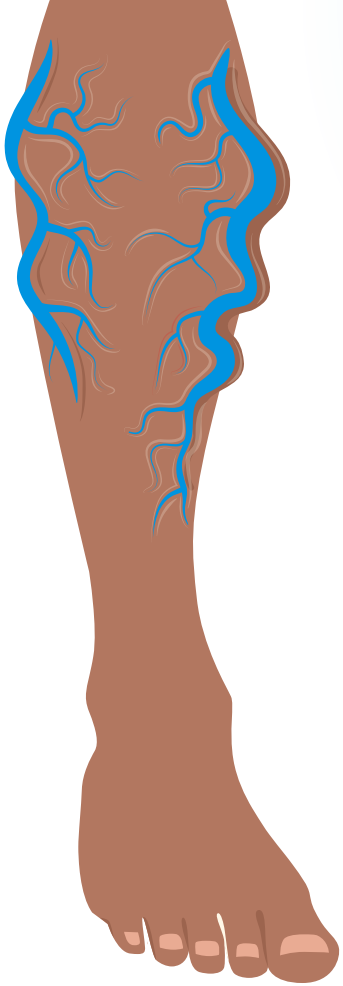
# Varicose Veins



# Varicose veins are :

**dilated,elongated,tortuous and palpable subcutaneous veins 3 mm or greater in diameter .They may involve the saphenous veins, saphenous tributaries, or non-saphenous superficial leg veins**

# Venous system of lower limp

Consist of Superficial and deep veins separated by Deep fasciae :

**Deep veins**

corresponding with the arteries in the lower limb But below the knee we have 2 veins to every artery

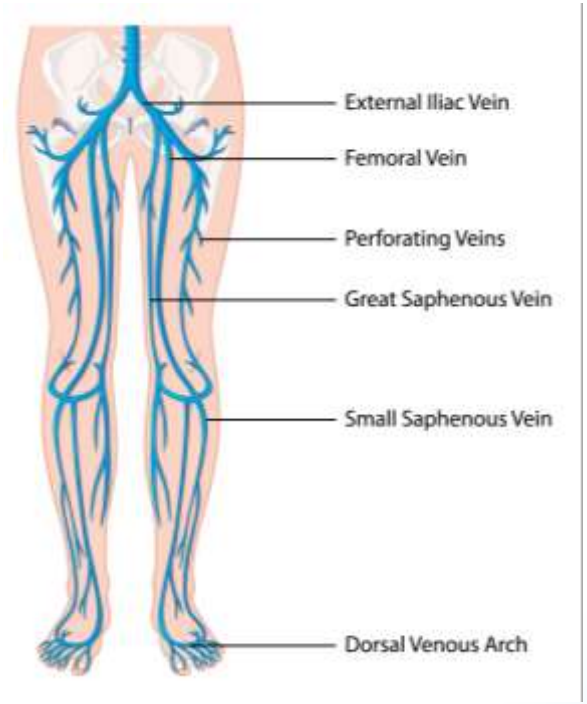
**Superficial veins**

1.main (greater. Lesser saphenous )

2.Communicators :Connect superficial to deep veins

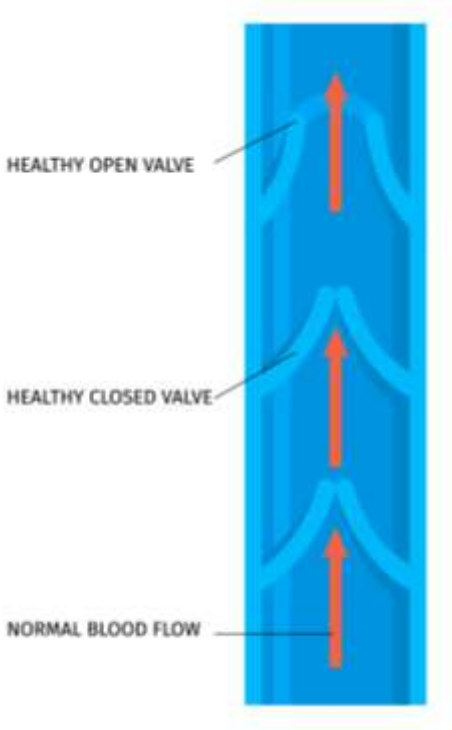
**Perforating veins**

three Medial leg perforators drain the superficial skin (Gaiter area)



