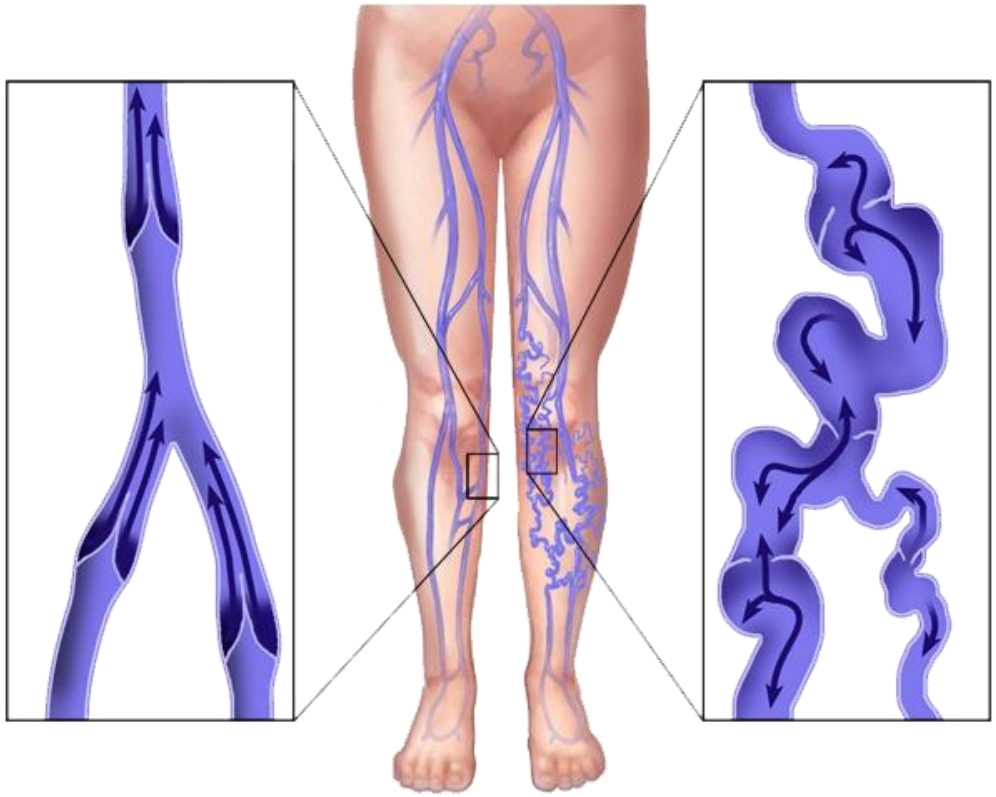
Varicose Veins



Definition

- Dilated, usually tortuous, subcutaneous veins ≥3 mm in diameter measured in the upright position with demonstrable reflux.

Epidemiology

- Adult prevalence of visible varicose veins is 25–30 per cent in women and 15 per cent in men.
- Common in females.
- Incidence increases with age.

Risk factors

- Strong family history
- Age
- Obesity
- Pregnancy
- Smoking
- Constipation
- Prolonged standing

} Inconclusive evidence

Causes

Primary

- Cause not known.
- Often familial.
- Very rarely, congenital absence of the valves.

Secondary

- **Obstruction to venous outflow**
  - ➢ Pregnancy
  - ➢ Fibroids/ovarian cyst
  - ➢ Abdominal lymphadenopathy
  - ➢ Pelvic cancer (cervix, uterus, ovary, rectum)
  - ➢ Ascites
  - ➢ Iliac vein thrombosis
  - ➢ Retroperitoneal fibrosis
- **Valve destruction**
  - ➢ Deep vein thrombosis
- **High flow and pressure**
  - ➢ Arteriovenous fistula

CEAP classification
(clinical – etiology – anatomy – pathophysiology)

