Cost-effectiveness of internal limiting membrane peeling versus no peeling for patients with an idiopathic full-thickness macular hole: results from a randomised controlled trial

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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.

CRD summary
This study assessed the cost-effectiveness of internal limiting membrane peeling for macular-hole surgery compared with no peeling. The authors concluded that internal limiting membrane peeling was the cost-effective treatment for full-thickness macular hole. The study methods were valid and transparent and good quality sources of data were used. The authors’ conclusions appear to be appropriate.

Type of economic evaluation
Cost-utility analysis

Study objective
This study assessed the cost-effectiveness of internal limiting membrane peeling as an additional surgical manoeuvre in macular-hole surgery.

Interventions
Internal limiting membrane peeling was compared with no peeling for patients who underwent surgery for an idiopathic stage 2 or 3 full-thickness macular hole.

Location/setting
UK/secondary care.

Methods
Analytical approach:
This economic analysis was based on a single trial and was conducted over a six-month time horizon. The authors stated that the perspective was that of the UK NHS.

Effectiveness data:
Clinical data were derived from a randomised controlled trial (RCT) with 71 patients in a internal limiting membrane peeling group and 67 in a no peeling group. An intention-to-treat analysis was conducted. Other details of the RCT, such as the clinical endpoints, were reported elsewhere in Lois et al. 2008 and 2011 (see Other Publications of Related Interest).

Monetary benefit and utility valuations:
The utility valuations were derived from patients who participated in the RCT using the EQ-5D questionnaire, which was completed at baseline and six months. Group means were used for missing data at six months.

Measure of benefit:
The health benefit measure was quality-adjusted life-years (QALYs).

Cost data:
Resource use was collected as a component part of the trial. The cost categories were of intervention and follow-up primary and secondary care. Resources included anaesthesia (drugs and equipment), operation theatre, equipment, consultation, recovery room, transportation using hospital and ambulance vehicle, in-patient stay, nurse, GP, optometrist/ophthalmologist and outpatient visits. The unit costs for health care were from national sources, such as
British National Formulary 57, Information Services Division Scotland and NHS Grampian prices. All costs were in UK pounds sterling (£).

Analysis of uncertainty:
A bootstrapping approach was conducted to investigate uncertainty surrounding the cost-effectiveness estimates. A one-way sensitivity analysis was conducted to test whether the model outcomes were robust.

Results
In the base case, over six months internal limiting membrane peeling was associated with slightly higher adjusted QALYs than no peeling (mean difference 0.002, 95% confidence interval 0.01 to 0.013). Total costs were £424 (95% confidence interval 182 to 1,045) higher in the no peel arm (£2,550.31 internal limiting membrane peeling versus £2,974.16 no peeling).

Internal limiting membrane peel dominated no peeling (was less costly and more effective).

The sensitivity analysis indicated that there was a 90% chance that internal limiting membrane peeling was cost-effective at a willingness-to-pay threshold of £20,000 per QALY.

Authors’ conclusions
The authors concluded that internal limiting membrane peeling was the cost-effective treatment for full-thickness macular hole.

CRD commentary
Interventions:
The intervention was appropriately compared against no intervention.

Effectiveness/benefits:
Clinical data were from a RCT conducted in a UK centre. The RCT was considered to be a high-quality source of clinical evidence. Use of an intention-to-treat approach and bootstrapping enhanced the validity. Utility data were derived appropriately and missing data were imputed appropriately. Extensive sensitivity analyses were conducted on the clinical estimates and utility valuation. Baseline characteristics were largely comparable. There were a couple of exceptions, one of which was EQ-5D scores; the importance of this difference was unclear. Baseline and six-month data seemed to suggest an increase in utility for the peel arm and a small decrease for the no peel arm. Results were sensitive to EQ-5D data and these baseline differences may have warranted further investigation.

Costs:
Use of a RCT to estimate the resource quantities was likely to ensure detailed data that were representative of clinical practice. Data sources and quantities were stated clearly. The impact of uncertainty in cost data was tested in the sensitivity analysis and bootstrapping analysis. The price year was not reported and this would limit reflation exercises.

Analysis and results:
The methods and results were presented clearly. The issue of uncertainty was addressed satisfactorily in deterministic and stochastic analyses. The authors acknowledged limitations of their analysis such as use of data from a single centre and a short period following surgery.

Concluding remarks:
The methods were valid and transparent. Good quality sources of data were used. The authors’ conclusions appear to be appropriate.

Bibliographic details
Other publications of related interest


Indexing Status
Subject indexing assigned by NLM

MeSH
Basement Membrane /surgery; Cost-Benefit Analysis; Health Resources /utilization; Health Services Research; Humans; Ophthalmologic Surgical Procedures /economics; Quality of Life; Quality-Adjusted Life Years; Retinal Perforations /economics /surgery; Surveys and Questionnaires

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