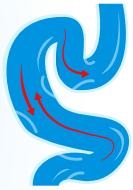
# Valves

- Valves present in all superficial and deep lower limb veins
- Prevent flow of blood from proximal to distal and from deep to superficial
- Absent from above groin level (ivc)



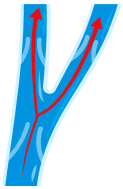
# Factors help in venous return

- Calf muscles pump (sec heart)
- Competent valves
- Negative pressure in thorax
- Transmitted arterial pulsation to the neighboring veins

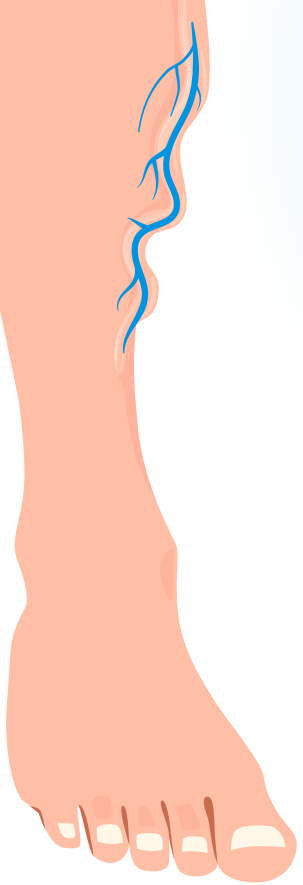


# Risk factors

- Advanced age
- History of venous disease
- Obesity
- smoking, sedentary lifestyle,
- lower extremity trauma
- Constricting clothes
- Estrogen intake



# Etiology



**Congenital**

Congenital hereditary weakness of wall of veins

**Primary : (Without demonstrable obstruction)**

1-Valvular incompetence

**Secondary (Usually the deep veins are occluded)**

DVT

Pregnancy (increased abdominal pressure)

Pelvic tumors

Arteriovenous fistula

# Epidemyology

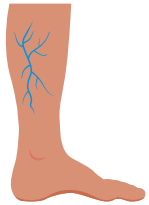
- more common in women than men
- More common on the left side
- Common  prolonged standing occupation and obesity

# pathophysiology

# CEAP clinical categories

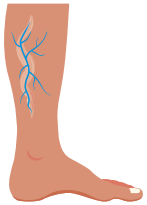
| Clinical classification | |
|---|---|
| $C_0$ | No visible or palpable signs of venous disease |
| $C_1$ | Telangiectasias, reticular veins, malleolar flares |
| **$C_2$** | **Varicose veins** |
| $C_3$ | Edema without skin changes |
| $C_4$ | Skin changes ascribed to venous disease (eg, pigmentation, venous eczema, lipodermatosclerosis) |
| $C_{4a}$ | Pigmentation or eczema |
| $C_{4b}$ | Lipodermatosclerosis or atrophie blanche |
| $C_5$ | Skin changes as defined above with healed ulceration |
| $C_6$ | Skin changes as defined above with active ulceration |
| S | Symptomatic, including ache, pain, tightness, skin irritation, heaviness, and 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 classification | |
| Pr | Reflux |
| Po | Obstruction |
| Pr,o | Reflux and obstruction |
| Pn | No venous pathophysiology identifiable |