Clinical

- C0: No signs of venous disease
- C1: Telangectasia or reticular veins
- C2: Varicose veins
- C3: Oedema
- C4a: Pigmentation or eczema
- C4b:Lipodermatosclerosis or atrophie blanche
- C5: Healed venous ulcer
- C6: Active venous ulcer

Etiologic

- Ec: Congenital
- Ep: Primary
- Es: Secondary (post-thrombotic)
- En: No venous cause identified

Anatomical	Pathophysiological
• As: Superficial veins • Ap: Perforator veins • Ad: Deep veins • An: No venous location identified	• Pr: Reflux • Po: Obstruction • Pr,o: Reflux and obstruction • Pn: No venous pathophysiology identifiable

Clinical features

1. Symptoms

Due to varicose veins

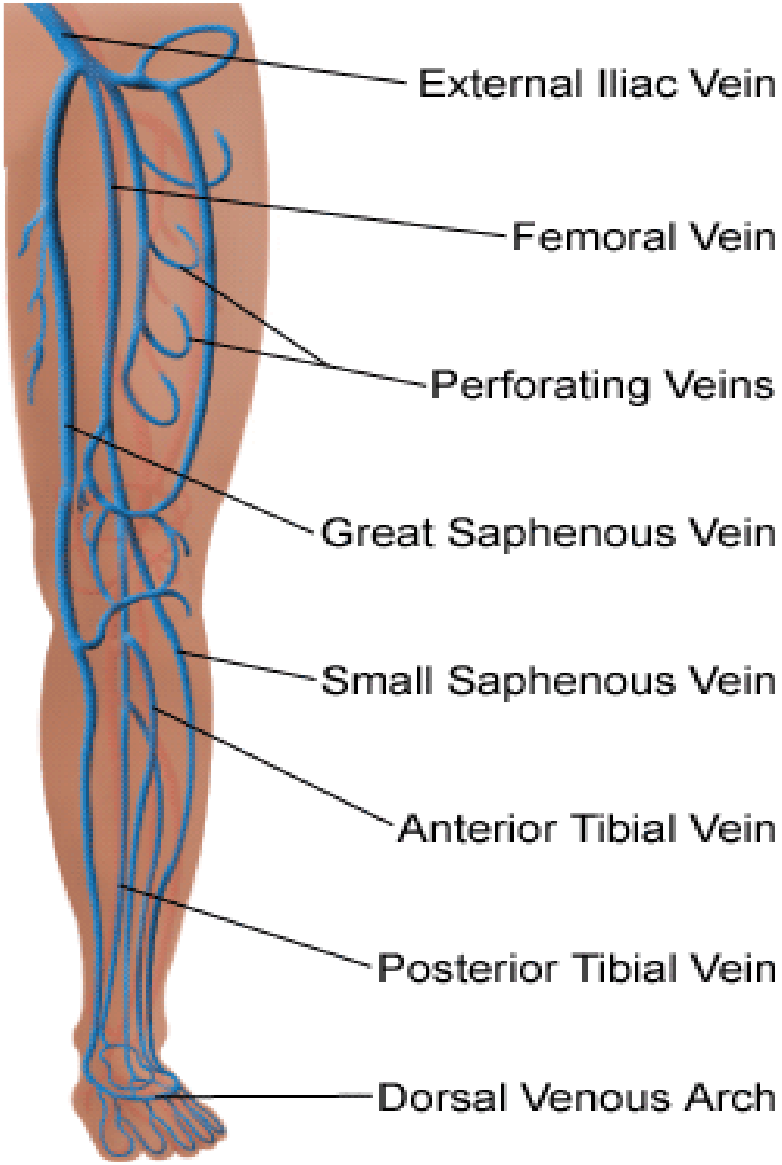
- Aching or heaviness
  - ❑ Increases throughout the day or with prolonged standing.
  - ❑ Relieved by elevation or compression hosiery.
- Ankle swelling
- Itching
- Cosmetic concerns

