Percutaneous tracheostomy: a cost-effective alternative to standard open tracheostomy
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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
Using percutaneous versus open tracheostomy in patients requiring tracheostomy.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Patients older than 14 years of age requiring tracheostomy.

Setting
Hospital. The economic study was carried out in Cleveland, USA.

Dates to which data relate
The effectiveness data relating to open tracheostomy were gathered between December 1992 and December 1993. The effectiveness data were collected for percutaneous tracheostomy between December 1993 to March 1996. The duration of the tracheostomy was estimated retrospectively from medical records completed during the above-mentioned periods, but the date of the estimation was not specified. The dates of the price data were not reported.

Source of effectiveness data
The evidence for final outcomes was derived from a single retrospective study.

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

Study sample
Power calculations were not used to determine the sample size. There were 74 patients in the percutaneous group, and 109 patients in open group. The records of only 19 patients in the percutaneous group, and 23 in the open group, who underwent tracheostomy as a sole procedure, were used for the cost analysis.

Study design
The study was a non-randomized trial with historical controls.
Analysis of effectiveness
It was not stated whether the analysis of the clinical study was based on intention to treat or treatment completers only. The main health outcome measures were intraoperative and postoperative complications, including postoperative morbidity. There were no significant differences in the indications for tracheostomy between the alternative groups; differences in other main characteristics of the patients were not investigated.

Effectiveness results
No intraoperative complications occurred in either the open or the percutaneous group. Postoperative morbidity was 3% in the percutaneous group, and 9% in the open group (P>0.05). It was not reported whether the differences between the groups in other postoperative complications were statistically significant.

Clinical conclusions
The study revealed that percutaneous tracheostomy can be as safe as open tracheostomy.

Measure of benefits used in the economic analysis
Since the effectiveness analysis showed no difference in effectiveness between the intervention and the comparator, the economic analysis was based on the difference of costs only.

Direct costs
Only health services costs were considered. Costs were not discounted. The operation time was reported separately from the costs. The average operating room cost was reported for each technique. The average operating cost was divided into the cost of operating room time and the cost of equipment. The finance office of the hospital was the source of the cost data. The surgeon's and anesthesiologist's fees were omitted from the cost study since they were common for the alternative techniques. The dates of the price data were not specified.

Statistical analysis of costs
Results were analysed using a Chi-squared test. A p-value <0.05 was considered significant.

Indirect Costs
Indirect costs were not reported.

Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was carried out.

Estimated benefits used in the economic analysis
Not applicable.

Cost results
The average operating room cost for the percutaneous group was $1,093 against $1,370 for the open group. The reason for this difference was the shorter operating time associated with percutaneous tracheostomy: 21 (+/- 6) minutes versus 46 (+/- 21) minutes for open tracheostomy, (P<0.05). The costs of complications were not included in the study.
Synthesis of costs and benefits
A synthesis was not undertaken by the authors since the use of percutaneous tracheostomy was a weakly dominant strategy.

Authors' conclusions
Percutaneous tracheostomy is a safe procedure that can be performed in less time and at a lower cost than standard open tracheostomy.

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

Validity of estimate of measure of benefit
Lack of randomisation may adversely affect the power of the study to provide an unbiased measure of the benefits.

Validity of estimate of costs
Resource quantities were reported separately from the costs. Adequate details of the methods of quantity/cost estimation were not given. The costs of postoperative complications were not included. The cost analysis was undertaken on small subgroups of patients which might introduce bias.

Other issues
Given the lack of randomisation, and sensitivity analysis the results need to be treated with some caution. The issue of generalisability to other settings or countries was not addressed. Appropriate comparison was made with other studies.

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