

Original Article

Endovenous Ablation of Varicose Veins Experience at Tertiary Neurological Center

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ABSTRACT

Introduction: Endovascular ablation of varicose vein either by radiofrequency ablation or laser delivers sufficient thermal energy to incompetent vein segments to produce irreversible occlusion, fibrosis and ultimately disappearance of the vein.

Materials and Methods: Three hundred patients with varicosities due to primary or recurrent sapheno-femoral or sapheno-popliteal junction and great or small saphenous vein reflux underwent out-patient and in-patient endovenous thermal ablation between January 2015 to December 2017. The great saphenous vein was ablated from 2-2.5 cm below sapheno-femoral junction to knee and the small saphenous vein was ablated from mid-calf to the sapheno-popliteal junction.

Results: Patient returning time to normal activity was 0-1 days returning to normal daily activity were immediately after 4 hours. Duplex ultrasound follow-up (median 3-months) confirmed abolition of sapheno-femoral junction/great saphenous vein and sapheno-popliteal junction/small saphenous vein reflux in all limbs. There were no instances of skin burns or deep vein thrombosis, but, 7 patients developed transient cutaneous numbness involving sural nerve and 1 developed endovenous heat induced thrombosis 3.

Conclusions: This is likely to be more effective than conventional surgery, although long-term follow up is required. Despite being expensive in comparison to open surgery, endovenous thermal ablation is superior in terms of: minimizing pain, avoiding incision, early mobilisation and discharge. Changing the treatment distance from 2 cm to 2.5 cm peripheral to the Deep veins junction may result in a diminished incidence of endovenous heat induced thrombosis 3.

Keywords: Ablation; Endovascular; Thermal; Varicose

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INTRODUCTION

Varicose veins whether primary or secondary are common in Nepal. The prevalence has been variously reported from as little as 2% to over 60% in population studies.¹ Most of the varicose patients visit at C5-6 stages. Various modalities are available for the management of varicose vein. Among them available options in Nepal are: open surgery, sclerotherapy, laser ablation and radiofrequency ablation. Open surgery encompasses high

ligation, division stripping of great saphenous vein (GSV) or small saphenous vein (SSV), combined with excision of segments of varicose veins if required.² The underlying goal for all thermal ablation procedures is to deliver sufficient thermal energy to the wall of an incompetent vein segment to produce irreversible occlusion, fibrosis, ultimately disappearance of the vein.³



Radiofrequency ablation (RFA) is an image-guided minimally invasive treatment alternative to surgical stripping of superficial venous reflux. Radiofrequency ablation works by destroying or ablating the refluxing vein segment using thermal energy delivered through a radiofrequency catheter.⁴ Diode lasers are most commonly used for endovenous laser ablation (ELA). Laser generators exist with multiple different wavelengths, including lower wavelengths that are considered hemoglobin specific include 810, 940, 980, 1064 nm. Higher wavelengths are considered water specific include 1320 nm, 1470 nm.⁵ Conventional surgery for varicose veins due to great or small saphenous reflux is associated with high recurrence rates (up to 50%), many resulting from inadequate surgery.⁶ Changing the treatment distance from 2 cm to 2.5 cm peripheral to the Deep veins junction may result in a diminished incidence of EHIT 3.⁷

This prospective audit examines the safety, efficacy and complications of endovenous thermal ablation (EVTA) in the treatment of varicose veins.

MATERIALS AND METHODS

All the patients who underwent open surgery, endovenous RFA or sclerotherapy from January 2015 to December 2017 in Annapurna Neurological Institute and Allied Sciences, were included in the study. Informed consent was obtained prior to the study. Permission was obtained from the ethical committee. Patients were informed in detail regarding the available modalities of management and suggestion was given while choosing the modality of management. During EVTA, the GSV was ablated from 2-2.5 cm below SFJ to knee and the SSV was ablated from mid-calf to the SPJ. Demographic data, and all the required variables were collected in the Proforma. Symptomatic improvement (Aberdeen Varicose Vein Severity Score [AVVSS]), time to return to normal activity, post-EVLA analgesic requirements, complications were recorded.

RESULTS

During the study period a total of 300 patients were included in

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the study. Patients with varicosities due to primary or recurrent sapheno-femoral junction (SFJ), sapheno-popliteal junction (SPJ) GSV, SSV reflux underwent various available modalities of management. Thirty (10%) patients underwent open surgery. Endovenous RFA was the treatment of choice among most of the patients (n=250; 83.33%) followed by sclerotherapy (n=20; 6.66%). Patient returning time to normal activity was 0–1 day returning to normal daily activity was immediately after 4 hours. Duplex ultrasound follow-up (median 3-months) confirmed abolition of SFJ/GSV and SPJ/SSV reflux in all limbs. There were no instances of skin burns or DVT but 7 patients developed transient cutaneous numbness (sural nerve) and 1 developed EHIT 3. After detecting EHIT-3, ablation was done from 2.5 cm to prevent EHIT.

DISCUSSION

EVTA has been widely used for varicose veins. Available EVTAs are Radiofrequency ablation & Laser ablation. Patient can be discharged on same day post EVTA. There are very few complications in EVTA compared to open surgery. Although different methods have different results, EVTA is more effective than open surgery in treating varicosity of the GSV.⁸ The primary failure recurrence in EVTA was not significantly different from that of surgery.⁹ EVTA is safe, although more energy is used, this has not translated into higher complication rates.¹⁰ We explored improved the treatment based on the experience of others. Recurrence remains a significant problem after either endovenous or open surgical ablation. After L/S, neovascularization in the subcutaneous tissue around the sapheno-femoral junction can lead to recurrence.¹¹ The process of neovascularization may be associated with a groin incision. The presence of incompetent tributaries after L/S is another possible cause of recurrence. Clinical problems are caused by a connection between a remaining segment of GSV and new vessels or incompetent tributaries.¹² Endoluminal ablation leaves a patent small proximal lumen of GSV and its proximal tributaries, which may affect long-term results. Another potential event leading to recurrence is recanalization of the GSV. During the two-year follow-up of the EVOLVEs trial¹³, neovascularization was observed in four L/S patients and one RFA patient.

CONCLUSIONS

EVTA abolished SFJ/GSV or SPJ/SSV reflux in all limbs. This is likely to be more effective than conventional surgery, although long-term follow up is required. Data from a randomized control trial would be desirable. Comparing open surgery with endovenous thermal ablation if patient has no cost issue: EVTA is superior in terms of: cosmetic, less painful and early mobilisation.

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