Due to complications

- Bleeding
- Superficial thrombophlebitis
- Eczema
- Lipodermatosclerosis
- Ulceration

2. Signs

- Tortuous dilated subcutaneous veins
  - Long saphenous incompetence - medial thigh and calf varicosities
  - Short saphenous incompetence - posterolateral calf varicosities
  - Isolated incompetence of the proximal anterolateral long saphenous tributary - anterolateral thigh and calf varicosities
- Telangectasia
- Reticular veins
- Saphena varix
- Atrophie blanche
- Corona phlebectasia
- Lipodermatosclerosis
- Ulceration
- Pigmentation
- Eczema


External Iliac Vein
Femoral Vein
Perforating Veins
Great Saphenous Vein
Small Saphenous Vein
Anterior Tibial Vein
Posterior Tibial Vein
Dorsal Venous Arch

Reticular veins

Eczema

Severe chronic venous disease

Localised chronic inflammation and fibrosis of the skin and subcutaneous tissues of the leg.

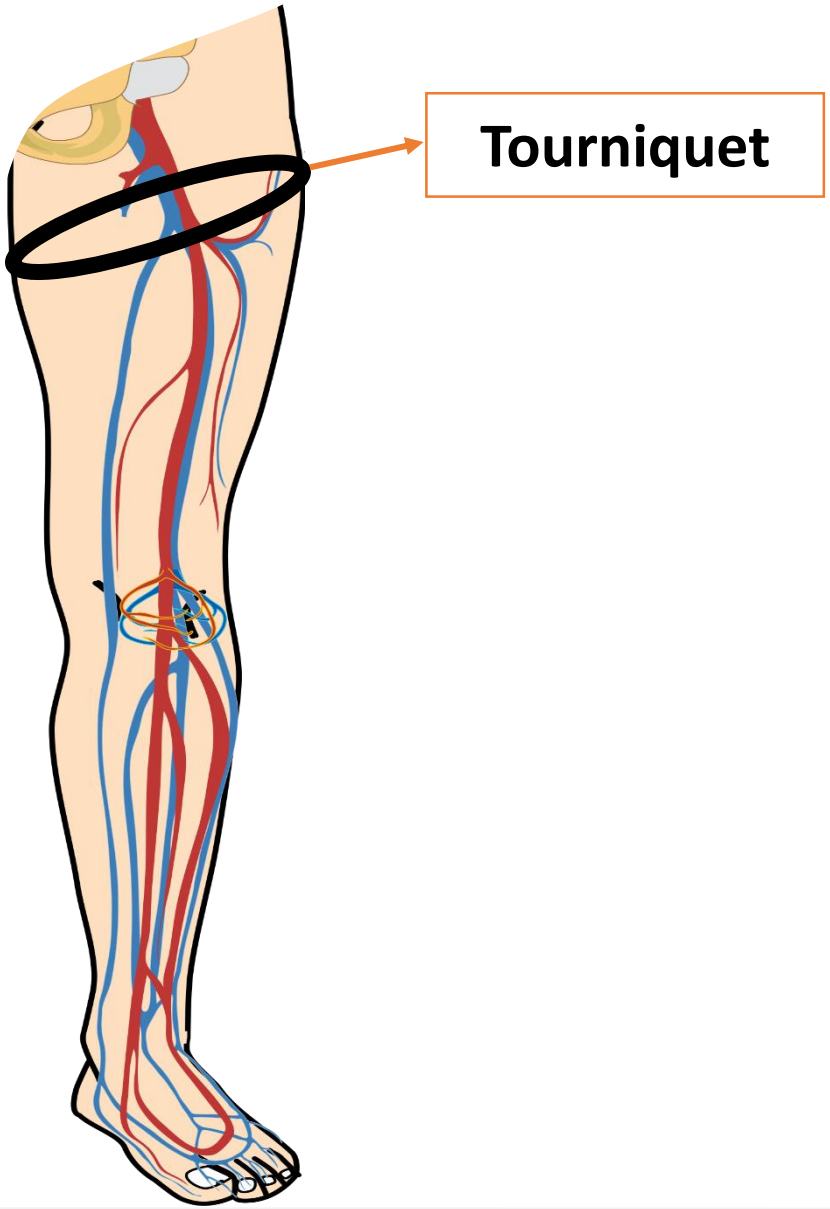
Lipodermatosclerosis and Lead Champagne bottle appearance.

