VARICOSE VEINS

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DEPARTMENT OF SURGERY

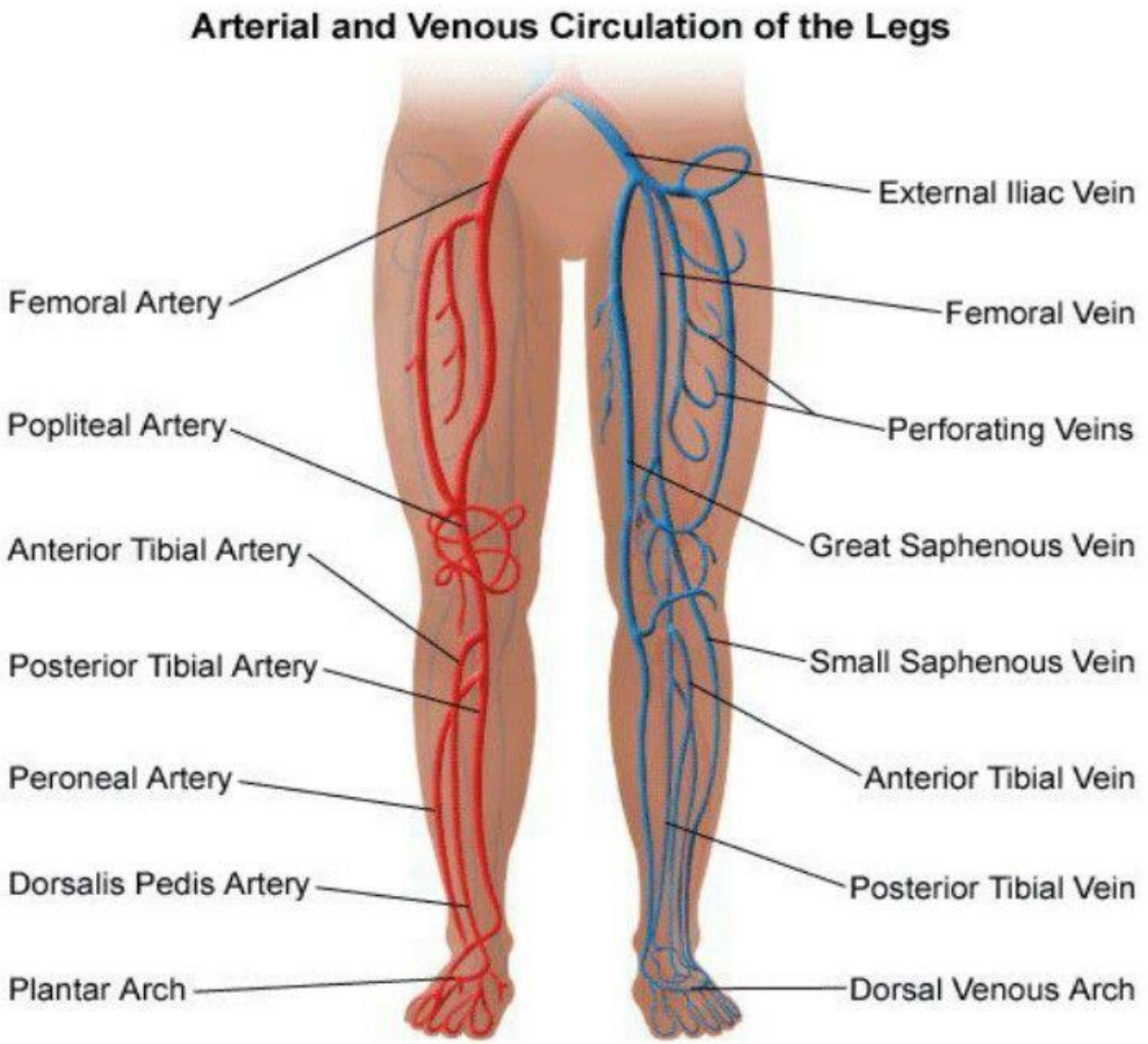
DEFINITION

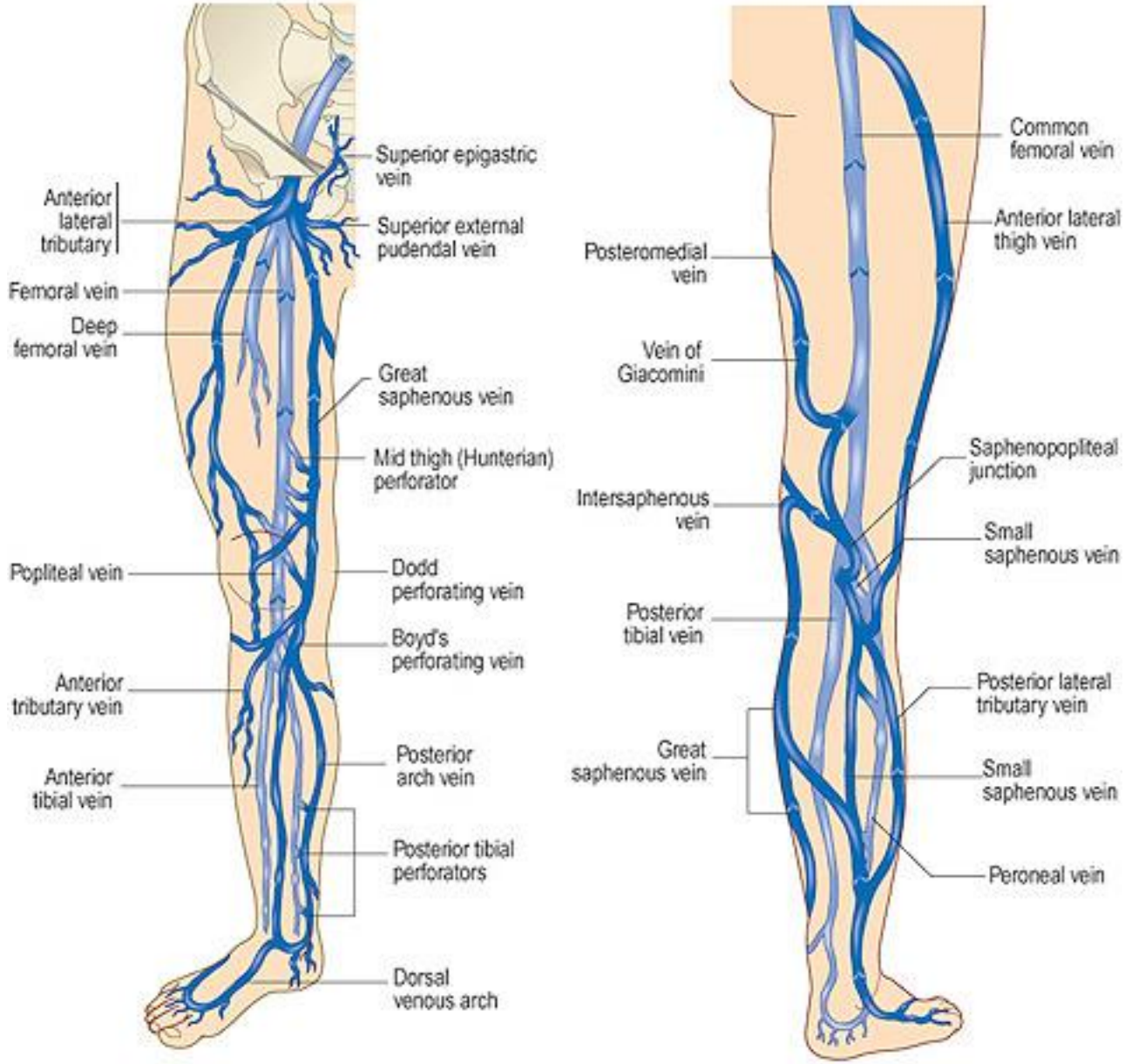
Tortuous, dilated superficial veins **>3mm** in diameter

- Can occur anywhere in the body where there is **poor venous return**.
- Commonly associated with the **lower limbs**
- Causes significant **physical** and **psychological morbidity**, has a **negative impact on patient's quality of life**

Epidemiology

- Affects 20%-64%