# Evolution of the disease



## Spider veins

0.1 -1.0 mm



## Reticular varicose

1.0-3.0 mm

## Varicose veins

> 1.0-3.0 mm

**C0**
No visible or palpable signs of venous disease

**C1**
Telangiectases or reticular veins

**C2**
Varicose veins

**C3**
Oedema

**C4**
a. Pigmentation and/or eczema
b. Lipodermato-sclerosis and/or atrophie blanche

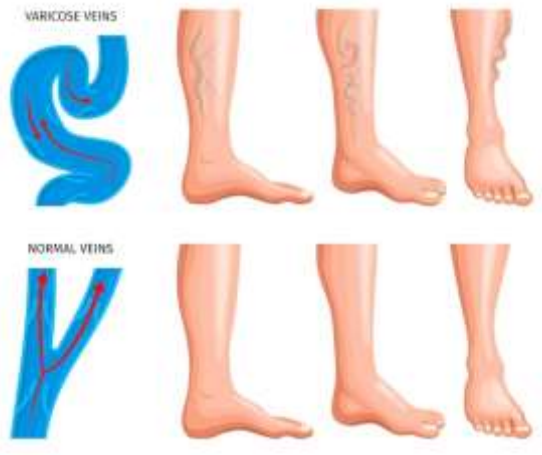
**C5**
Healed venous leg ulcer

**C6**
Active venous ulcer

# pathophysiology

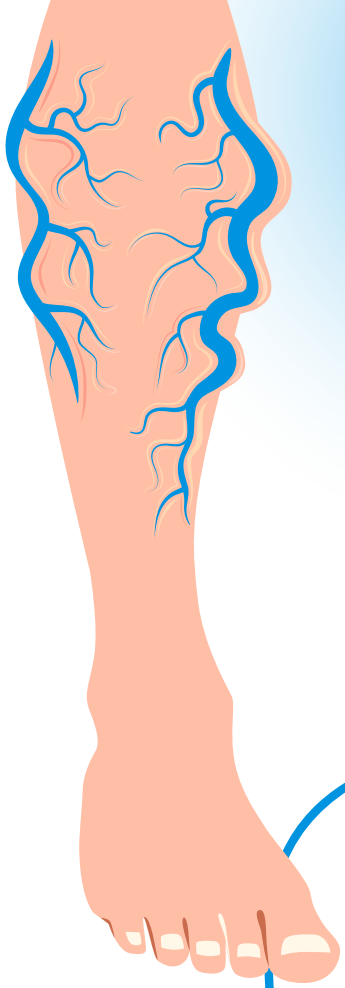
Inadequate muscle pump function, incompetent venous valves (reflux), and venous thrombosis or obstruction are causes of elevated venous pressure (venous hypertension), which initiates a sequence of anatomic, physiologic, and histologic changes

1. Increase in venous pressure duo to any cause leads to distention of the veins
2. Separation of cusps of the valves leading to secondary valve incompetence & valve dysfunction in the deep veins , communicators and perforators
3. Reflux ( back flow ) of blood into the veins lead to more dilatation of veins , elongation & tortuosity .
4. Impairment of absorption of extracellular fluid → oedema
5. Decrease capillary blood flow → hypoxia → accumulation of metabolites → dilatation and rupture of small venules →RBCs in the subcutaneous tissue → formation of hemosiderin → pigmentation , itching & eczema especially in the lower 1/3 of the leg .



# Clinical manifestations

- limb discomfort (i.e. tired, heavy legs), pain, and limb swelling
- Bulging, bluish veins ( cosmetic disfiguration )
- Itching or burning discomfort around the veins
- Skin color changes around the veins
- Swelling in the legs
- Dull Aching pain in the legs
- A feeling of heaviness in the legs and feet
- Nighttime leg cramps