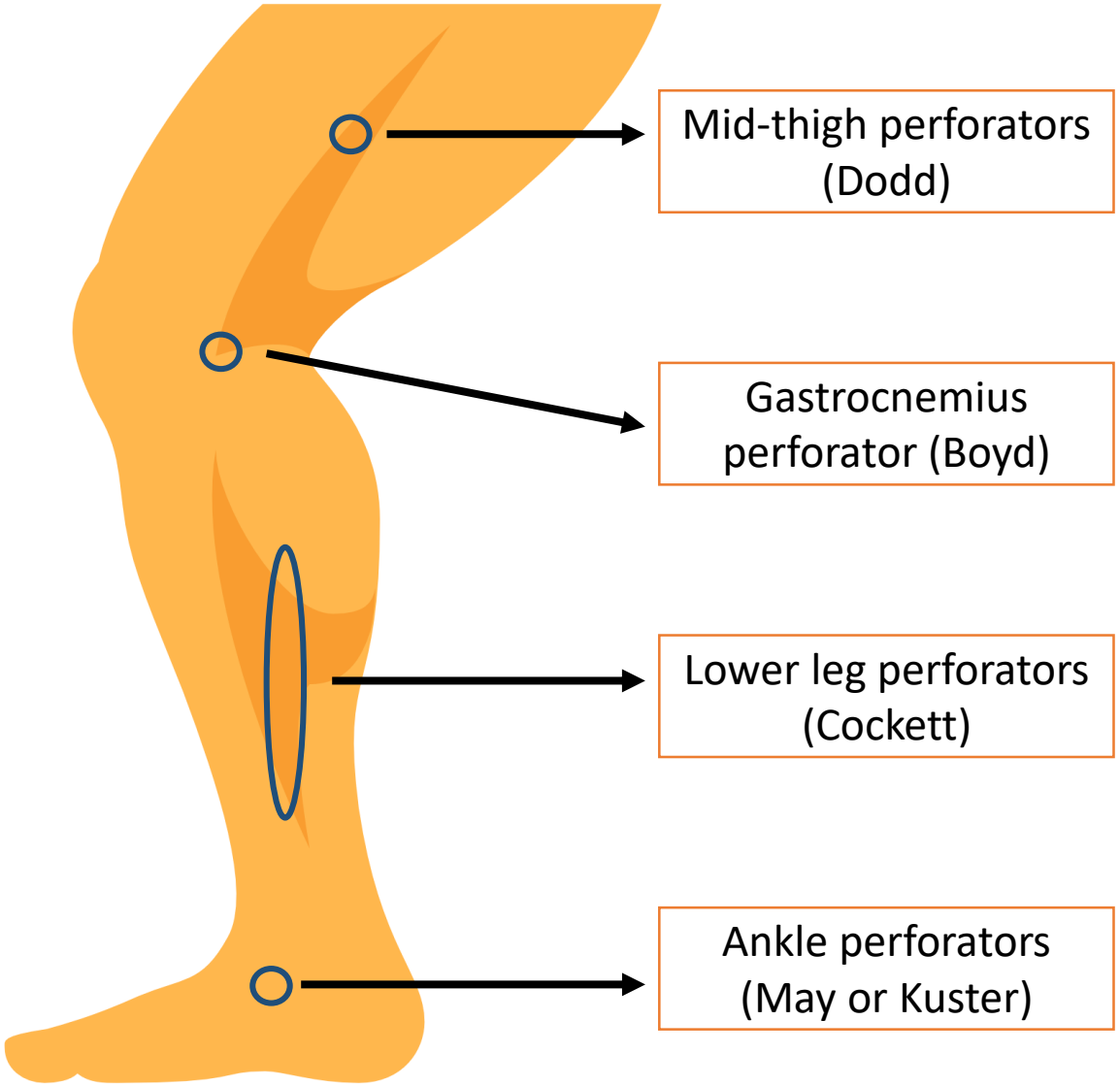
Leakage of RBC from engorged vessels → Degradation of haemoglobin and deposition of haemosiderin → Pigmentation