- Spider veins in 80% of the population





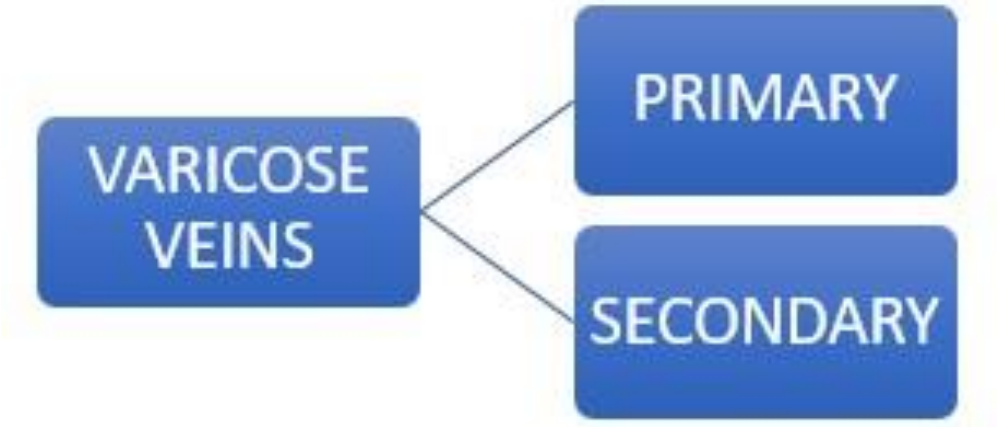
The Venous Anatomy of the Legs
Deep System - light blue Superficial System - dark blue

Risk factors

- Family history
- Advancing age
- Pregnancy
- Previous history of DVT
- Congenital conditions
- Obesity
- Female gender
- Smoking

Pathology

- Impairment of venous disease secondary to,
  - Reflux
  - Obstruction
  - Calf muscle pump failure
- Resultant increase of distant venous pressure leads to the cutaneous changes typical to the disease