# Complications

1. Edema
2. Hyperpigmentation
3. Eczema
4. Lipodermatosclerosis
5. Venous ulcer
6. Bleeding
7. Thrombophlebitis

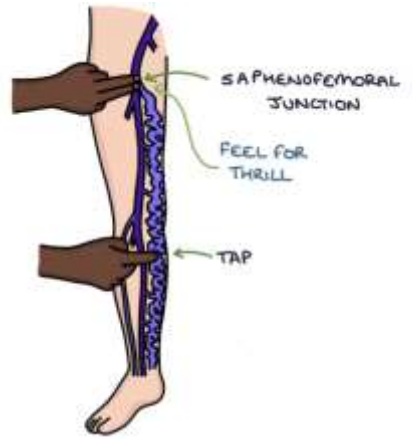
# Diagnosis

**Clinical Evaluation:**

- Symptoms such as edema, skin changes, and venous ulcers may indicate venous hypertension or obstruction.
- A thorough history and physical examination often help in diagnosing the condition.

# Diagnosis

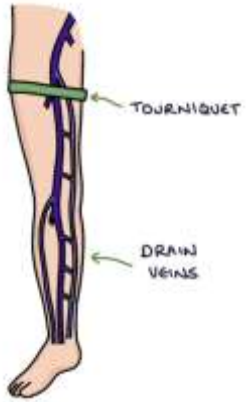
**Tap test** – apply pressure to the **saphenofemoral junction** (**SFJ**) and tap the distal varicose vein, feeling for a thrill at the SFJ. A thrill suggests incompetent valves between the varicose vein and the SFJ.




**Cough test** – apply pressure to the SFJ and ask the patient to cough, feeling for thrills at the SFJ. A thrill suggests a dilated vein at the SFJ (called **saphenous varix**).

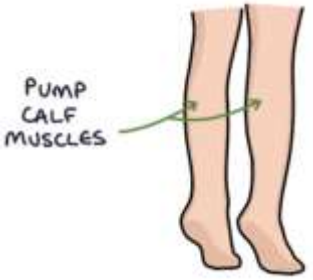
# Diagnosis

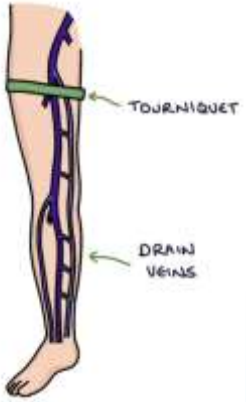
***Trendelenburg's test*** – with the patient lying down, lift the affected leg to drain the veins completely. Then apply a tourniquet to the thigh and stand the patient up. The tourniquet should prevent the varicose veins from reappearing if it is placed **distally** to the incompetent valve. If the varicose veins appear, the incompetent valve is **below** the level of the tourniquet. Repeat the test with the tourniquet at different levels to assess the location of the incompetent valves.

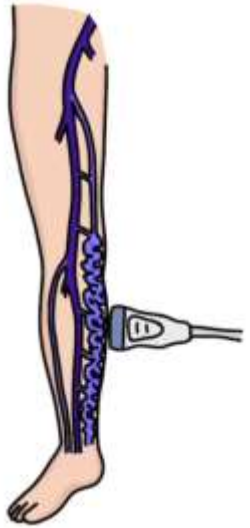
# Diagnosis

***Perthes test*** **– apply a tourniquet to the thigh and ask the patient to pump their calf muscles by performing heel raises whilst standing. If the superficial veins disappear, the deep veins are functioning. Increased dilation of the superficial veins indicates a problem in the deep veins, such as deep vein thrombosis.**



# Diagnosis



**Duplex Ultrasonography:**

- Preferred diagnostic test for chronic venous disease.
- Combines real-time imaging and Doppler flow assessment.
- Identifies venous reflux or obstruction, determining severity and location of disease.

**Indications**

- Inconclusive clinical diagnosis despite suggestive symptoms.
- Atypical cases, early-onset symptoms, or post-trauma evaluation.
- Presence of ulcers or symptoms unresponsive to conservative measures.

