A retrospective comparison of the morbidity and cost of different reconstructive strategies in oral and oropharyngeal carcinoma

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
Three different strategies for surgical resection of squamous cell cancer and reconstruction in oral and oropharyngeal carcinoma were considered in the study: plate-soft tissue, bone-soft tissue, and soft tissue only.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised patients with oral and oropharyngeal carcinoma, undergoing reconstruction with vascularised flaps.

Setting
The setting was secondary care. The economic study was carried out at the Toronto Hospital, Canada.

Dates to which data relate
Effectiveness and resource use data were gathered between 1992 and 1996. The price year was not reported.

Source of effectiveness data
The effectiveness evidence was based on a single study.

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

Study sample
Power calculations were not performed. 127 consecutive patients who underwent reconstruction with vascularised flaps from 1992 to 1996 were extracted from the head and neck surgery database at the Toronto Hospital and were considered eligible. Reconstruction was performed with plate-soft tissue for 30 patients (15 male, mean age 64.8 years), with bone-soft tissue for 33 patients (18 male, mean age 60.1 years), and with soft tissue only for 64 patients (46 male, mean age 53.3 years).

Study design
The study was a retrospective case-control study carried out in a single centre (Toronto Hospital). The length of follow-up was not clearly reported.

**Analysis of effectiveness**

All patients included in the study were accounted for in the analysis. The primary health outcomes (morbidity factors) were operative time, intraoperative blood loss, postoperative admission length, intensive care unit (ICU) and coronary care unit admission length, surgical interventions for complications, re-admissions, prolonged gastrostomy tube feeding, and days of life lost (defined for the purpose of this study as the total amount of time spent in the hospital). Groups were not shown to be comparable at baseline and the effect of confounding variables was not accounted for.

**Effectiveness results**

Among the numerous effectiveness results, only those significantly different among the techniques are reported here.

Primary and secondary operation times were higher for bone-soft tissue (14.2 hours and 3.2 hours, respectively) than for plate-soft tissue (12.4 hours and 0.2 hours) and soft tissue only (11.9 hours and 1.1 hours).

Blood loss and number of patients having prolonged gastrostomy tube feeding were also higher for bone-soft tissue (1,430 mL and 7 patients) than for plate-soft tissue (1,280 mL and 7 patients) and soft tissue only (1,020 mL and 8 patients).

The number of patients undergoing secondary procedures was significantly higher for both bone-soft tissue (11 patients) and soft tissue only (15 patients) compared to plate-soft tissue (2 patients).

**Clinical conclusions**

Overall, the three techniques were equally effective, with only operative time and blood loss being significantly higher compared to plate-soft tissue and soft tissue only.

**Measure of benefits used in the economic analysis**

Health outcomes were left disaggregated and no summary benefit measure was used, therefore a cost-consequence analysis was carried out.

**Direct costs**

Discounting was not carried out. Few details about the cost analysis were reported. Quantities and costs were not analysed separately and the resource/cost boundary was not reported. Costs were divided into three groups: initial admission costs (operating room, ward, and post-anaesthetic care unit nursing salaries, non-reusable supplies, surgeons’ and anaesthesiologists’ fees); secondary costs (costs related to complications); and re-admission costs. The estimation of some costs was based on actual data and was derived from a government insurance plan. Resource use data were gathered between 1992 and 1996. The price year was not reported.

**Statistical analysis of costs**

No statistical analysis was reported.

**Indirect Costs**

Indirect costs were not included.

**Currency**

Canadian dollars (Can$).
Sensitivity analysis
No sensitivity analysis was carried out.

Estimated benefits used in the economic analysis
See effectiveness results above.

Cost results
The cost results were not reported in detail. However, initial admission costs were higher for bone-soft tissue, secondary costs were higher for soft tissue only, and re-admission costs were higher for bone-soft tissue. Overall, bone-soft tissue resulted in higher costs compared to plate-soft tissue and soft tissue only, but the difference was not statistically significant.

Synthesis of costs and benefits
Costs and benefits were not combined.

Authors' conclusions
The authors concluded that neither costs nor morbidity factor differed substantially among the three techniques, therefore all three could be considered equally effective and costly.

CRD COMMENTARY - Selection of comparators
The rationale for the selection of comparators was clear; they represented commonly used techniques for the treatment of patients with oral and oropharyngeal carcinoma. You should consider whether they represent routine treatments in your own setting.

Validity of estimate of measure of effectiveness
The analysis was based on a case-control study, which appeared to be an appropriate design for the study question. However, the internal validity of the study may have been limited by the lack of statistical analyses to take into account potential biases and confounding factors, given that the study was retrospective and was not randomised. It would have been interesting had a summary benefit measure related to patients' preferences been derived, given that the health status of the patients was affected by the different techniques.

Validity of estimate of measure of benefit
Not applicable.

Validity of estimate of costs
The cost estimates used in the study were quite specific to the analysis setting. Only a few details relative to the resources used were reported, and statistical analyses on quantities were not carried out. Total costs relative to each strategy were not reported. Furthermore, the price year was not indicated and costs and quantities were not reported separately. Finally, the perspective of the study was not stated and some costs may have been omitted.

Other issues
The generalisability of the results to other settings was quite limited, because sensitivity analyses were not carried out. Several interesting comparisons of the study findings with those of other studies were made. The authors acknowledged that results should be treated with a degree of caution, given the problems related to the study design.
Implications of the study
The authors suggested that the choice of the best reconstruction strategy after oral and oropharyngeal cancer ablation should be driven not by morbidity or cost factors, but by disease stage, life expectancy, and quality of life.

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