PRIMARY VARICOSITIES

- Due to incompetence of ***superficial*** veins
- Located and connections between the superficial and the deep venous systems (SFJ, SPJ, perforator veins)
- Commonly occur in GSV and SSV distribution

SECONDARY VARICOSITIES

- Because of another pathology
- Often in the ***deep*** venous system, which leads to venous hypertension in the superficial venous system
- E.g. DVT (post-thrombotic syndrome), Intra-abdominal masses

History

- Pain, achiness
- Heaviness
- Swelling
- Restless legs
- Cramps
- Itching

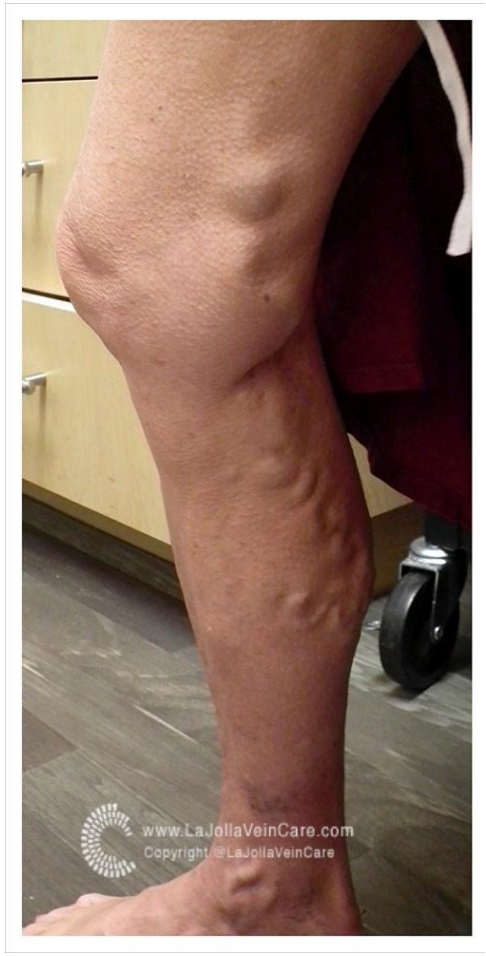
*no correlation between varicose vein diameter and symptoms and quality of life

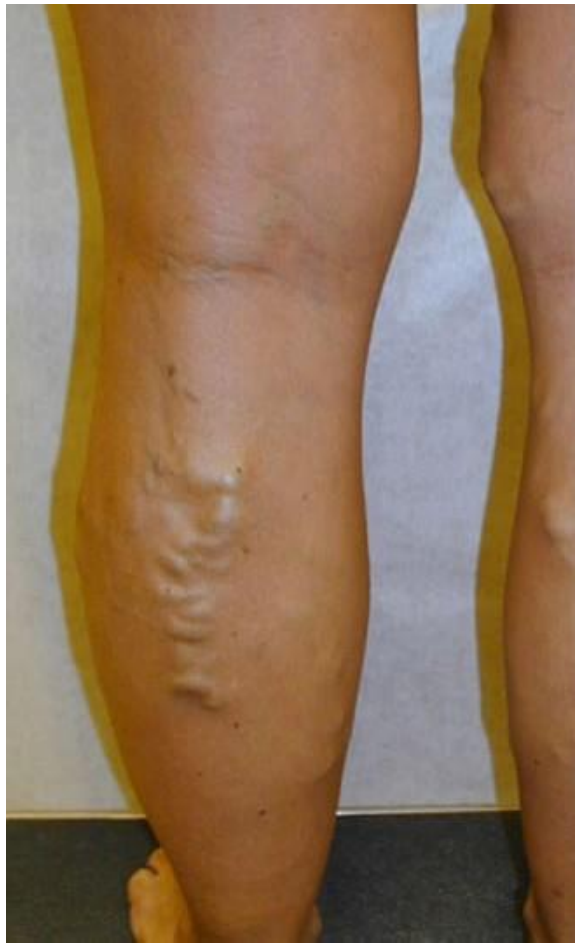
- <u>correlates well with clinical disease severity</u>
- Exacerbated by prolong standing, prolong seated position with feet dependent and worse towards the end of the day
- Leg elevation may alleviate the symptoms
- *“Pain relieved by walking”*
- Women- symptoms are exacerbated by period & pregnancy (increased fluids due to the action of oestrogen)

Examination goals

- Establish the diagnosis of varicose veins
- Identification of the affected system – GSV/ SSV/ perforator
- Complications of the disease

