Clinical outcome of proximal versus total gastrectomy for proximal gastric cancer
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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
The use of proximal gastrectomy reconstructed by jejunum or gastric tube as a surgical treatment for patients with proximal gastric cancer.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised patients with proximal gastric cancer, histologically in stage I or II.

Setting
The setting was tertiary care. The economic analysis was conducted in Japan.

Dates to which data relate
The effectiveness data were collected from April 1993 to October 1999. The quantities of resource use were obtained from the most recent five years. The price year was not reported.

Source of effectiveness data
The effectiveness data were gathered from a single retrospective study.

Link between effectiveness and cost data
The costing was carried out retrospectively using a different sample of patients to that used in the effectiveness study. The costing was conducted using patients treated at the authors’ institution during the most recent five years.

Study sample
No power calculations to determine the sample size were reported. Fifty-one consecutive patients with stage I or II tumours located in the upper one-third of the stomach, and in good condition at operation, were assigned to proximal or total gastrectomy on the basis of the depth of wall invasion, as evaluated by endoscopy and barium meal study. Thirty-one patients received proximal gastrectomy for tumours restricted to the mucosa, while 20 patients received total gastrectomy for tumours invading the submucosa. Among patients receiving proximal gastrectomy, 17 treated before February 1997 underwent jejunum reconstruction, whereas 14 treated after February 1997 had gastric tube reconstruction.
Study design
This was a retrospective cohort study that was conducted in a single centre. The duration of follow-up was 49.8 months. No loss to follow-up was reported.

Analysis of effectiveness
The analysis of the clinical study was conducted on the basis of treatment completers only. The primary health outcomes used in the analysis were operating time, blood loss, postoperative stay, hospital stay, weight loss and quality of life. Quality of life was estimated from a questionnaire, which was described at length in an earlier article (see Other Publications of Related Interest). The groups showed similarities in terms of tumours and demographic characteristics such as age, gender and height. However, the body mass index was significantly lower for the total gastrectomy group (21.3 +/-3.8) than for the jejunum group (25.1 +/- 2.5), (p<0.01). Weight was also significantly lower for the total gastrectomy group (54.3 +/-11.6 kg) than for the jejunum group (67.1 +/- 9.1 kg), (p<0.01) or the gastric tube group (63.2 +/- 7.0 kg), (p<0.05).

Effectiveness results
Operating time was significantly less for the gastric tube group (166 +/- 35 minutes) than for the jejunum group (317 +/- 82 minutes), (p<0.01), or the total gastrectomy group (286 +/- 63 minutes), p<0.01).

Blood loss was significantly less for the gastric tube group (163 +/-112 mL) than for the jejunum group (474 +/- 280 mL), (p<0.01), or the total gastrectomy group (607 +/- 321 mL), (p<0.01).

Hospital stay was significantly less for the gastric tube group (31.7 +/- 6.6 days) than for the jejunum group (46.1 +/- 13.3 days), (p<0.01), or the total gastrectomy group (41.3 +/- 15.5 days), (p<0.01).

Weight loss in the jejunum group (14.6 +/-5.1 kg) was more than in the total gastrectomy group (10.5 +/- 5.9 kg), (p<0.01).

During the follow-up period, three patients (one in each group) died of recurrence.

Food intake (number of meals per day) was least after gastric tube reconstruction (1.22 versus 1.71 for total gastrectomy), (p<0.05). The performance status was best after gastric tube construction (1.33 versus 1.85 for jejunal interposition), (p<0.05).

Jejunal reconstruction was associated with vomiting (1.57 versus 1.11 for gastric tube or 1.18 for total gastrectomy), (p<0.05). It was less favourably accepted by the patients as a good operation they would recommend to others (1.79 versus 1.24 for total gastrectomy), (p<0.05).

The total scores for quality of life were 35.9 for gastric tube, 39.5 for jejunal interposition, and 37.6 for total gastrectomy. None of these results reached statistical significance.

Clinical conclusions
In comparison with more aggressive procedures, proximal gastrectomy reconstructed by gastric tube provided good clinical results in patients with early-stage proximal gastric cancer.

Measure of benefits used in the economic analysis
The authors did not develop a summary benefit measure. A cost-consequences analysis was therefore performed.

Direct costs
The economic analysis was conducted from a hospital perspective. The direct costs were for consultation, prescriptions, injections, nursing care, operating room, laboratory tests, radiology, ward, meals and others. The costs were derived from hospital charges for medical diagnostics and treatments based on the clinical reward specifications in Japan.
costs were estimated from patients treated during the most recent five years at the authors' institution. The costs and the quantities were not reported separately. The period of follow-up used for the cost analysis was from hospital admission until discharge. Discounting was not reported. The price year was not reported.

**Statistical analysis of costs**
The costs were analysed using a t-test.

**Indirect Costs**
The indirect costs were not included.

**Currency**
US dollars ($) and Japanese yen (Y). No conversion rate was reported.

**Sensitivity analysis**
No sensitivity analysis was carried out.

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

**Cost results**
The total charges for the gastric tube group (Y 1,410,000; $11,800) were significantly lower than for the jejunum group (Y1,790,000; $14,900) or the total gastrectomy group (Y2,110,000; $17,600), (p<0.01).

**Synthesis of costs and benefits**
Not applicable because a cost-consequences analysis was conducted.

**Authors' conclusions**
In patients with proximal gastric cancer, proximal gastrectomy reconstructed by gastric tube provides a shorter operating time, earlier recovery, lower hospital charge and better performance status when compared to proximal gastrectomy reconstructed with jejunum or to total gastrectomy.

**CRD COMMENTARY - Selection of comparators**
The choice of the comparators was clear. You should consider whether these are widely used health technologies in your own setting.

**Validity of estimate of measure of effectiveness**
Power calculations were not reported and, given that the sample size was very small, the study may have been underpowered. The patients were shown to be comparable at analysis for age, gender, height and tumours, but there were significant differences in weight and body mass index at baseline. Moreover, the authors reported that the difference in the periods of inclusion for patients with gastric tube reconstruction and patients with jejunal interposition might have affected the results, particularly the length of hospital stay. Given the nature of the study design used, it is likely that both confounding and bias have not been dealt with adequately. It appears that appropriate methods have been used to measure quality of life, although it is unclear which patients completed the questionnaire.
Validity of estimate of measure of benefit
The authors did not derive a measure of health benefit. A cost-consequences analysis was performed.

Validity of estimate of costs
The hospital perspective was adopted and, as such, all the relevant costs appear to have been included. The costs and the quantities were not reported separately and details of the unit costs were limited. The authors only reported hospital charges, which were then used as a proxy for cost. These facts hinder the reproducibility of the results to other settings. A statistical analysis was performed for the quantities, but not the prices. In addition, no price year was reported, thus hindering any future reflation exercise.

Other issues
The generalisability of the results was not discussed, although adequate comparisons were made with studies dealing with the same topic. The study enrolled patients with gastric cancer and this was reflected in the authors’ conclusions. The authors highlighted the limitations of their study. They do not appear to have reported the results selectively.

Implications of the study
The authors suggest that proximal gastrectomy with gastric tube reconstruction may contribute to better surgical treatment of patients with proximal gastric cancer.

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Other publications of related interest


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