Tourniquet tests

1. Procedure

- The patient should lie on a couch.
- The limb to be examined is then elevated to empty the veins.
- A tourniquet made from a long length of 1 cm diameter soft rubber tubing is then pulled tight around the upper thigh and held in place by strong artery forceps.
- The patient is then asked to stand up quickly, and the legs are observed for 10–15 seconds.


Tourniquet


Mid-thigh perforators (Dodd)
Gastrocnemius perforator (Boyd)
Lower leg perforators (Cockett)
Ankle perforators (May or Kuster)

2. Interpretation

Saphenofemoral junction incompetence

- Veins above the tourniquet will rapidly fill, but those below it will remain collapsed when patient stands up.
- Confirmed by suddenly releasing the tourniquet and watching the veins below the site of the tourniquet rapidly distend from above.

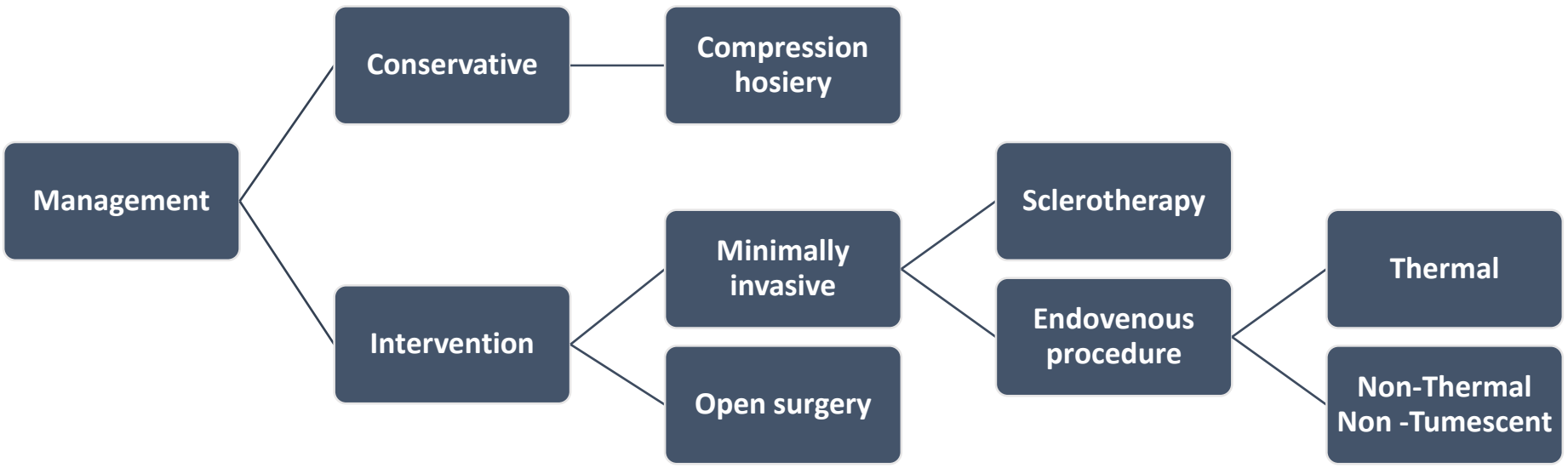
Other sites of superficial to deep incompetence

- Veins below the tourniquet fill immediately when patient stands up.
- Test can be repeated with the tourniquet moved progressively down the whole length of the leg to try to define all the sites of superficial to deep vein incompetence.
- Apply it once below the knee to exclude short saphenous incompetence.