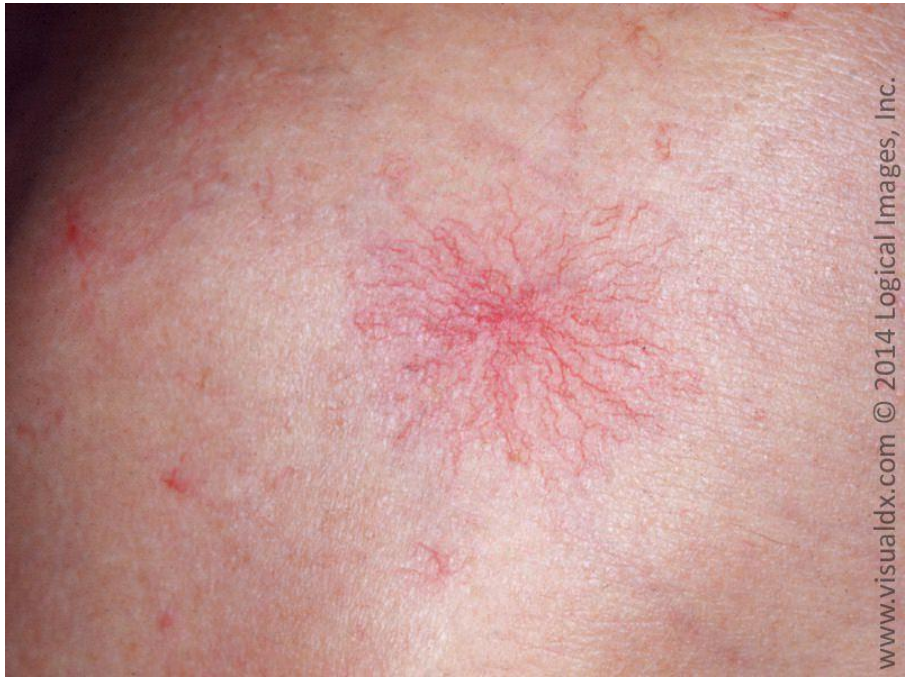
Identify the system involved



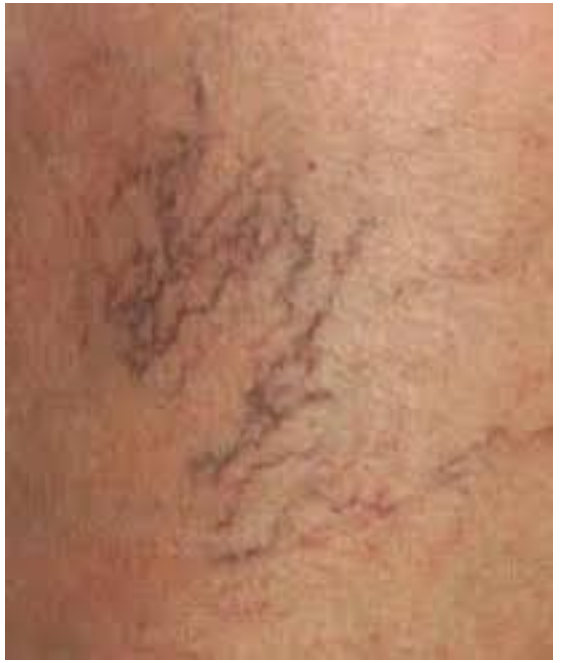


Examination – standing first

- Telangiectasia – Intradermal veins



- Reticular veins – subdermal veins

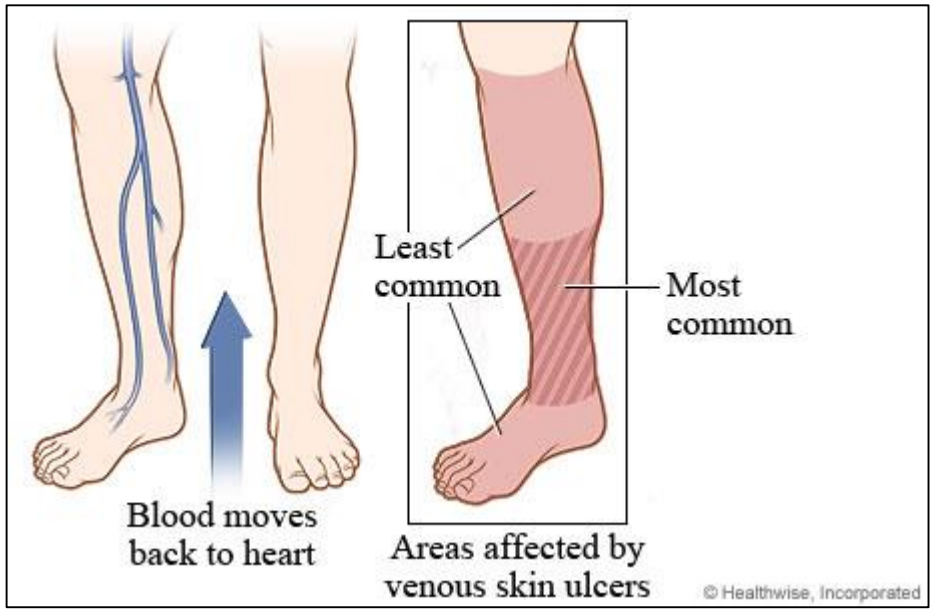


Examination – standing first

Pitting ankle oedema

- Nonspecific symptom unless unilateral, confined to the lower limb & coexistent with other features of chronic venous disease
- Relieved by recumbence (in contrast to lymphedema which doesn't resolve when recumbent)