# Diagnosis

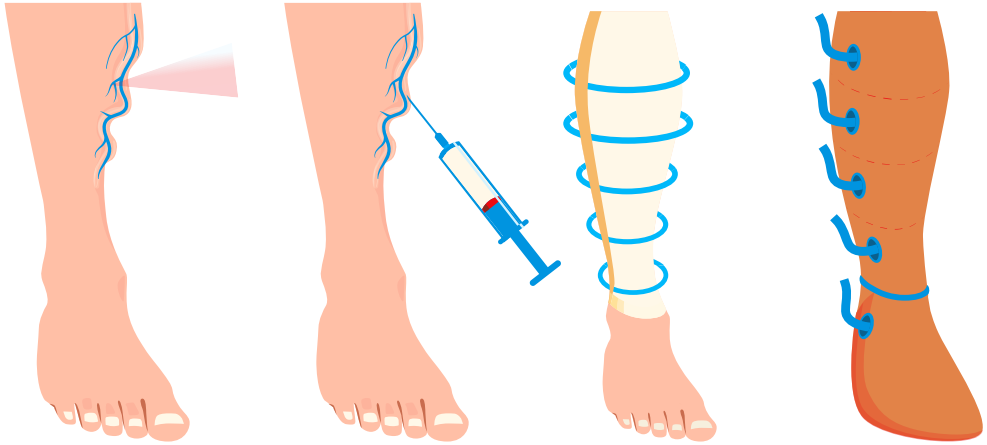
**Venography:**

- Rarely used but confirms venous outflow obstruction before intervention.
- Invasive and associated with certain risks but can provide detailed information.

