Feasibility of 23-hour hospitalization after laparoscopic fundoplication
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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 laparoscopic fundoplication, performed on an outpatient basis, for the treatment of patients with refractory gastroesophageal reflux disease. Outpatients were admitted to the ambulatory care centre on the morning of surgery and then discharged home the next morning, less than 23 hours after surgery, if complications did not occur.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised patients suffering from severe or complicated refractory gastroesophageal reflux disease. Patients were excluded if were classified as having ASA class III or IV disease, bleeding disorders, or if there was inadequate support at home.

Setting
The study was set in an outpatient facility and its affiliated tertiary-care centre. The economic study was carried out in the USA.

Dates to which data relate
The effectiveness evidence and the resource use data were gathered from April 1994 to July 1997. The price year was not reported.

Source of effectiveness data
The effectiveness evidence was derived from a single study.

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

Study sample
Power calculations were not performed to determine the sample size. Twenty-two patients undergoing outpatient laparoscopic fundoplication between September 1995 and July 1997, and 16 patients undergoing inpatient laparoscopic fundoplication between April 1994 and February 1996, were selected and included in the analysis. The mean age was 43 years in the outpatient group and 45 years in the outpatient group. The outpatient group comprised 45% men, whilst...
the inpatient group comprised 31% men. Routine laboratory tests and surgeon and anaesthesiologist visits were performed in advance, to ensure that the patients were eligible for the two treatments. The baseline characteristics were presented, according to group.

Study design
The study was a retrospective cohort, with the patients identified by group from the records. The study was carried out in a single centre. The same surgeon was responsible for both groups of patients. The patients were followed for 2 weeks after the intervention.

Analysis of effectiveness
All patients included in the study were accounted for in the analysis. The primary health outcomes were the number of outpatients discharged within 23 hours after surgery, the rate of complete resolution of symptoms, the average postoperative length of stay, and the presence of complications. The groups were shown to be comparable (p greater than or equal to 0.05) in terms of age, gender distribution, duration of preoperative reflux symptoms, history of abdominal surgery. They were also comparable with regards to operative data, i.e. duration of the procedure, total anaesthesia time, and time spent in the recovery room.

Effectiveness results
Seventeen patients (77%) were discharged within 23 hours after surgery. Only 5 outpatients (23%) failed to qualify for early discharge, due to excessive pain and vomiting, open conversion, and symptomatic pneumothorax necessitating drainage. The "average" postoperative length of stay was 1.3 days (range: 1 - 3) in the outpatient group and 2.6 days (range: 1 - 6) in the inpatient group. The difference was statistically significant, (p<0.05). The rate of complete resolution of reflux symptoms was 86% in the outpatient group and 88% in the inpatient group. This was stated to have been the status of the patients "to date". Finally, 5 complications were reported in the outpatient group, and 4 in the inpatient groups.

Clinical conclusions
The effectiveness analysis indicated that laparoscopic fundoplication can be performed on an outpatient basis with little difference in the outcome measures. This resulted in a statistically, significantly shorter average hospital length of stay.

Measure of benefits used in the economic analysis
The authors did not use a summary measure of benefit and left the health outcomes disaggregated. A cost-consequences analysis was therefore carried out.

Direct costs
Discounting was irrelevant because the costs were occurred within two weeks after surgery. The resource quantities and the unit costs were not reported separately. The resource/cost boundary adopted was that of the hospital. The costs included hospitalisation, utilisation of operating suite, anaesthesia, surgical supplies, and ancillary costs (laboratory tests, respiratory therapy and pharmacy). The quantities and the costs were estimated from actual data derived from the hospital records. The resource use data were gathered from April 1994 to July 1997. The price year was not reported.

Statistical analysis of costs
A statistical analysis of costs was reported.

Indirect Costs
No indirect costs were included.
Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was carried out.

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

Cost results
The mean facility costs of the procedure, plus or minus the standard deviation, were $4,588 (+/-274) in the outpatient group and $7,169 (+/-447) in the inpatient group. The difference was statistically significant, (p<0.05). All the cost items (supplies, room, operating room, anaesthesia and ancillary) in the outpatient group were lower than those in the inpatient group.

Synthesis of costs and benefits
Not applicable.

Authors’ conclusions
The authors concluded that outpatient laparoscopic fundoplication was as effective and safe as surgery performed on an inpatient basis. However, outpatient laparoscopic fundoplication resulted in a significant reduction in the intervention costs when compared with inpatient surgery. This was due to the significantly shorter hospitalisation associated with the outpatient procedure.

CRD COMMENTARY - Selection of comparators
The reason for the selection of the comparator was clear. It represented the routine treatment before the introduction of minimally invasive surgery based on laparoscopy. You should consider whether it represents a widely used technology in your own setting.

Validity of estimate of measure of effectiveness
The main limitation of the effectiveness analysis was the lack of randomisation in the study design. This could have led to possible selection bias, even if the groups were shown to be comparable in the identified characteristics. Further, the lack of a statistically significant difference could have been due to the small sample size, given the lack of power calculations in the planning phase of the analysis. Also, as the authors acknowledged, patients in the two groups were operated on in different time periods. Thus, the observed reduction in the costs could have been determined by an increase in efficiency and experience over time. Finally, the measures themselves were problematic. The complication rates were difficult to compare due to differences in the severity. In addition, the rate of symptom resolution was stated as occurring "to date", and it was therefore unclear how long it took to reach this rate.

Validity of estimate of costs
The costs and the quantities were not analysed separately. The price year was not reported. The cost estimates used in the study were quite specific to the study setting. Only a few details relating to the resource user were reported. Finally, the perspective of the study was unclear, although the authors made reference to the societal perspective. Some costs of relevance to the analysis could, therefore, have been omitted or erroneously included. It would have been interesting to have adopted a societal perspective and included the indirect costs (productivity losses), as these would appear to have been relevant, due to the significant difference in the duration of hospital stay between the two treatments.
Other issues
The authors made appropriate comparisons of the findings of their study with those from other studies. Sensitivity analyses were not performed, therefore limiting the generalisability of the study's results to other settings. The authors acknowledged some limitations of their study, which were mainly related to the design of the study.

Implications of the study
The authors recommended the adoption of outpatient laparoscopic fundoplication provided that "there are strict guidelines for patient selection, anaesthesia, surgery, and postoperative care". However, there were methodological problems that did not support the increased benefits of outpatient care. The study does not give evidence to support the authors' caveats.

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