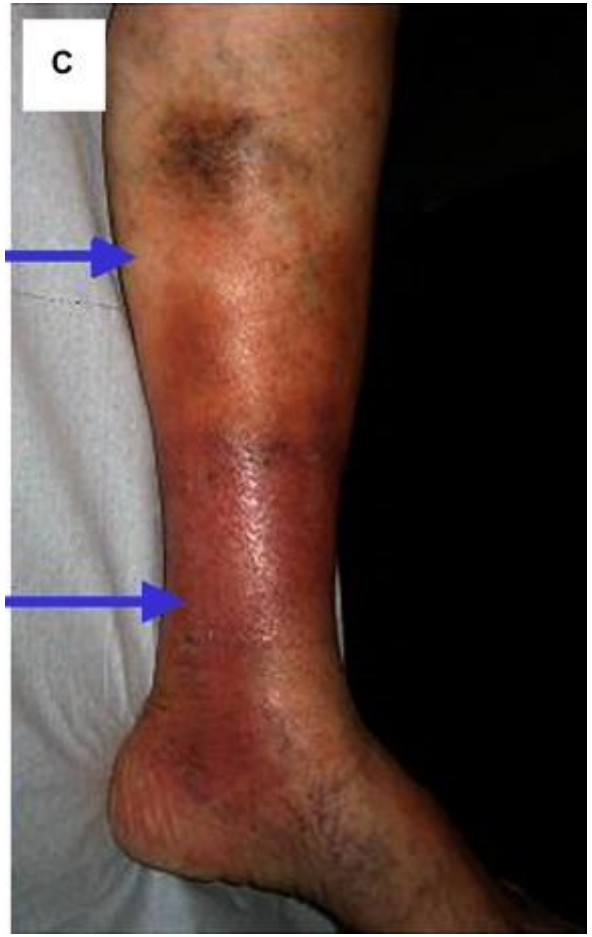
- Gaiter area



Examination – standing first

Skin hyperpigmentation

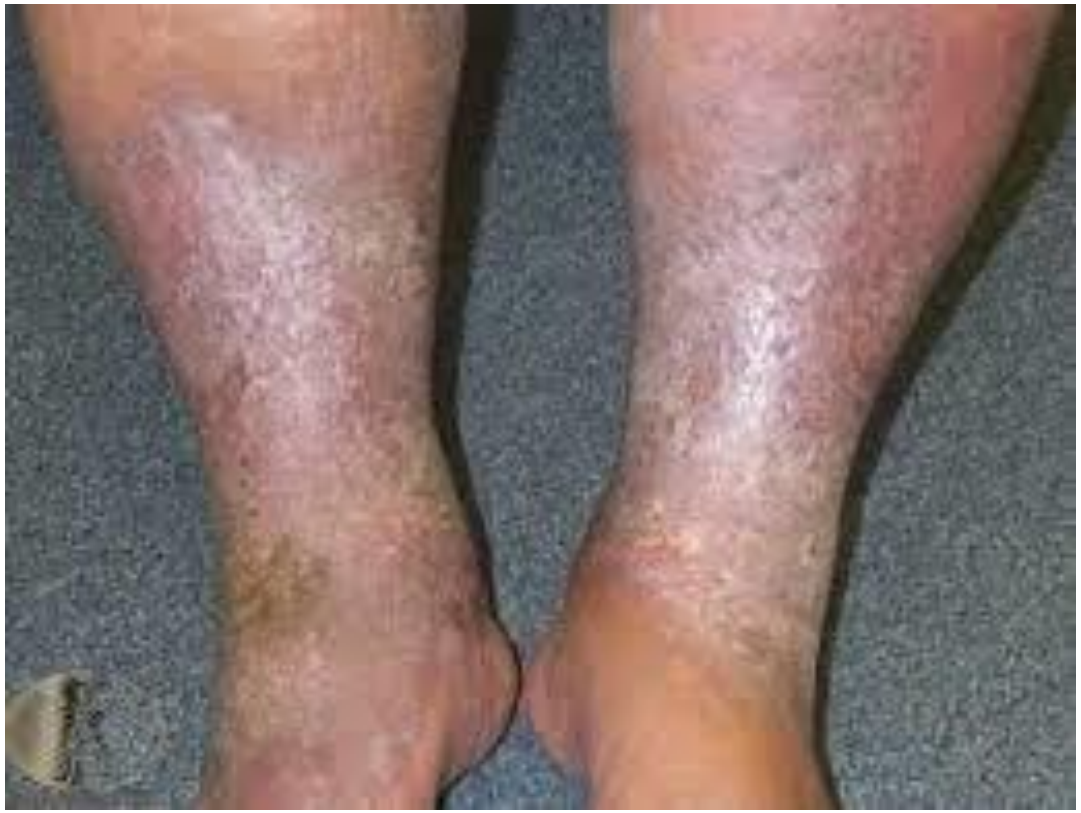
- Increased pressure at venular end → seeping out of RBC → degradinh haem → haemosiderin