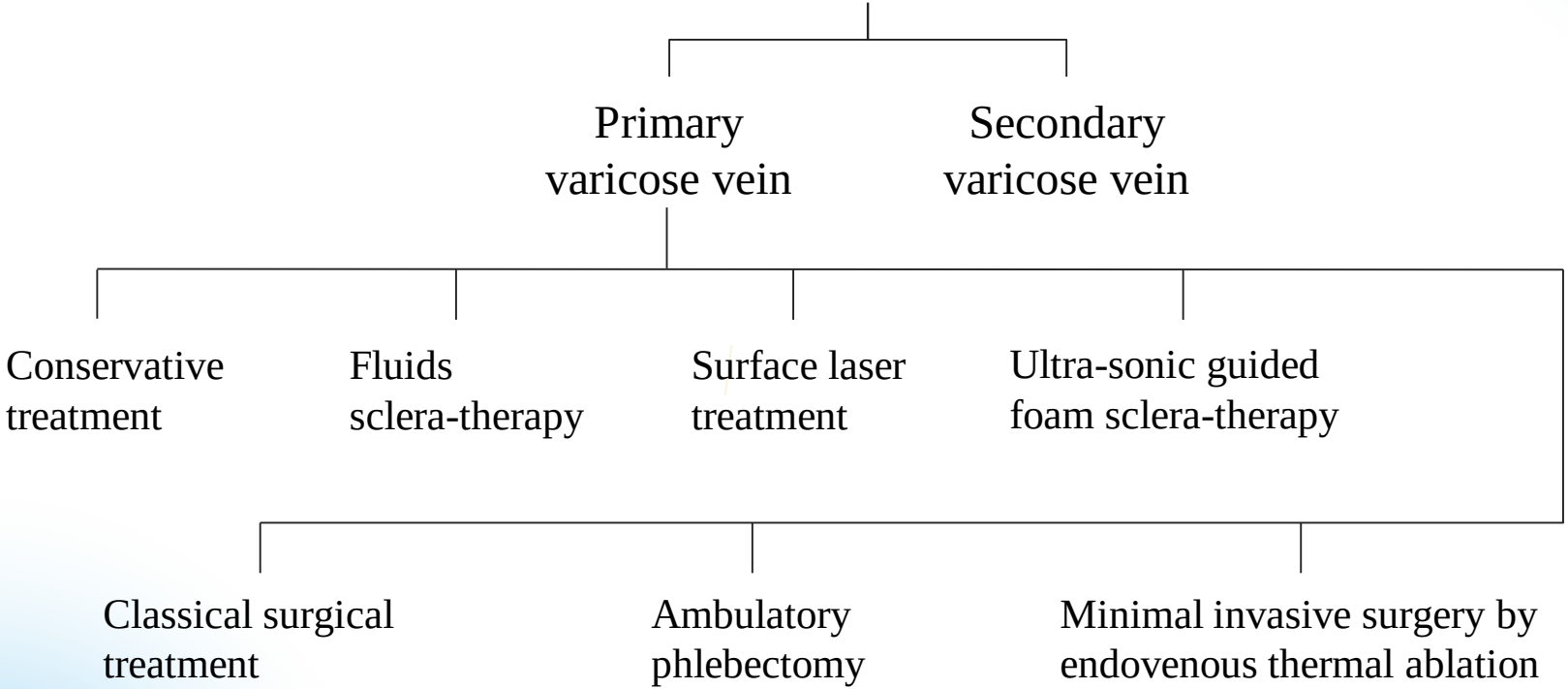
**Other Physiological Tests:**

1. Air Plethysmography
2. Photo plethysmography
3. Ankle-Brachial Index (ABI)

# Treatment



# Treatment


Primary varicose vein
Secondary varicose vein
Conservative treatment
Fluids sclera-therapy
Surface laser treatment
Ultra-sonic guided foam sclera-therapy
Classical surgical treatment
Ambulatory phlebectomy
Minimal invasive surgery by endovenous thermal ablation

# Conservative treatment

- Indications: Early uncomplicated Iry Varicose veins. or spider Varicose veins. without cosmetic upset, pregnancy or patient unfit or refusing operation.

- Aim : Relief of pain and prevent Varicose veins from getting worse .

- Methods :

a) Avoid any predisposing factors & reassurance.
b) Below or above knee elastic stoking ( according to extent of Varicose veins ) to support & compress the superficial veins.
c) Avoid prolonged standing or sitting while walking, exercises, losing weight & leg elevation are encouraged.

# Fluid Sclerotherapy

- Indications:

a) Spider varicose veins with cosmetic upset or small localized Iry Varicose veins ( 1-2mm).
b) Residual small Varicose veins after operation.

- Method:

✓ During standing, the sites of injections are marked on the skin
✓ Ask the patient to lie flat, elevate the limb and through a fineneedle inject 1 ml polidocanol, into the veins.
✓ Then a local elastic bandage is applied for 4 weeks to keep the veincollapsed.
✓ Immediately, the patient is instructed to walk for a long distance.
✓ Multiple sites can be injected at the same visit .

- Effect: The injected material → injury of the endothelium of the vein and the pressure bandage → obliteration of the veins by fibrosis not by thrombosis.

# Fluid Sclerotherapy

- Complications of sclerotherapy

1. Extravastion of sclerosant material in S.C tissue → sloughing of skin.
2. If injection in vein full of blood → thrombsis → recanalization→> recurrence.
3. DVT may occur if a large amount of sclerosant material reaches the deep system.

- Contraindications : Septic thrombo-phlebitis, patient predisposed to DVT (contraceptive pills) or occlusion of deep system eg. pregnancy, pelvic or abdominal tumours & active D.V.T.