Investigation

- **Venous duplex**
  - ❑ Shows superficial and deep veins
  - ❑ Can identify the site of incompetence
  - ❑ Recommended for all the patients who undergoing intervention
- **Contrast venography**
  - ❑ Conventional
    - ○ If duplex is inconclusive
  - ❑ MRV/CTV
    - ○ Assess intra-abdominal and pelvic veins

Management


Management
Conservative
Compression hosiery
Intervention
Minimally invasive
Sclerotherapy
Endovenous procedure
Thermal
Non-Thermal Non -Tumescent
Open surgery

Compression hosiery

- It relies on graduated external pressure to improve deep venous return.
- Compression hosiery can be knee length or thigh length.
- Compression hosiery is classified according to the pressure exerted,
  - class 1 exert 14–17 mmHg
  - class 2 exert 18–24 mmHg
  - class 3 exert 25–35 mmHg
- Recommended Stockings are - Class 2 and Class 3.
- Significantly improves varicose vein symptoms.

Ultrasound-guided foam sclerotherapy

- Sclerosants
  - ❑ **Chemical irritants** - glycerine
  - ❑ **Osmotic** - hypertonic saline
  - ❑ **Detergent** - sodium tetradecyl sulphate (**STD**), Polidocanol
- Injection of detergent directly into the superficial veins.
- Only 1 or 2 mL of foam should be injected at a time and the distribution of the foam should be monitored and massaged with the ultrasound probe.
- Compression bandaging or hosiery is then applied and left in situ for 7–10 days.
- Sclerotherapy improves varicose vein-related symptoms, but recurrence rates and the need for reintervention are relatively high.
- Complications - phlebitis, pigmentation, headache, visual disturbance, chest tightness, cough.

Endovenous laser ablation(EVLA)

- Insertion of a laser fibre into the lumen of an incompetent truncal vein, with subsequent thermal ablation of the vein.
- The tumescent anaesthesia,
  - Dilute lidocaine with adrenaline and bicarbonate warmed to body temperature.
  - Provides analgesia and compresses the vein.
  - Increasing the contact area between the vein wall and laser fibre.
  - Protects adjacent structures (skin, nerves).
- EVLA treats only junctional and truncal incompetence.
- Compression and analgesia are usually recommended in the early postoperative period.

Radiofrequency ablation(RFA)

- It is a minimally invasive endovascular therapy that uses a bipolar catheter to generate thermal energy to ablate the vein.
- Preoperative planning and consent, patient positioning, tumescent anaesthesia administration and postoperative management are identical to EVLA.
- The main differences include vein cannulation and method of ablation.

Surgical

- Local ‘stab’ avulsions.
  - Deals with varicosities.
- Saphenofemoral or saphenopopliteal ligation.
- Long saphenous vein stripping.
  - Effectively avulses all incompetent thigh perforators
  - Not usually done below the knee due to risk of saphenous nerve injury.

Post operative care

- Graduated compression stockings or bandages are worn day and night for 7-10 days. Thereafter only during day for 1 month.
- Oral analgesics
- Leg elevation

Complications of surgery

- Bleeding or bruising
- Healing with fibrosis- contracture
- Wound infections
- Neuropraxia or complete damage
  - Saphenous nerve accompanies LSV
  - Sural nerve accompanies SSV
  - Sapheno popliteal ligation may lead to sural nerve and common peroneal nerve damage.
- Recurrence
- DVT

Non-Thermal Non –Tumescent methods

- Mechano-chemical endovenous ablation(MOCA).
- Venaseal closure system.