Endovenous treatment for varicose veins

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Definition



Introduction

- Varicose veins are the commonest lower limb vascular condition
 - 30-35% females
 - 10-15% males
- With morbidity (swelling, heaviness, pain, bleeding, ulcers)
- Traditionally

GSV- trendelenburg and stripping SSV- ligation +/- avulsion

Great saphenous stripping



Short saphenous ligation



Trendelenburg and stripping

- Reported to have success rate of 80%
- Lower venous ulcer recurrence than with compression treatment as per **ESCHAR**(Effect of Surgery and Compression on Healing and Recurrence)trial , 12% vs 25% after 12 months
- **Disadvantages** ; hospitalisation, incisions ,longer recovery time and recurrence rate of 20%

Endovenous treatment

• Proven to be as effective as surgery

 Advantages; outpatient, no wound complications, better cosmesis and quicker recovery

Types of endovenous treatment

• Thermal(radiofrequency, laser and steam)

• Sclerotherapy

 Non thermal, non tumescent (mechanochemical and venaseal)

Radiofrequency ablation

- MOA; electromagnetic energy causes

 a)endothelial destruction
 b)collagen denaturation and contraction
 c)shortening and thickening of vessel wall
- End result is fibrotic occlusion
- RF vs Stripping studies (Rautio et al, EVOLVes and Stotter et al) – RF quicker recovery and less complications, but success and recurrence similar

Radiofrequency equipment

ClosureFast catheter and RFGPlus generator



Tumescent

- Mixture(50ml 1% lidocaine with epinephrine in 450ml N/S and 5-10ml 8.4% sodium bicarbonate)
- Functions; analgesia, protect the surrounding structures and improve contact of vein wall to the catheter)

Procedure

Reverse trendelenburg

Catheter tip 2cm below SFJ





Procedure

Tumescent anaesthetic

Post ablation ultrasound



Post procedure

Management

- Class II graded stockings
- Ambulation
- NSAID
- 1 week ultrasound DVT

Typical ultrasound after a month



Echogenic occlusion of the GSV



Venous wall thickening



Laser ablation

- Uses a bare tipped or jacket tipped fibre
- MOA; chromophores (haemoglobin, myoglobin and interstitial water) absorb light inducing collagen denaturation and thrombosis

 -haemoglobin absorption → thrombus formation (occurs mainly with shorter wavelengths)

• Procedure very similar to RF

Laser compared to other modalities

- Comparable success rate as surgery, or non significantly better
 - less complications and quicker recovery

- Earlier studies showed superiority to RF when the older RF catheter was being used
 - RF has less pain, but laser has improved with the jacket tip

Sclerotherapy

- MOA ; sclerosant(osmotic, alcohol and detergent) induces endothelial damage → thrombosis and fibrosis
- Liquid sclerotherapy has poor occlusion rates ← deactivation by blood
 - improved by foam
- Sclerotherapy, cutaneous laser and intense pulse treat spider veins and telangiectasia

Non-thermal, non-tumescent ablation

• Mechanochemical(Clarivein), rotating tip abrading the intima and simultaneous injection of sclerosant

• Venaseal closure, cyanoacrylate glue and ongoing compression

Same Site Recurrence is More Frequent After Endovenous Laser Ablation Compared with High Ligation and Stripping of the Great Saphenous Vein:5 year Results of a Randomized Clinical Trial (RELACS Study)

Objective: To compare the long-term clinical efficacy of endovenous laser ablation (EVLA) with high ligation and

stripping (HLS) as standard treatment for great saphenous vein (GSV) incompetence.

Design: Investigator initiated two centre randomized controlled trial with 5 year follow up.

Materials and methods: Interventions were performed on ambulatory and hospitalized patients at two vein centres, a university dermatology department (EVLA) and a specialized vein clinic (HLS). Four hundred patients

suffering from GSV incompetence were assigned to EVLA or HLS of the GSV. One hundred and eighty five and 161

patients (¼limbs), respectively, were treated per protocol. Main outcome measures were clinically recurrent varicose veins after surgery (REVAS classification, primary study objective), Duplex detected saphenofemoral recurrence, clinical venous severity scoring (Homburg Varicose Vein Severity Score), quality of life (Chronic Venous Insufficiency Questionnaire 2), side effects, and patient satisfaction 5 years after treatment.

Results: Two hundred and eighty one legs (81% of the study population) were evaluated with a median follow up

of 60.4 (EVLA) and 60.7 months (HLS). Overall, REVAS was similarly observed in both groups: 45% (EVLA) and 54%

(HLS), p ¼ .152. Patients of the EVLA group showed significantly more clinical recurrences in the operated region

(REVAS: same site): 18% vs. 5%, p $\frac{1}{4}$.002. In contrast, more different site recurrences were observed in the HLS

group: 50% vs. 31%, p $\frac{1}{4}$.002. Duplex detected saphenofemoral refluxes occurred more frequently after EVLA: 28% vs. 5%, p < .001. Both treatments improved disease severity and quality of life without any difference.

Conclusions: EVLA and HLS are comparably effective concerning overall REVAS, improvement of disease severity,

and quality of life. In terms of same site clinical recurrence and saphenofemoral refluxes, HLS is superior to EVLA

5 years after treatment.

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Systematic Review and Meta-analysis of Randomised Controlled Trials Comparing Endovenous Ablation and Surgical Intervention in Patients with Varicose Vein

Objectives and design

A systematic review and meta-analysis was conducted to compare clinical outcomes between endovenous laser ablation (EVLA), radiofrequency ablation (RFA), ultrasound-guided foam sclerotherapy (UGFS) and surgery.

Methods

We searched MEDLINE and Scopus from 2000 to August 2011 to identify randomised controlled trials (RCTs) comparing EVLA, RFA, UGFS, and surgery or combinations of these for treatment of varicoses. Differences in clinical outcomes were expressed as pooled risk ratio and unstandardised mean difference for dichotomous and continuous outcomes, respectively. Methodological quality was assessed using Cochrane tools.

Results

Twenty-eight RCTs were included. The primary failure and clinical recurrences were not significantly different between EVLA and RFA versus surgery with the pooled RR of 1.5 (95%CI:0.7, 3.0) and 1.3 (95%CI:0.7, 2.4) respectively for primary failure, and, 0.6 (95%CI:0.3, 1.1) and 0.9 (95%CI:0.6, 1.4) respectively for clinical recurrences. The endovenous techniques had advantages over surgery in lowering wound infections (RR = 0.3 (95%CI:0.1, 0.8) for EVLA), haematoma (RR = 0.5 (95%CI:0.3, 0.8) and 0.4 (95%CI:0.1, 0.8) for EVLA and RFA), and return to normal activities or work (mean differences = -4.9 days (95%CI:-7.1,-2.7) for RFA).

Conclusions

The primary failure and recurrence in EVLA and RFA were non-significantly different compared with surgery. However, they had lower haematoma, less wound infection, less pain

Indications for ligation and stripping in the era of endovenous treatment

• Superficial saphenous tributary

• Proximal GSV dilatation >2.5cm

• Chronic thrombophlebitis

• Excessive tortuosity



Radiofrequency catheter



VNUS closure catheter