# Surface laser treatment

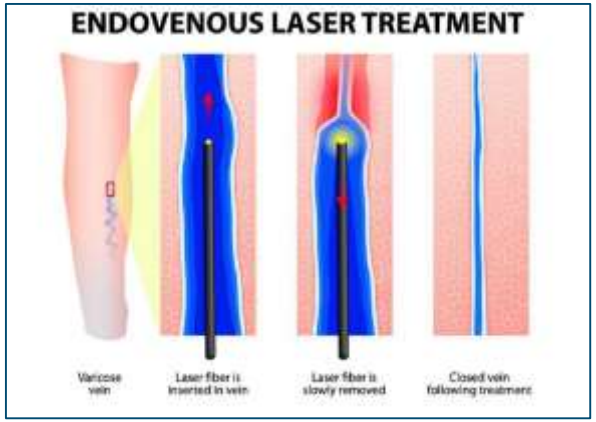
- Indication : spider varicose veins
- Effect : veins are targeted with a high-intensity laser light laser heats up, the veins are constricted, destroyed and absorbed

# Ultrasonic guided foam sclera-therapy

- Indications : Recent highly effective treatment for varicose veins up to 4 mm.
- Result of foam sclerotherpy

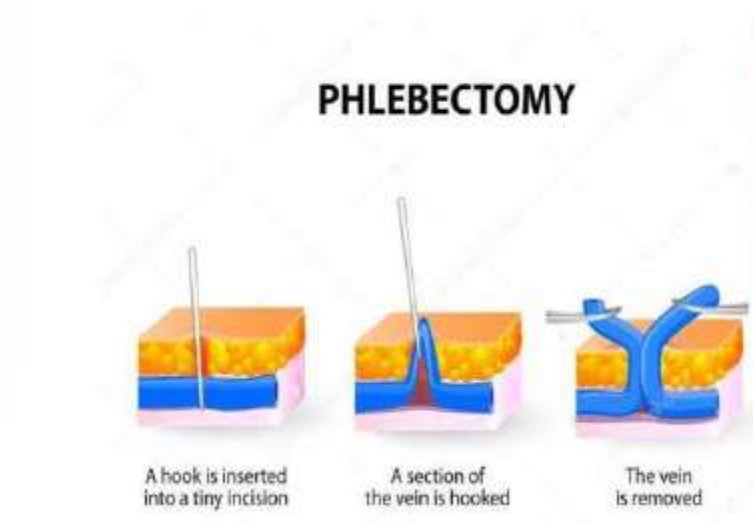

# Minimal invasive surgery by endovenous thermal ablation

- Indications : This the preferred treatment nowadays for large varicose veins, incompetent sapheo-femoral junction, incompetent
- communicators & perforators
- Method : Under local anesthesia & U/S guided , heating the vein from inside its lumen (via radiofrequency or laser catheters), causing immediate irreversible damage and closure of the vein.

