

Radiofrequency versus Laser versus Chemical Sclerotherapy for Endoablation of the Saphenous Vein and When You Do Not Need to Do Stab Avulsions

NOTES

Jose I. Almeida, MD, RVT, Miami, FL; Jeffrey Raines, PhD, RVT, Miami, FL

Purpose

Thermal ablation by endovenous radiofrequency (RF) and laser (EVL) have been found to be safe and effective with faster recovery and better cosmesis than surgical high ligation and stripping.^{1,2} Both systems use electromagnetic energy to destroy refluxing veins, such as the GSV. Chemical ablation of venous endothelium with foam sclerotherapy has gained popularity because of its high success rate, reduced cost, and safety.³ Ambulatory phlebectomy (AP) remains a useful adjunct when removal of bulging surface varicose veins are indicated.

Methods

From March 2002 until June 2005, endovenous ablation (thermal or chemical) was performed on 983 refluxing veins in 934 limbs of 719 patients, by a single vascular surgeon. All cases were performed endoluminally, using ultrasound guidance and local anesthesia. Adjunctive AP was used selectively. Successful treatment was defined as the absence of flow in the treated vein segment by duplex ultrasonography. Follow-up with ultrasonography was performed at 2 days, 1 month, 6 months, and 12 months and then annually. Recanalization was defined as the presence of flow in a vein segment greater than 5 cm in length.

Results

Cessation of retrograde flow in the target vein was observed in all patients at the completion of the procedure. Recanalization was observed in 21 veins following thermal ablation and is depicted in Figure 1 by the Kaplan-Meier Life Table method. Two veins reopened following chemical ablation. Concomitant phlebectomy was performed in 795 of 934 limbs (85%). Adverse events associated with endothermal venous ablation were minimal and transient; two limbs in the RF group and two limbs in the EVL group developed paresthesias. Phlebectomy was associated with the development of six small seromas which resolved spontaneously. Thrombus extension into the common femoral vein requiring anticoagulation occurred in two cases after thermal ablation; thrombus in the femoral vein was found in two cases after treatment with catheter directed foam sclerotherapy (4 of 983 [0.4%]) (see Figure 1).

Conclusions

Both RF and EVL are effective methods of saphenous ablation. Primary closure rates (EVL 92%, RF 85%) reached statistical significance in favor of laser up to 500 days following surgery. A 0.4% incidence of DVT falls within the standard of care for the treatment of superficial venous disease. Chemical ablation of the GSV with foamed sclerosants holds great promise as another minimally invasive alternative to the treatment of superficial venous insufficiency. Ambulatory phlebectomy remains a useful adjunct to saphenous ablation and should be used selectively. Performing AP in conjunction with saphenous ablation eliminates reflux and bulging varicosities with a single procedure. Varicosities in continuity with a refluxing truncal vein, and not in continuity with any perforating veins, will diminish in size after endovenous ablation, therefore, some patients will not require further treatment.

CHART HERE?

Figure 1. Recanalization observed in 21 veins following thermal ablation.

References

1. Min RJ, Zimmet SE, Isaacs MN, Forrestal MD. Endovenous laser treatment of the incompetent greater saphenous vein. *J Vasc Intrv Radiol* 2001;12:1167-71.
2. Lurie F, Creton D, Eklof B, et al. Prospective randomized study of endovenous radiofrequency obliteration (Closure Procedure) versus ligation and stripping in a selected patient population (EVOLVE Study). *J Vasc Surg* 2003;38:207-14.
3. Cabrera Garrido JR, Cabrera Garcia-Olmedo JR, Garcia-Olmedo Dominguez MA. Elargissement des limites de la sclerotherapie: nouveaux produits sclerosants. *Phlebologie* 1997;50:181-8.