Bronchoscopic guidance makes percutaneous tracheostomy a safe, cost-effective, and easy-to-teach procedure


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
Percutaneous tracheostomy using bronchoscopic guidance.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Patients undergoing tracheostomy.

Setting
Hospital. The study was carried out in Pennsylvania, USA.

Dates to which data relate
1991 cost figures for treatment were used. Effectiveness dates were not reported.

Source of effectiveness data
Single study.

Link between effectiveness and cost data
The costing was undertaken prospectively on the same patient sample as that used in the effectiveness study.

Study sample
Power calculations were not explicitly stated as the reason for the sample size chosen. Forty-eight individuals were divided between two groups: 27 received PET and 21 received ST.

Study design
Retrospective cohort study. Single Centre. Follow-up ranged from 2 to 18 months. Ten patients were lost to follow-up: 4 patients died in the ST group and 6 died in the PET group.

Analysis of effectiveness
Intention to treat. The primary health outcome used in the analysis was side-effects. Groups were assumed to be comparable in age, sex and prognostic features.

**Effectiveness results**
All patients decannulated were followed by the trauma team and there was no clinical indication of a major late complication related to a tracheostomy in either group.

**Clinical conclusions**
Bronchoscopic guidance makes percutaneous tracheostomy safer.

**Measure of benefits used in the economic analysis**
Benefits measured were safety and difficulty of implementation. One of the author followed-up of cases, which took place from two to eighteen months after intervention. A questionnaire was used to ask the clinicians if the method was "easy" or "difficult", and if it was "easier than the standard".

**Direct costs**
No discounting was applied. Some costs and quantities were reported separately. Direct health service and hospitalisation costs were (overhead and operating costs) used in the analysis. The following costs were included: surgical fee, anaesthesia fee, operating room (OR) charges (1st and 2nd halves of an hour), PET equipment, equipment charges (1st and 2nd halves of an hour), respiratory therapist (salary per hour), and Surgical Intensive Care Unit (SICU) nurse (salary per hour). Costs were derived from actual data (unit of analysis). 1991 costs were used.

**Statistical analysis of costs**
Mean values, standard deviations and p-values were reported for the time required to perform the procedure.

**Currency**
US dollars ($).

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

**Estimated benefits used in the economic analysis**
There was some support for the idea that PET is even easier than ST (p<0.031). No major complications or side effects after intervention were reported.

**Cost results**
The average cost of PET (in a SICU) was $1475 while the corresponding figure for ST was $4810. Thus, the average savings were $3335 per patient.

**Synthesis of costs and benefits**
The PET intervention was the dominant strategy.

**Authors’ conclusions**
PET was performed easily and safely at the OR and at the Intensive Care Unit (ICU) bedside. PET required one third
of the of ST. Bronchoscopic supervision of PET may have contributed to the small number of complications and the educational experience of junior residents. PET in the ICU can reduce hospital charges significantly and avoids transport of patients to the OR. PET is as safe as ST and should be considered the procedure of choice for an ICU patient requiring an elective tracheostomy. Caution, however, should be exercised when considering a tracheostomy for those patients who require high levels of ventilatory support.

CRD Commentary
(a) More information is needed regarding the comparability of the two groups. The authors themselves admitted possible biases given the non-randomization of the study design.

(b) More detailed analysis of benefits, i.e. diversity of outcomes in terms of quality of life in the longer term, would have been desirable but probably would support the PET procedure.

(c) More analysis is needed about the safety aspects of the intervention.

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