and high surgical risk. An overall sample of 52 patients was enrolled in the study over the study period. There were 32 patients in the laser group and 20 in the stent group. The mean age in the laser group was 73.3 years (range: 40 - 91) and 22 of the patients were men. The mean age in the stent group was 70.1 years (range: 52 - 87) and 16 patients were men.
Study design
This was a retrospective cohort study, which appears to have been conducted in a single centre, although the authors did not explicitly report the setting of the analysis. An experienced endoscopist decided on the choice of palliative treatment. In addition to endoscopic treatment, 6 (30%) after stent placement and 10 (31%) after laser therapy received chemotherapy and/or radiotherapy. The outcome evaluation was based on a retrospective review of the patients' records. All patients were followed until death and no patient was lost to the follow-up evaluation.

Analysis of effectiveness
All patients included in the initial study sample were taken into account when estimating the effectiveness. The health outcomes used in the analysis were technical success, median post-treatment dysphagia score on a scale of 0 (swallowing normally) to 4 (complete dysphagia), rates of early and late complications, hospital mortality, 30-day mortality and survival. The study groups were shown to have been comparable at baseline in terms of their demographic and disease characteristics.

Effectiveness results
Technical success was 94% in the laser group and 90% in the stent group;
the median post-treatment dysphagia score was 2 (range: 0 - 4) in the laser group and 2 (range: 2 - 4) in the stent group;
the median improvement in dysphagia score was 1 (range: -1 - 3) in the laser group and 1 (range: -2 - 2) in the stent group;
the rate of early complications was 6.3% in the laser group and 30% in the stent group, (p=0.043);
the rate of late complications was 41% in the laser group and 30% in the stent group;
hospital mortality was 3.1% in the laser group and 20% in the stent group;
30-day mortality was 3.1% in the laser group and 40% in the stent group, (p=0.0011);
survival was 144 (+/- 138) days in the laser group and 139 (+/- 158) days in the stent group.

Clinical conclusions
The effectiveness analysis showed that the laser procedure was more effective than stent implantation in terms of rate of early complications and 30-day mortality. The two procedures were similar with respect to the remaining clinical outcomes, such as survival, improvement in dysphagia and technical success.

Measure of benefits used in the economic analysis
The benefit measure used in the economic analysis was survival, which was derived from the effectiveness study.

Direct costs
Discounting was not conducted since the costs per patient were incurred in a short time period, due to limited survival of the study patients. The unit costs were reported separately from the quantities of resources for most cost items. The health services included in the analysis were hospital stay, laser and stent procedures, and endoscopic theatre. The costs of the endoscopic procedures included staff, material consumed, medication and equipment. The costs referring to initial diagnostic procedures, community health care, ancillary services, and both radiotherapy and chemotherapy were not included in the evaluation because they were assumed to be similar in the two study groups. The cost/resource boundary adopted in the study seems to have been that of the health service. The costs were estimated using actual data derived from the hospital finance department. Resource consumption was evaluated retrospectively on the basis of patients' hospital records from January 1990 to December 1998. No price year was reported.
Statistical analysis of costs
Statistical analyses were conducted to test the statistical significance of the difference in the estimated costs of the interventions.

Indirect Costs
The indirect costs were not included in the economic evaluation.

Currency
Euros (Euro).

Sensitivity analysis
Sensitivity analyses were not conducted.

Estimated benefits used in the economic analysis
See the 'Effectiveness Results' section.

Cost results
The total costs per patient were Euro 5,450 (+/- 5,500) in the laser group and Euro 5,360 (+/- 3,650) in the stent group.

Synthesis of costs and benefits
An average cost-effectiveness analysis was conducted to combine the costs and benefits of the two interventions. The cost per day survived was Euro 85 (+/- 205) in the laser group and Euro 175 (+/- 205) in the stent group. However, these values do not tally with the separate survival and cost results presented.

Authors' conclusions
The two palliative procedures for patients suffering from advanced obstructive adenocarcinomas near the oesophagogastric junction (OAOJ) were equally effective and costly, although the laser approach was associated with significantly fewer early complications and short-term mortality than the stent procedure. Quality of life issues involved the evaluation of dysphagia and this outcome was similar in the two study groups.

CRD COMMENTARY - Selection of comparators
Both endoscopic procedures for tumour palliation were selected because they represented two widely used approaches among patients with OAOJ. Each offers some specific advantages related to patient conditions. You should decide whether they are widely used procedures in your own setting.

Validity of estimate of measure of effectiveness
The analysis of the effectiveness used a retrospective cohort study, which was appropriate for the study question. However, the retrospective nature of the study represented a limitation of the analysis. A further threat to the internal validity of the analysis was the small sample size and the lack of power calculations, required to detect statistically significant differences in the outcome measures. There was a possibility of selection bias as the method of sample selection was not reported. The number of centres in which the study was conducted was not explicitly stated. There was a risk of confounding because of the study design. However, for various characteristics the study groups were comparable at baseline. No patient was lost to follow-up. The period during which the outcome data were collected was reported.
Validity of estimate of measure of benefit
The benefit measure was derived from the effectiveness study.

Validity of estimate of costs
The perspective adopted in the study appears to have been that of the hospital. The authors explicitly reported which categories of costs were not included in the analysis. The reason for their exclusion was that such costs were observed (and assumed for some items) to be similar between the study groups. The source of the cost data was reported. Standard statistical analyses were conducted to compare the estimated treatment costs, but sensitivity analyses were not conducted. The cost estimates were specific to the study setting. Resource use was evaluated retrospectively. The price year was not reported, thus making reflation exercises in other settings difficult. The unit costs and the quantities of resources used were reported separately for most of the cost items.

Other issues
The authors compared some of their findings with those from published studies. However, they did not address the issue of the generalisability of the study results to other settings. Sensitivity analyses were not conducted, thus the overall external validity of the analysis was low. The study referred to patients with advanced OAOJ and this was reflected in the conclusions of the analysis.

Implications of the study
The authors suggest that the two endoscopic procedures should be considered as complementary rather than mutually exclusive because, in many cases, the primary treatment has to be changed in patients with OAOJ.

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