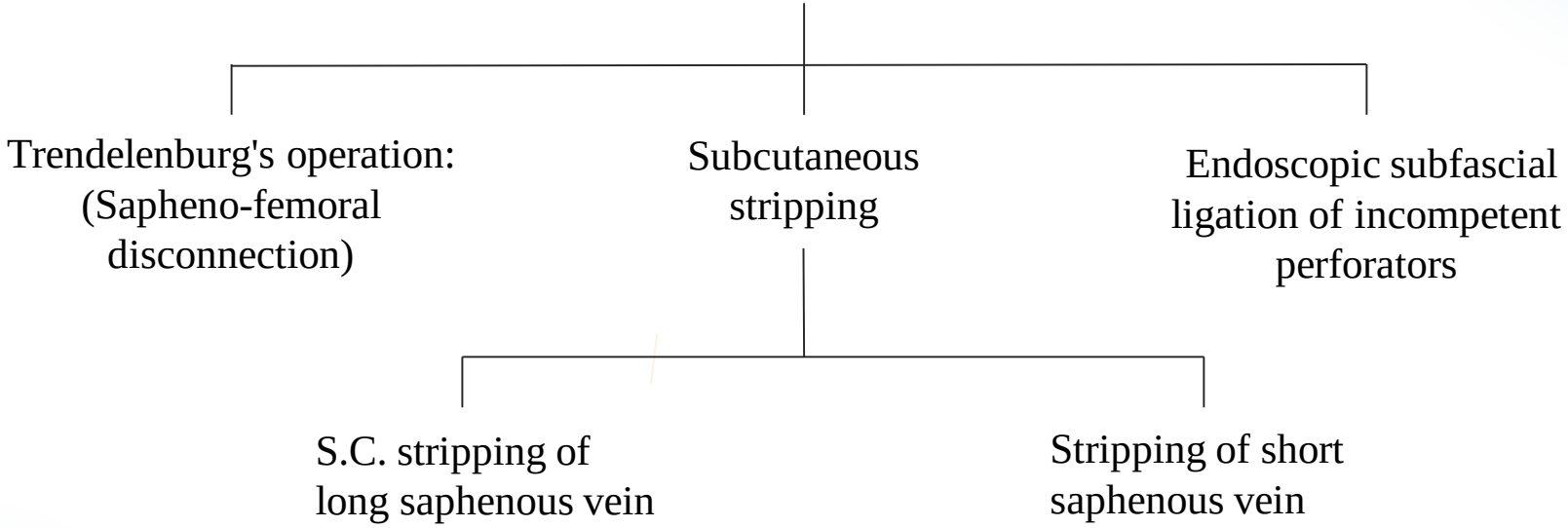


# Ambulatory phlebectomy

- Indications : large varicose veins.
- Method : Removal of small varicose veins through multiple tiny skin punctures




# Methods of classical surgical treatment

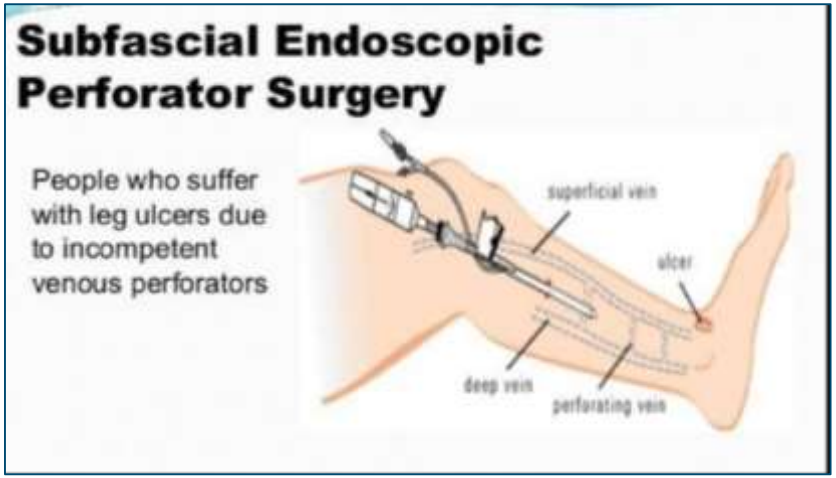



Note: it is rarely performed nowadays and it’s largely replaced by endovenous thermal ablation

# Classical surgical treatment

- Indications: It is performed only if other measures fails for

a) Large I ry Varicose veins. b) Severe symptoms
d) Incompetent valves of long saphenous or short saphenous.
e) Presence of complications (hge, ulcer...etc.



# Management of secondary varicose veins

A. **Post-phlebitic limb:**

1. Before recanalization of deep veins: Conservative treatment only (the same as treatment of D.V.T.) The Varicose veins. should not be attacked as they represent collaterals for the occluded deep veins.
2. After recanalization of deep veins: Once recanalization & patency of deep system is detected clinically & by Duplex ultrasound, treat the condition as primary varicose veins

**B. Varicose veins due to A. V fistula**: Surgical treatment of the fistula followed by regression of Varicose veins. & any residual veins are treated as 1 ry Varicose veins.

**C. Varicose veins during pregnancy**: A complete elastic stocking from the toes up to the groin is applied during pregnancy. After labour, residual veins are treated as Iry Varicose veins.

# Thanks!