Health utility assessment and cost-effectiveness analysis of septorhinoplasty

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Background
Septorhinoplasty is one of the most common procedures performed in Rhinology and demands for the procedure is rising in Germany1. Despite this, associated health benefits remain controversial1. In this study, a health utilities assessment and cost-utility analysis was performed for septorhinoplasty.

Methods
- 103 patients undergoing Septorhinoplasty at Universitätsklinikum Heidelberg completed Short Form-36 (SF-36) and satisfaction questionnaires before and 12 months after their procedure.
- Patient perspective (Statutory Insurance) was adopted.
- Cost for Septorhinoplasty (including follow-up) was acquired from hospital administration (€ 3487.69).
- Health utilities (Quality Adjusted Life Years – QALYs) were derived from SF-36 responses using the SF-6D instrument3.
- Cost utility was calculated by determining cost per QALY gained compared to counterfactual of no surgery. Incremental Cost Utility Ratio (ICUR) = cost difference/outcomes difference. Counterfactual cost was assumed to be zero and counterfactual outcomes were preoperative QALYs.
- Sensitivity analysis was performed for cost variability (variations in regional DRG base rates) and outcome variability (confidence intervals of QALYS gained).

Results

Patients: 51% were male and the average age of study participants was 28.7 years. Indications for septorhinoplasty were both functional and aesthetic with 66% of patients seeking both improved nasal function and appearance. 27% prioritised improved nasal function and 7% prioritised improved nasal cosmesis.

Health Utilities: Patients undergoing septorhinoplasty reported mean preoperative QALY values of 0.70 preoperatively and 0.74 postoperatively, indicating health gains of 0.04 QALYs (95% CI: 0.007 - 0.07).

Post-operative satisfaction: Patients satisfied with their procedures had significant health utility gains while dissatisfied patients did not experience any significant gains.

Cost Utility: The cost of septorhinoplasty to SHI in this study was € 3487.69, while mean QALY gain was 0.0367. The mean ICUR was therefore €94797.30 per QALY gained. Cost effectiveness of this value depends on willingness to pay as indicated in the cost effectiveness plane diagram.

Sensitivity analyses: Sensitivity analysis, based on reimbursement rate variations across Germany and local outcome variations, yielded a best case ICUR of €50030.91 and worst case ICUR of €516762.86.

Conclusions: Septorhinoplasty has associated health gains but at a high cost-utility ratio. This is the first study to estimate health utilities and cost-utility of the procedure. Determination of cost-effectiveness depends on the health payer’s willingness-to-pay. Post-procedure satisfaction rates can also predict health gains after septorhinoplasty.