VARICOSE VEINS

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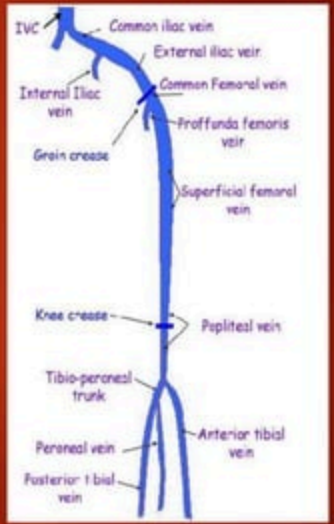
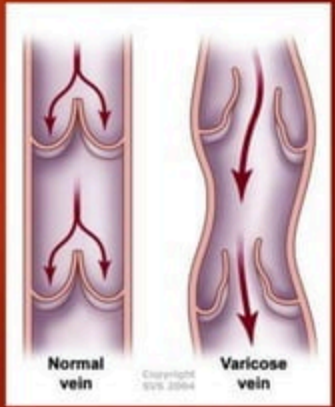
Venous Anatomy of Lower Limbs

- Superficial venous system
- Deep venous system
- Perforator veins



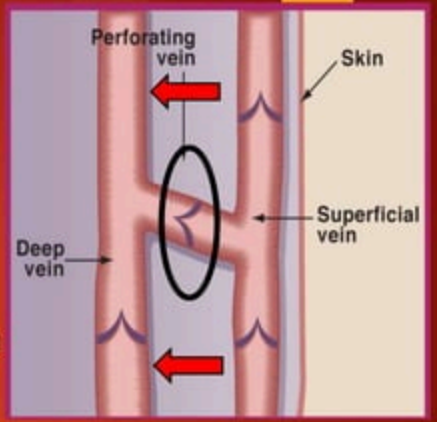
Venous valves

- The venous valves are abundant in the distal lower extremity and number of valves decreases proximally, with no valves in superior and inferior vena cava
- Delicate structures
- Prevent reverse flow in the veins
- Ensure that the blood is pumped from the superficial to the deep system and back towards the heart when the patient is walking

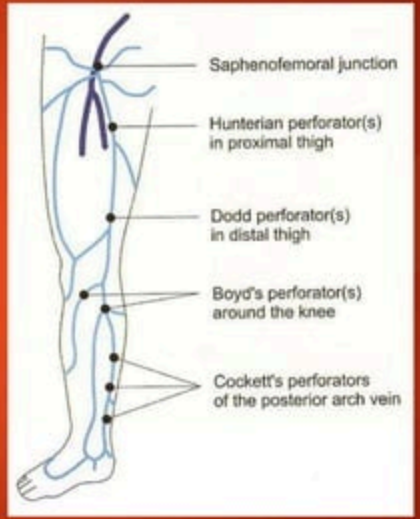


Perforator veins

- Connect superficial to deep veins at various levels.
- Travel from superficial fascia through an opening in the deep fascia before entering the deep veins.
- The direction of blood flow - from superficial to deep veins.
- Guarded by valves so that the flow is unidirectional, i.e. Towards deep veins.
- Reversal of flow occurs due to incompetence of perforators which will lead to varicose veins



- Ankle perforators
- Lower leg – Cocket perforators
- Boyd's
- Dodd perforators
- Hunterian perforators



Varicose Veins

- Permanently dilated , elongated veins with tortous path causing pathological circulation.
- Risk factors
  - Female sex
  - Prolonged standing
  - Raised intra abdominal pressure
  - Increased progesterone
  - High heels

Classification Of Varicose Veins

- Anatomical
  - Long Saphenous System
  - Short Saphenous System
  - Perforator Incompetence
- Size Of Varices
  - Thread Veins
  - Reticular Veins 1- 4mm
  - Varicosities >4mm
- CEAP Classification
  - Clinical
  - Etiological
  - Anatomical
  - Pathophysiological