Examination – standing first

Venous eczema

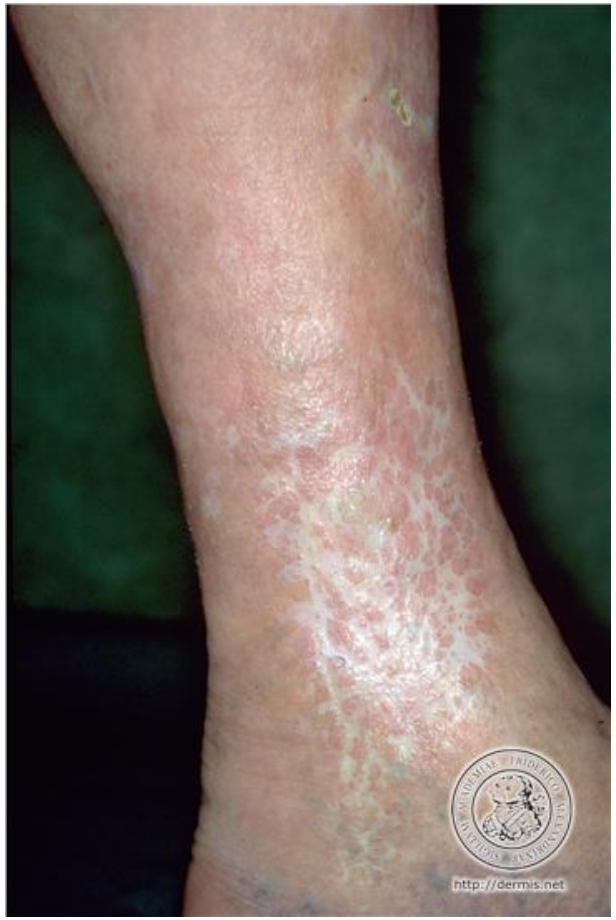
- Gravitational dermatitis
- Fluid collects in the tissues
- An inflammatory reaction occurs.
- Itchy red, blistered and crusted plaques; or dry fissured and scaly plaques on one or both lower legs



Examination – standing first

Atrophie blanche

- Points of avascular fibrosis
- Star-shaped or polyangular, ivory-white depressed atrophic plaques
- Prominent red dots within the scar due to enlarged capillary blood vessels

