17th July 2012

Minimally Invasive Therapy of Varicose Veins: Options Besides Stripping

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Chronic Venous Disorder (CVD) has very diverse clinical presentations, ranging from simple spider veins, unsightly varicose veins to debilitating venous ulcers. The CEAP classification helps to provide guidance in choosing the appropriate treatment for such patients. The six CVD categories are defined in Table 1.

Currently, there are a number of well established minimally invasive options in the treatment of varicose veins, besides the traditionally Tredelenberg's operation and stripping procedure. Most of these procedures are Ultrasound guided.

Duplex Scan Ultrasound

Duplex ultrasound has evolved to become the most important imaging study for patients with varicose veins, both for diagnostic and therapeutic purpose. It is essential in planning for treatment and to identify the specific points of reflux so that treatment is appropriate and reduces the chance of recurrence.

Foam Sclerotherapy

The use of foam for sclerotherapy has greatly improved the efficacy and safety of the procedure. Sclerosants (Sodium Tetradecyl Sulfate or polidocanol) are mixed with air or CO_2 to form microbubbles. Foam acts by completely displace blood away from the vein wall, and hence increase the contact area of scleroants with the endothelium. Current use is mainly for closing the spiders and reticular veins, and tributaries of varicose veins.

Endovenous Radiofrequency Ablation (RFA)

RFA is mainly for treatment of Great or Small Saphenous vein reflux. RF waves from the tip of the catheter destroys the saphenous endothelium and denatures the vein wall collagen in a bloodless field, resulting in the formation of fibrous cord with obliteration of the vein. The RF catheter is introduced through a sheath along the Saphenous Vein, up to the Saphenofemoral or Saphenopopliteal junction. The procedure can be done under local anaesthesia in the clinic setting.

Conclusion

None of these therapies are perfect.
Each therapy has their own limitation, risk, and failure rate.
Treatment has to be tailored to individual patients based on their clinical status and symptoms.
There are newer therapies coming up like glue, steam therapy etc, but evidence is not enough to prove their role yet.

Endovenous Laser Therapy (EVLT)

EVLT works very similar to RFA procedure, but is using Laser energy to ablate the vein. It initiates a non-thrombotic occlusion by direct and indirect thermal injury to the vein wall, causing endothelial denudation, collagen contraction and later fibrosis.
Recent studies showed RFA and EVLT have similar efficacy and safety. However RFA is associated with less pain and bruising in early post-operative period.

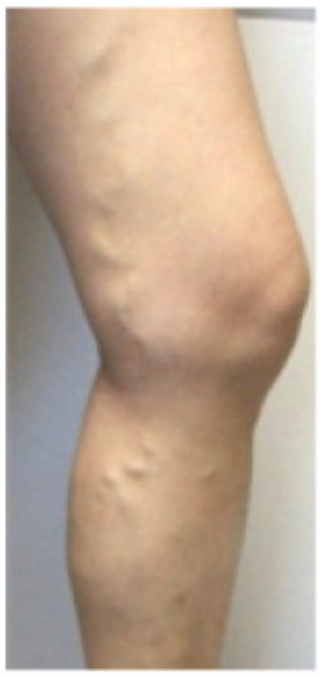


Figure 1: Varicose vein of great saphenous vein.

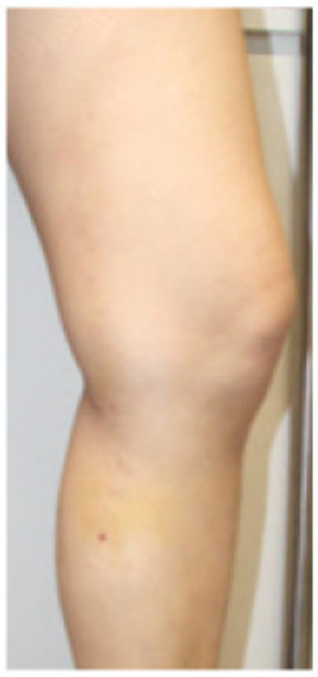
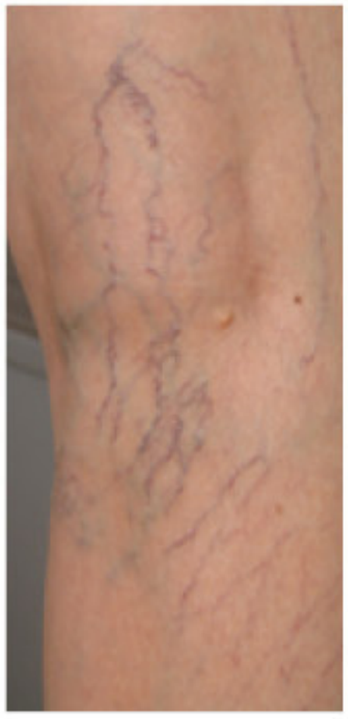


Figure 2: After treatment of RFA.