International Consensus
CEAP

Symptoms | **Clinical signs**

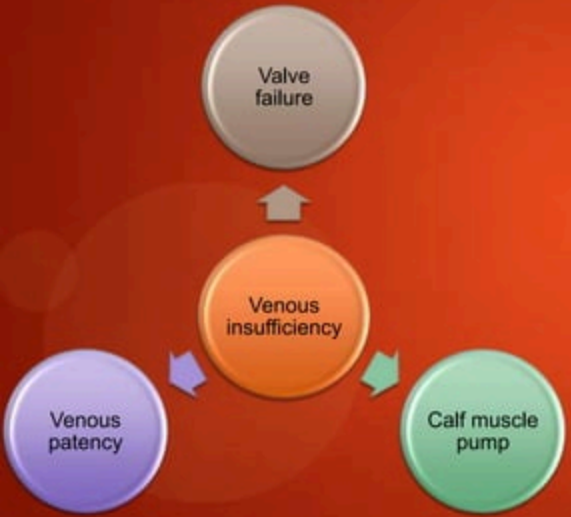
C0S	C1	C2	C3	C4	C5	C6
						
Heavy legs, pains in the legs, pruritus... But no clinical or palpable signs of venous disease	Telangiectasia or reticular veins	Visible and palpable varicose veins	Venous oedema (without trophic changes)	Trophic changes of venous origin : atrophie blanche, pigmented purpuric dermatitis, varicose eczema	healed ulcer with trophic changes	Presence of one or more active venous leg ulcers, often accompanied by trophic changes

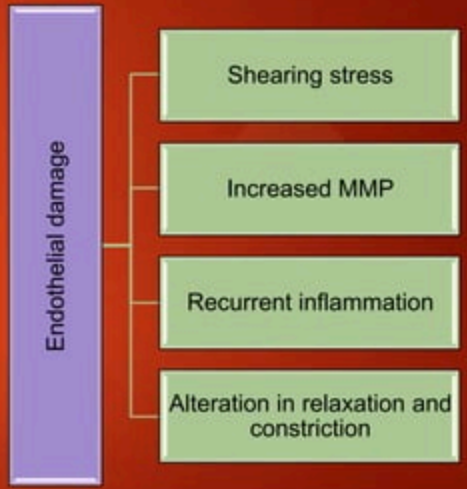
C0 - C6 : description of the progression of the disease on the basis of the clinical signs present

C : clinical signs E : etiological classification A : anatomical distribution P : pathophysiological dysfunction

URGO MEDICAL

Pathogenesis Of Varicose Veins





Valve incompetence /Ch. Venous hypertension

Defective microcirculation

RBC diffusion/ lysis

Hemosiderin deposition

Dermatatis / capillary damage

Chronic Venous ulceration

Clincial Features

- Dragging pain, postural discomfort
- Heaviness in the legs
- Night time cramps
- Oedema, itching
- Discolouration
- Ulceration

Cause Of Pain In Varicose Veins

- Chronic venous hypertension
- Anoxia
- Hyperviscosity or red cells
- Platelet aggregation
- Capillary functional disorder
- Altered cutneous microcirculation

Complications

- Hemorrhage
- Pigmentation/ eczema
- Periostitis
- Venous ulcer
- Lipodermatosclerosis
- Talipes equinovsrus
- DVT
- Recurrent thrombophlebitis

Clinical Signs

Brodie-trendelenberg's test I	• Saphenofemoral incompetence
Brodie-trendelenberg's test II	• Perforator incompetence
Perthe's test / modified perthe's	• DVT
Tourniquet's test	• Perforator incompetence
Schwartz test	• Valvular incompetence
Fegan test	• Perforator site localisation
Pratt's test	• Blow outs = perforators

Other Examination

- Abdomen examination
- Ulcer
- Lymphnodal examination

Investigation In Varicose Veins

- Localise the anatomical location of the disease
- Nature of the lesion
- Rule out DVT

Contd…

- Venous doppler
- DUPLEX scan
  - Doppler combined with B mode Ultrasound
  - Functional and anatomical information
  - DVT well made out.
  - Uniphasic signal – normal
  - Biphasic signal – reversal flow

Contd...