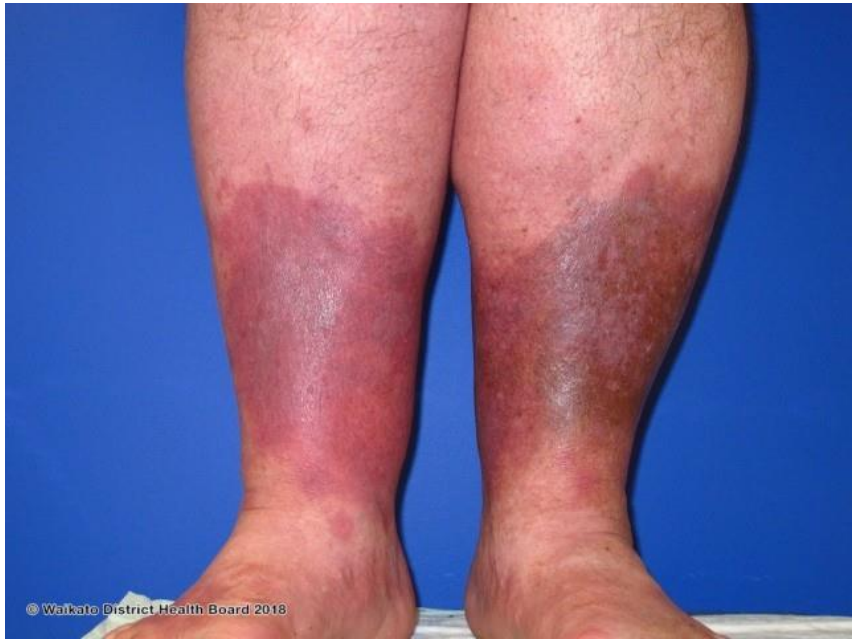


Examination – standing first

Lipodermatosclerosis

- Panniculitis (inflamed S/C fat)
- Mostly in obese

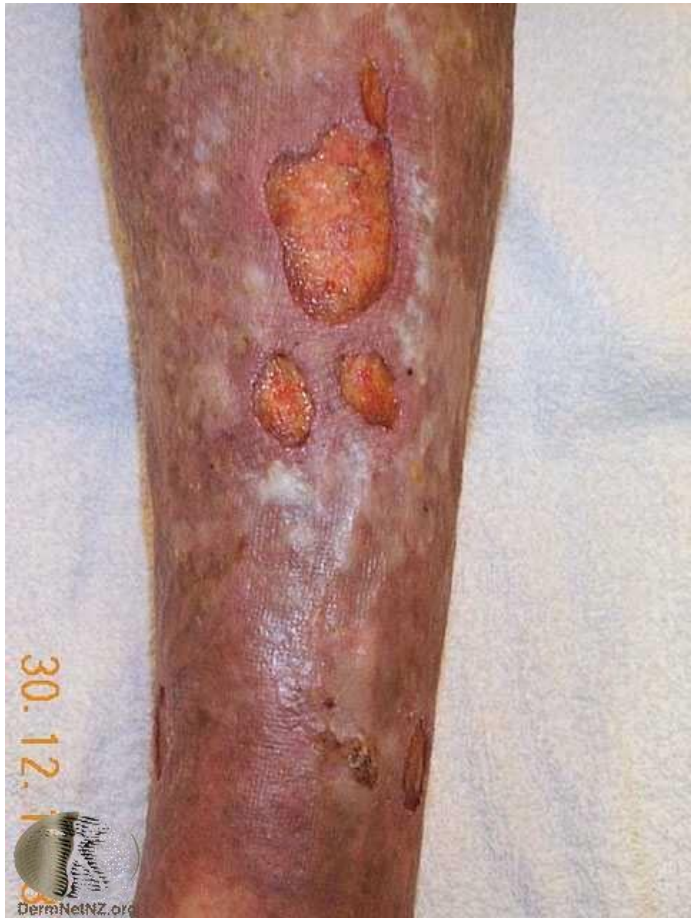
- Findings
  - Skin induration (hardening)
  - Increased pigmentation
  - Swelling
  - Redness
  - “Inverted champagne bottle” or “bowling pin” appearance
- Extensive fibrosis may strangle the lower limb further worsening the venous and lymphatic drainage



Examination – standing first

Venous ulcer

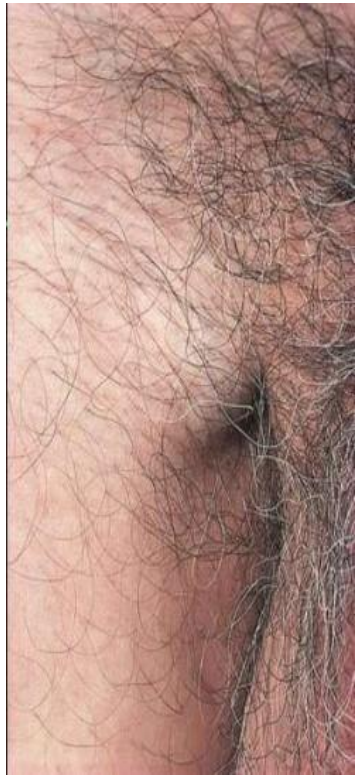
- Commonly located low on the medial ankle over a perforator or along the course of GSV/SSV
- Can occur proximally if precipitated by trauma
- Never in the forefoot or above the level of the knee
- Multiple or single
- Exquisitely tender
- Shallow
- Exudative
- Base – pink/granulated/pale – if coexisting arterial disease
- Irregular sloping margin - but not undermined



Examination – standing first

- Scars – previous surgery
- Blow outs: perforators

- Saphena varix
  - SFJ: 2 finger breadths below & lateral to the pubic tubercle
  - Smooth swelling
  - Cough impulse – palpable
  - Thrill



Examination - supine

- Elevate the limb (supine): If varicose veins don’t collapse, they are due to pelvic vein thrombosis or a mass

Trendelenburg test

- First lying down
- Elevate the leg and gently empty the veins
- Palpate SFJ and ask the patient to stand while maintaining pressure
- Veins do not refill: SFJ is incompetent
- Veins fill: SFJ may or may not be incompetent, but there are certainly distant incompetent perforators

Other examination findings

- Tourniquet test
  - Multiple tourniquets to check perforators
- Abdominal and pelvic masses
- DRE
- Bi manual examination
- Fegan’s method
  - Facial defects (perforators)(Supine and leg elevated)
  - Useful for marking perforators pre-operatively

CEAP CLASSIFCATION

- Clinical, Etiology, Anatomy, Pathophysiology
- Describes the severity & etiology of lower limb venous disease
- Not useful in outcome measuring after treatment as the classification is static

TABLE 1. Basic 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	Oedema, only due to a venous etiology	P Primary
4	(a) Pigmentation and/or eczema	**A-Anatomy ****
	(b) Lipodermatosclerosis, *atrophie blanché*	S Superficial
5	Prior ulceration, now healed	P Perforator
6	Active ulceration	D Deep
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. oedema secondary to heart failure).