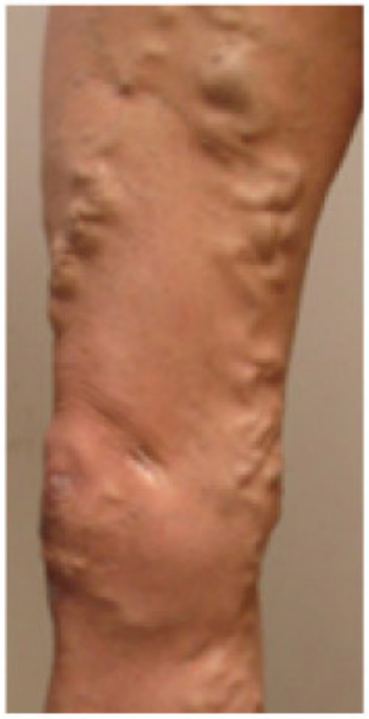
Table 1. CEAP Classification - Clinical, Etiologic, Anatomic, Pathophysiologic

C-Clinical Class	Characteristics*	
0	No clinical findings or symptoms	E-Etiology**
1	Telangiectasia or reticular veins	C Congenital
2	Varicose veins	S Secondary
3	Edema, only due to a venous etiology	P Primary
4	(a) Pigmentation and/or eczema	A-Anatomy**
	(b) Lipodermatosclerosis, atrophie blanché	S Superficial (Great and short saphenous systems as well as any branch varices)
5	Prior ulceration, dermatitis	P Perforator (Veins that communicate between the superficial and deep systems)
6	Active ulceration	D Deep (Calf veins and sinuses, popliteal, femoral, iliac veins and vena cava)
A, S	Subscript: Asymptomatic, Symptomatic	P-Pathophysiology**
Date	Date of investigation	R Reflux
Level	Level of investigation (I, II, III)	O Obstruction
		R-O Both
		N** No evident disease**

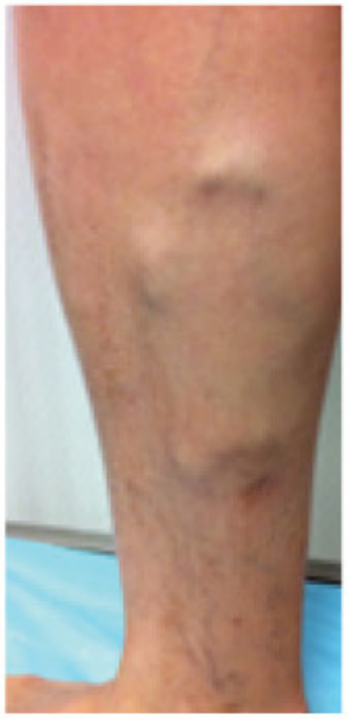
**Complaints are expected to be related to venous insufficiency and are not classified if another etiology is present (i.e. edema secondary to heart failure).*
***The N subscript indicates no evidence of disease. It is applicable to E, A, and/or P of CEAP.*



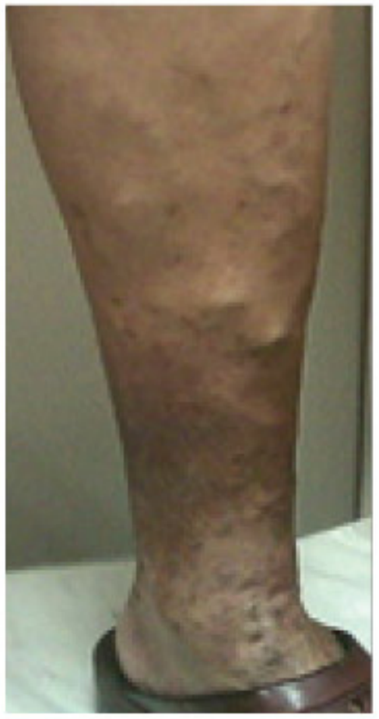
Class 1:
Telangiectasia.



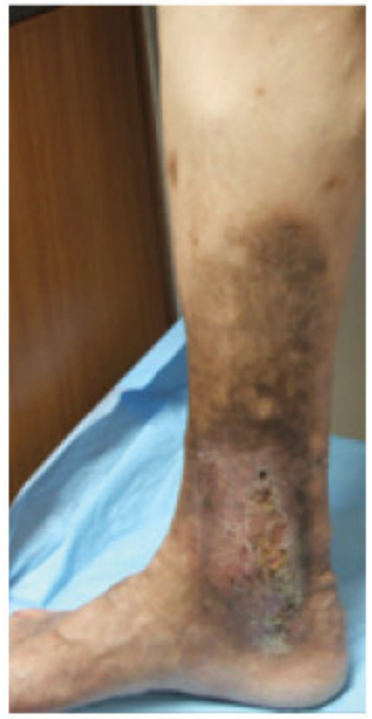
Class 2:
Varicose vein.



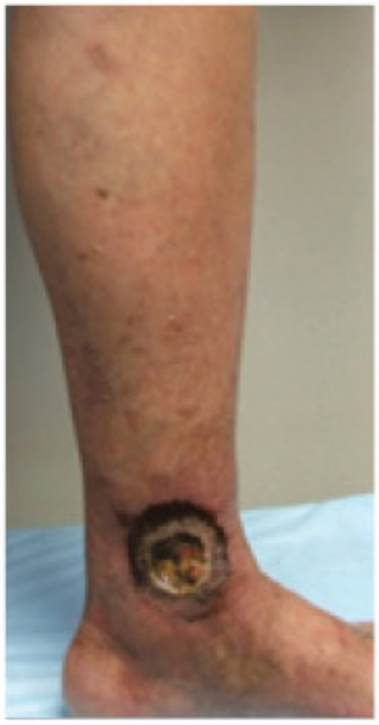
Class 3:
Edema.



Class 4:
Pigmentation /
Eczema.



Class 5:
Healed Ulcer.



Class 6:
Venous Ulcer.