Cost and effectiveness of laser with phlebectomies compared with foam sclerotherapy in superficial venous insufficiency: early results of 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 examined the costs and health effects of endovenous laser ablation, with phlebectomy (vein removal), compared with ultrasound-guided foam sclerotherapy, for patients with symptomatic varicose veins. The authors concluded that at three months, sclerotherapy was less expensive than ablation, with shorter treatment time, less pain and analgesia requirements, and shorter time to recovery, but comparable effectiveness. The costs of later recurrence were unknown. The methods of the study were good, and the authors’ conclusions appear to be appropriate.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
This study examined the costs and health effects of endovenous laser ablation with phlebectomy (vein removal), compared with ultrasound-guided foam sclerotherapy, for patients with symptomatic varicose veins.

Interventions
Endovenous laser ablation was compared with ultrasound-guided foam sclerotherapy. Ablation was performed as day surgery, with tumescent anaesthesia. The incompetent saphenous tributaries were treated at the same time, using phlebectomy hooks. Sclerotherapy was performed in an out-patient consultation room, with ultrasound to guide the extent and direction of the foam within the target veins. Sclerotherapy was repeated, if required, at a further session.

Location/setting
UK/in-patient and out-patient care.

Methods
Analytical approach:
The analysis was based on data from a clinical trial. The time horizon was three months. The authors did not state the perspective.

Effectiveness data:
The effectiveness evidence was from a prospective, single-centre, randomised controlled trial, with 100 patients with primary symptomatic varicose veins. Fifty patients were allocated to ablation and 50 patients to sclerotherapy. Patients were followed-up at three weeks and three months after their procedure. The main clinical effectiveness estimates were the rate of success, defined as occlusion without reflux; quality of life, valued on the Aberdeen Varicose Vein Questionnaire (AVVQ); Venous Clinical Severity Score (VCSS); venous filling index; and pain, measured on a visual analogue scale (VAS). The Student's t-test, X², and Mann-Whitney U test were used to analyse the differences between the groups at baseline and follow-up assessments.

Monetary benefit and utility valuations:
Not relevant.

Measure of benefit:
The measures of benefit were the rate of success, AVVQ score, VCSS, venous filling index, and pain score.
Cost data:
The economic analysis considered the costs directly related to the procedures. This included the costs of the physician, nursing and staffing, procedure location, overheads, consumables, and duplex ultrasound scan. The costs and resources used were based on those used by the patients in the clinical trial. Parametric and non-parametric statistics were used to analyse the resource use.

Analysis of uncertainty:
Interquartile ranges were presented for the results.

Results
The median cost was £724.72 (IQR 676.74 to 773.85) with ablation and £230.24 (IQR 123.20 to 259.91) with sclerotherapy (p<0.0005).

The above-knee great saphenous vein occlusion rate (without co-existing reflux), at three months, was not significantly different between the groups (74% for ablation and 69% for sclerotherapy; p=0.596). The median AVVQ score, at three months was 5.8 (IQR 2.5 to 12.2) for ablation and 12.4 (IQR six to 21.9) for sclerotherapy (p=0.062). The VCSS was one (IQR zero to three) for ablation and two (IQR one to four) for sclerotherapy (p=0.817). The venous filling index was 1.5mL per second (IQR 1.1 to 2.4) for ablation and 1.9mL per second (IQR 1.3 to 2.7) for sclerotherapy (p=0.791).

The median pain score in the seven days following treatment was 33 out of 100 (IQR 18 to 54) with ablation and 14 out of 100 (IQR six to 34) with sclerotherapy (p=0.005).

Authors’ conclusions
The authors concluded that at three months, sclerotherapy was less expensive than ablation, with shorter treatment time, less pain and analgesia requirements, and shorter time to recovery, but comparable effectiveness. The costs of later recurrence were unknown.

CRD commentary
Interventions:
The interventions were clearly reported, and appear to have been appropriate. They might be relevant in other settings.

Effectiveness/benefits:
The study design and outcomes were clearly reported. The outcome data were from a randomised controlled trial, which was a good design, but the trial was small and was conducted in one centre, making it uncertain to what extent the sample represented the general population of patients with varicose veins.

Costs:
The economic viewpoint was not explicitly stated, but the types of costs and their source indicate the perspective of the hospital. All those costs relevant to the procedures were included. The methods used to measure the resources and associated costs were clearly reported. The cost estimates were from one hospital, which might limit the generalisation of the results across the UK. Discounting was not relevant. The price year was not reported, making reflation exercises difficult.

Analysis and results:
The costs and effects were not combined in an incremental cost-effectiveness ratio. The uncertainty in the input estimates was assessed in a variety of statistical tests, but sensitivity analyses would have been more informative. The authors acknowledged that the cost of treating potential recurrences was not included.

Concluding remarks:
The methods of the study were good, and the authors’ conclusions appear to be appropriate.

Funding
Funded by Ealing Hospital, and STD Pharmaceuticals, UK, a manufacturer of sclerotherapy products.
Bibliographic details

PubMedID
22386383

DOI
10.1016/j.ejvs.2012.01.032

Original Paper URL

Indexing Status
Subject indexing assigned by NLM

MeSH
Adult; Aged; Cost-Benefit Analysis; Female; Humans; Laser Therapy /economics; Male; Middle Aged; Prospective Studies; Saphenous Vein /surgery; Sclerotherapy /economics; Treatment Outcome; Varicose Veins /economics /therapy; Venous Insufficiency /economics /therapy; Young Adult

AccessionNumber
22012018967

Date bibliographic record published
31/08/2012

Date abstract record published
09/01/2013