The ABCs of Varicose Veins

Definition

Varicose vein is a type of venous insufficiency that presents with any dilated, elongated, or tortuous veins caused by permanent loss of its valvular efficiency.

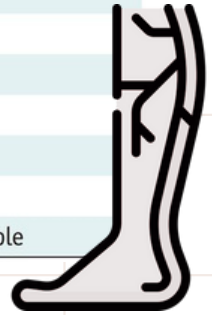
Through a variety of pathophysiological mechanisms, weakness develops in the vein wall that results in varicosity over time. Varicosities typically form in the greater and lesser saphenous veins but also develop in branch vessels. Obstruction of the iliac veins or inferior vena cava can result in extensive varicose veins.

Pathophysiology

- Venous drainage of the lower extremities is accomplished by a network of superficial veins connected to the deep veins by small perforator veins.
- Venous valvular incompetence, venous hypertension, structural changes in the vein wall, inflammation, and alterations in shear stress are the major pathophysiological mechanisms resulting in varicose veins.
- Venous valvular incompetence
- may result from deformation, tearing, thinning, and adhesion of the valve leaflets.
- Venous hypertension
- caused by reflux attributable to venous valvular incompetence, venous outflow obstruction, or calf-muscle pump failure.
- Structural changes in the vein wall may lead to pathological weakening and resultant dilation.
- Over time, the venous valves exposed to high pressures demonstrated adverse remodelling with decreases in leaflet length and thickness.
- Turbulent flow, reversal of flow, and decreases in shear stress promote inflammatory and prothrombotic changes that may further contribute to loss of structural and functional integrity of the vein wall and valve leaflets.

Classification

CEAP classification	
Clinical classification	
C0	No visible or palpable signs of disease
C1	Telangiectasias or reticular veins
C2	Varicose veins
C3	Edema
C4a	Pigmentation or eczema
C4b	Lipodermatosclerosis or atrophic blanche
C5	Healed venous ulcer
C6	Active venous ulcer
S	Symptomatic, including ache, pain, tightness, skin irritation, heaviness, muscle cramps, and other complaints attributable to venous dysfunction
A	Asymptomatic
Etiologic classification	
Ec	Congenital
Ep	Primary
Es	Secondary (post-thrombotic)
En	No venous cause identified
Anatomic classification	
As	Superficial veins
Ap	Perforator veins
Ad	Deep veins
An	No venous location identified
Pathophysiologic	
Pr	Reflux
Po	Obstruction
Pr, o	Reflux and obstruction
Pn	No venous patholophysiology identifiable



Credits
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Risk factors

Category	Risk factor	Proposed mechanism
Hormonal	Female gender	High oestrogen state
Lifestyle	Prolonged standing/ sitting	Venous hypertension
	Smoking	Venous endothelial injury
Acquired	Obesity	Venous hypertension
	Pregnancy	High oestrogen state/ venous hypertension
	Deep vein thrombosis	Deep venous obstruction/ venous valvular incompetence
	Age	Venous valvular incompetence
Inherited	Family history	Venous valvular incompetence
	Tall height	Venous hypertension
	Congenital syndrome	Venous hypertension/ Venous valvular incompetence/ Deep venous obstruction

Clinical Features

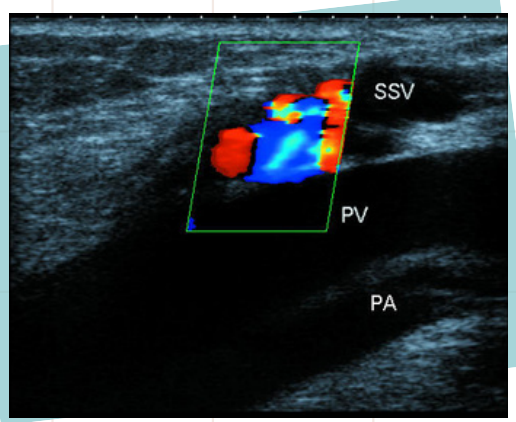
Initial symptoms and signs localised to the areas of varicose veins include:

- Aching or throbbing discomfort
- Burning
- Pruritus
- Dry irritated skin

More advanced chronic venous disease (higher CEAP class) with venous valvular incompetence manifests with symptoms and signs such as:

- Leg heaviness and fatigue
- Cramping
- Hyperpigmentation
- Edema
- Fibrotic skin changes (lipodermatosclerosis)
- Ulceration

Investigations



Determine which saphenous junctions are incompetent, the diameter of the junctions, the extent of reflux, and the location and size of other incompetent perforating veins

Assess for acute and occult deep venous thrombosis and superficial thrombophlebitis

Indications:

- Reflux in the popliteal fossa
- Recurrent varicose veins
- Complex/ unusual varicose veins
- History of deep vein thrombosis

Managament

	Conventional surgery	Radiofrequency and laser ablation	Foam sclerotherapy
Anaesthesia required	General	General or extensive infiltration of local	Local or none
Postoperative pain and discomfort	Variable—many patients have minimal discomfort, but others are very bruised	Avoids a groin incision and causes less thigh bruising in many patients	No incisions or bruising, but veins may be lumpy and tender for weeks
Need for compression (bandaging or stocking)	Usually advised for up to 10 days but not essential	Usually advised for several days (like surgery), sometimes longer	Usually advised for about 2 weeks, but up to 4 weeks
Can both legs be treated at a single procedure?	Yes	Yes under general anaesthesia	No, usually not
Further procedures required for clearance of varicose veins?	No	Frequently, unless done under general anaesthesia with conventional phlebectomies	Yes, frequently
Long term freedom from varicose veins	A few varicose veins reappear in many patients: about a third have troublesome recurrence at 10 years	Similar to surgery up to 3 years. Longer term results not known	Probably similar to surgery up to 3 years, but may need further treatments. Longer term results not known

Complications

- Superficial Thrombophlebitis
- Spontaneous Vein Haemorrhage
- Venous stasis and venous eczema
- Deep Venous Thrombosis
- Venous Leg Ulcer