Venography

Ascending venography

- Dorsal venous arch – canulated
- Tourniquet at malleoli
- Dye injected
- X-rays taken
- DVT/perforator status

Descending venography

- Ascending venogram nor possible
- Contrast through femoral vein
- Valvular incompetence

Treatment


catheter inserted into vein
vein warms and collapses
catheter withdrawn, closing vein

Conservative management

- Elastic crepe bandage – stockings
  - 30-40mm Hg
- Elevation of limbs
  - Above the level of heart
- Graded compression stockings

Contd..

- Unna boot
  - Nonelastic compression
  - Zinc oxide, calamine, and glycerine
  - Dressing changed once in a week
  - Infection should not be there

- Compression methods
  - Reduce ambulatory venous pressure
  - Trans capillary leakage
  - Improve cutaneous micro circulation

Medications

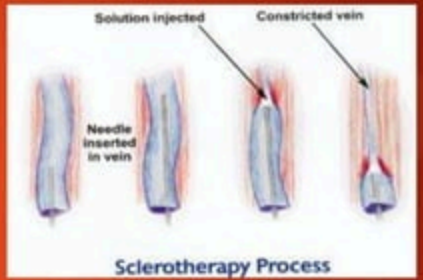
- Calcium dobesilate
  - Improves lymph flow, reduce edema
- Diosmin
  - Protects venous valves / anti inflammatory
- Not proven much beneficial

Sclerotherapy

- Complete sclerosis of the venous wall
- Indications
  - Uncomplicated perforator incompetence
  - Smaller varices
  - Recurrent varices
  - Isolated varices
  - Aged/unfit patients

Contd…

- Sclerosants used are
  - Sodium tetradecyl sulphate
  - Sodium morrhuate
  - Ethanolamine oleate
  - Polidocanol



- Mechanism of action
  - Aseptic inflammation
  - Perivenous fibrosis
  - Endothelial damage
  - Obliteration by intimal approximation