**The N subscript indicates no evidence of disease. It is applicable to E, A, and/or P of CEAP.

Investigations

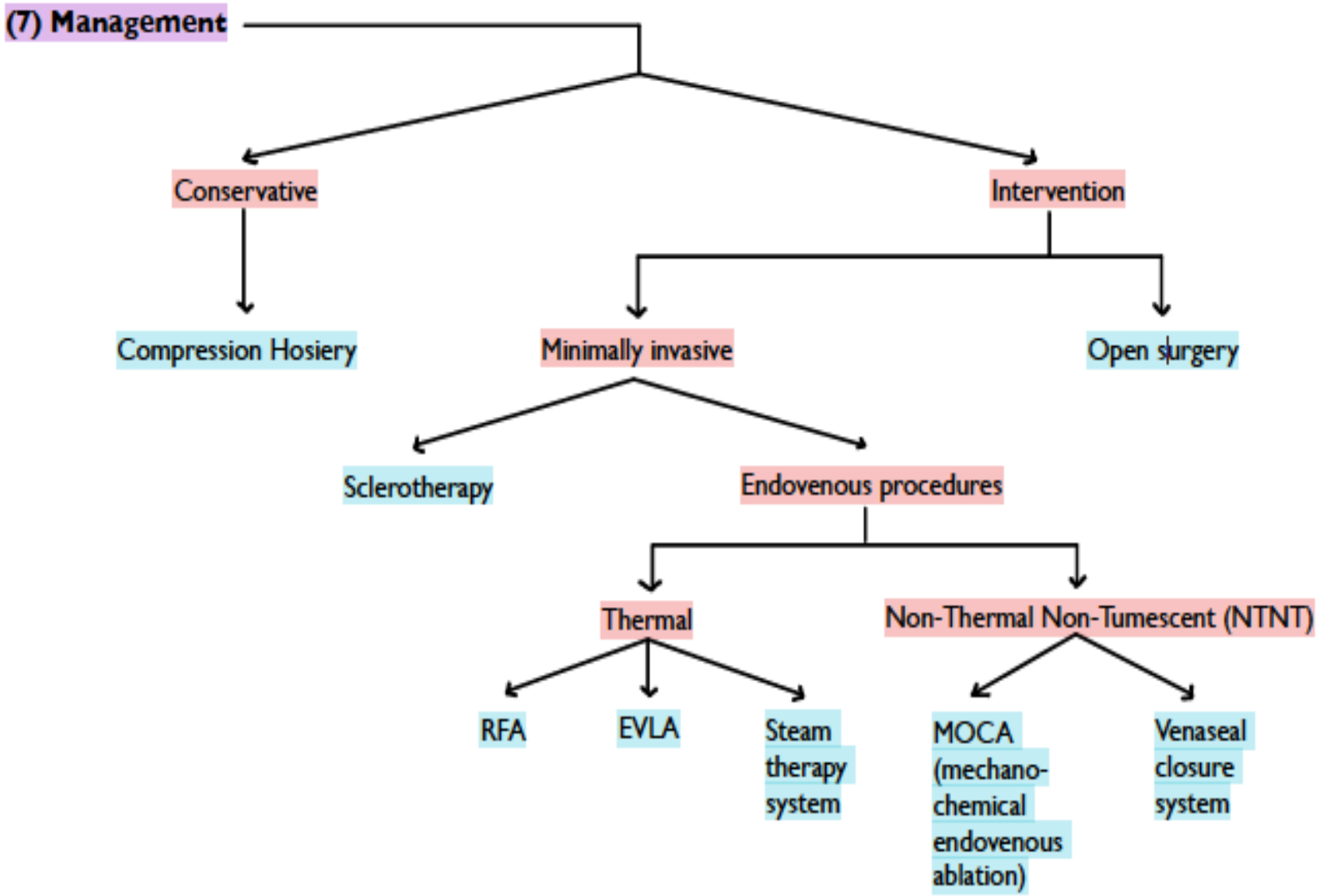
- Colour duplex ultrasound
  - Gold standard
  - Noninvasive, dynamic imaging modality
  - Can assess both deep and superficial venous systems
  - ALL PATIENTS SHOULD HAVE *PREOPERATIVE* DUPLEX ULTRASOUND SCANNING

Contrast venography

- Conventional
- Only recommended if venous duplex is inconclusive

MRV

- Recommended if lower limb superficial venous system appears normal despite having varicose veins, to
- assess intra-abdominal and pelvic veins


(7) Management
Conservative
Intervention
Compression Hosiery
Minimally invasive
Open surgery
Sclerotherapy
Endovenous procedures
Thermal
Non-Thermal Non-Tumescent (NTNT)
RFA
EVLA
Steam therapy system
MOCA (mechano-chemical endovenous ablation)
Venaseal closure system

Non-operative management

- Leg elevation, exercise, and compression therapy improve oxygen transport to the skin and subcutaneous tissues, decrease edema, reduce inflammation, and compress dilated veins.
- Skin changes ("stasis dermatitis") respond to topical dermatologic agents

- Compression therapy
  - Compression hosiery
  - Problems
    - Patient compliance is 66% (34% noncompliant) because patient has to wear it everyday, all the time
    - irritation
    - skin necrosis (poorly fitting)
    - Expensive
    - Every 3-6 months patient has to change it to a new one
    - If ABPI <0.9 → cannot use compression

Operative

- Sclerotherapy
  - Injection of sclerosant into the vein followed by compression to achieve occlusive fibrosis rather than thrombosis!
  - Foam or liquid
  - Sclerosants
    - *Chemical irritants* – glycerine
    - *Osmotic* - hypertonic saline
    - *Detergent* - sodium tetradecyl sulphate
- Endovascular
  - Thermal ablation
    - Radio frequency ablation (RFA)
    - Endo vascular laser ablation (EVLA)

Operative

- Open surgery
  - Sapheno-femoral ligation and stripping
  - Sapheno-popliteal ligation
  - Stab avulsion of incompetent perforators

Thank you