Technique

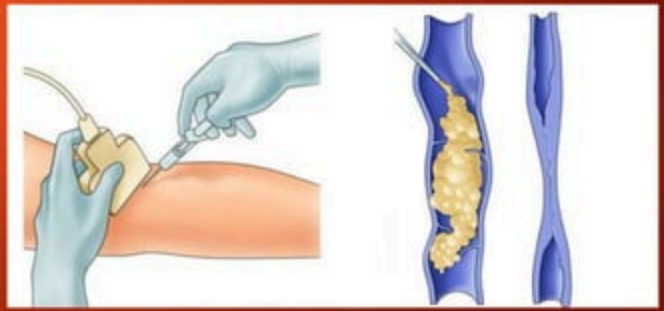
23 gauge needle in to vein and emptied

0.5 -1 ml of sclerosant

Immediate compressio n bandage

Proper endothelial apposition

May have to be repeated after 2-4 weeks later



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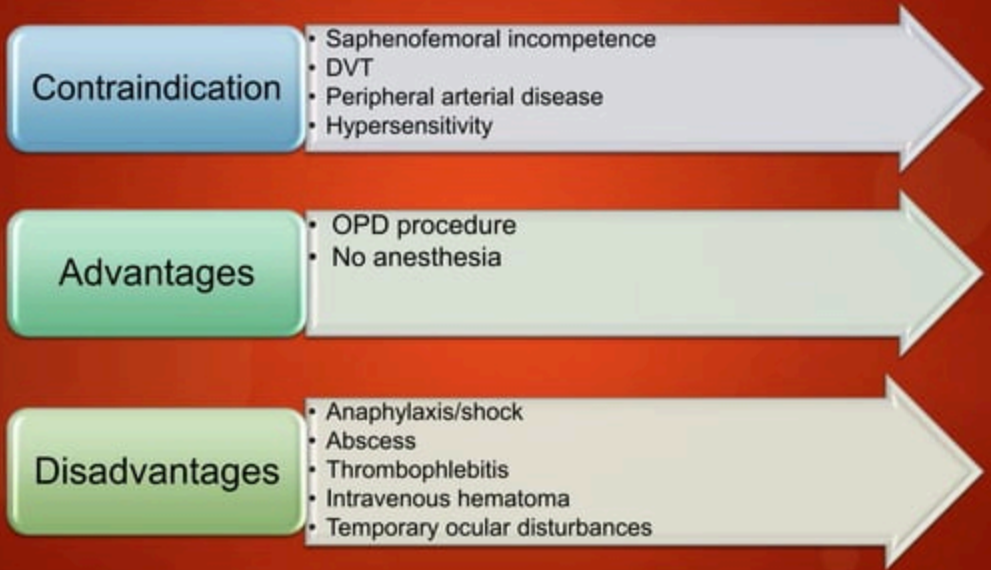
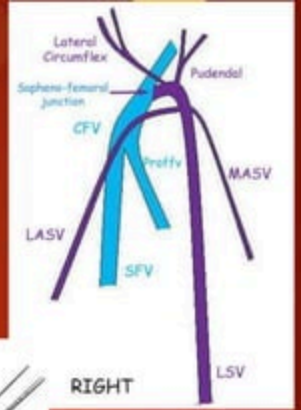

Contraindication
Saphenofemoral incompetence
DVT
Peripheral arterial disease
Hypersensitivity
Advantages
OPD procedure
No anesthesia
Disadvantages
Anaphylaxis/shock
Abscess
Thrombophlebitis
Intravenous hematoma
Temporary ocular disturbances

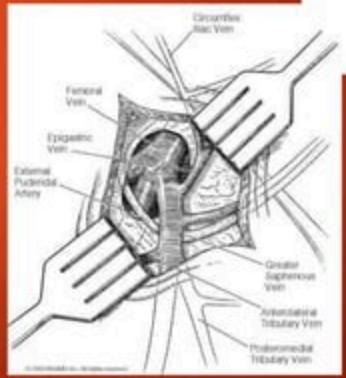
Interventional Procedures

- Relieve complaints
- Pain / discomfort
- Reverse complication
- Cosmesis

Surgical management

- Trendelenberg's procedure
  - Juxtafemoral flush ligation of long saphenous vein
- Flush ligation of tibutaries
  - Superficial circumflex
  - Superficial external pudendal
  - Superficial epigastric
  - Deep external pudendal
  - Unnamed tibutaries





Contd…

- Stripping of long saphenous vein
- Upto knee joint
- Myer's stripper
- Complications
  - Saphenous nerve injury
  - Hematoma
  - Infection

Contd…

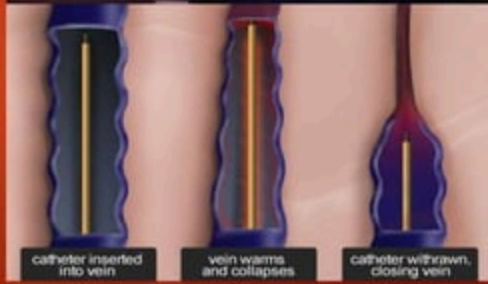
- Perforator incompetence
  - Subfascial ligation of perforators
  - Linton's method
  - Stab avulsion method

SEPS

- Subfascial endoscopic perforator surgery
- Minimally invasive method

Endovenous Laser Ablation - EVLA

- US guidance LSV canulated above knee jt
- Guide wire passed beyond SFJ
- Tip is placed 1cm distal to SF junction
- Laser fibre inserted upto the catheter
- Diode laser used for firing



Contd…

- Thermal damage of endothelium – occlusion of vein
- Laser energy acts on blood – in turn heats the vein wall.

- Complications
  - Pain / ecchymosis
  - Hematoma
  - Skin burns
  - DVT

THANK YOU