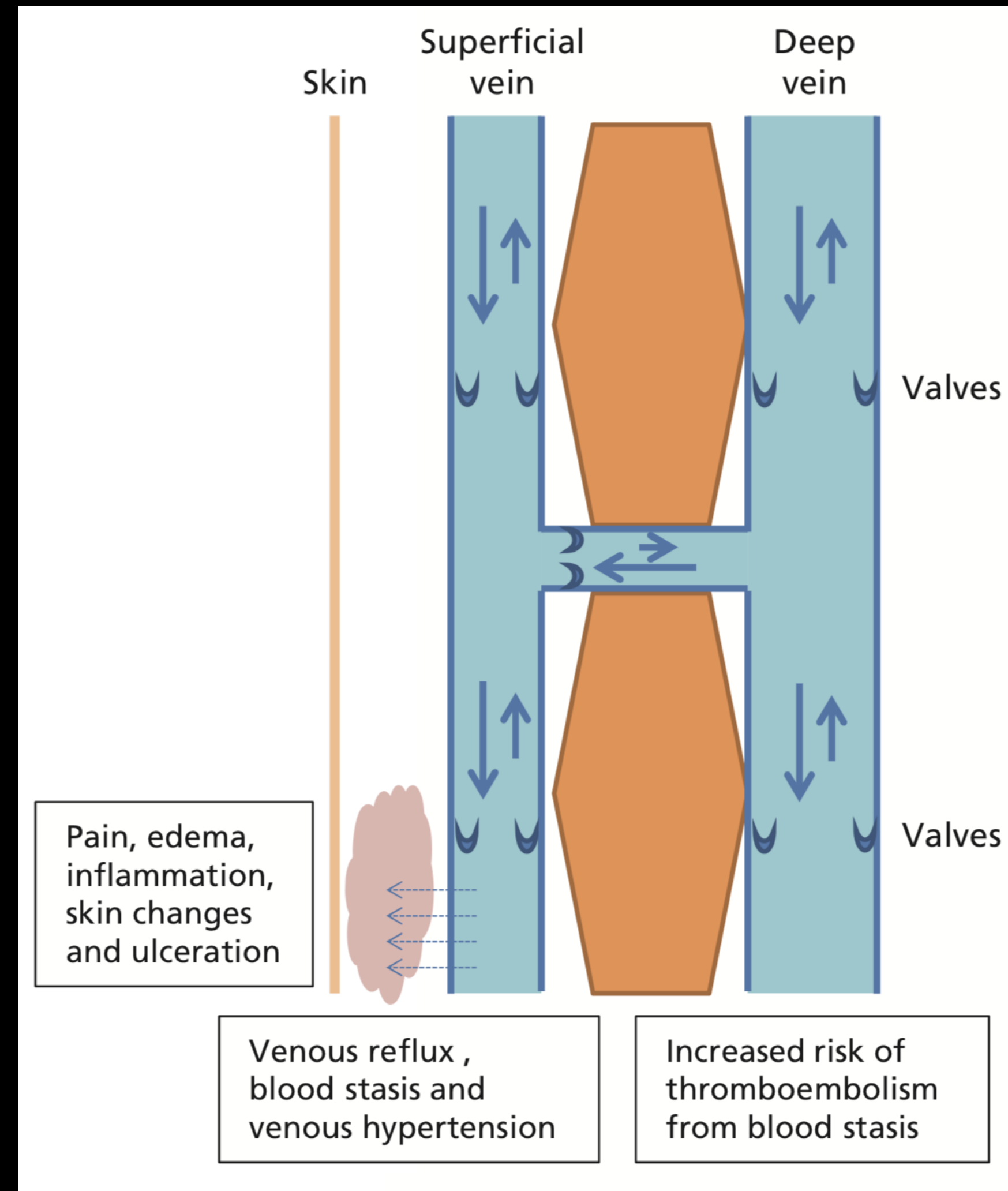
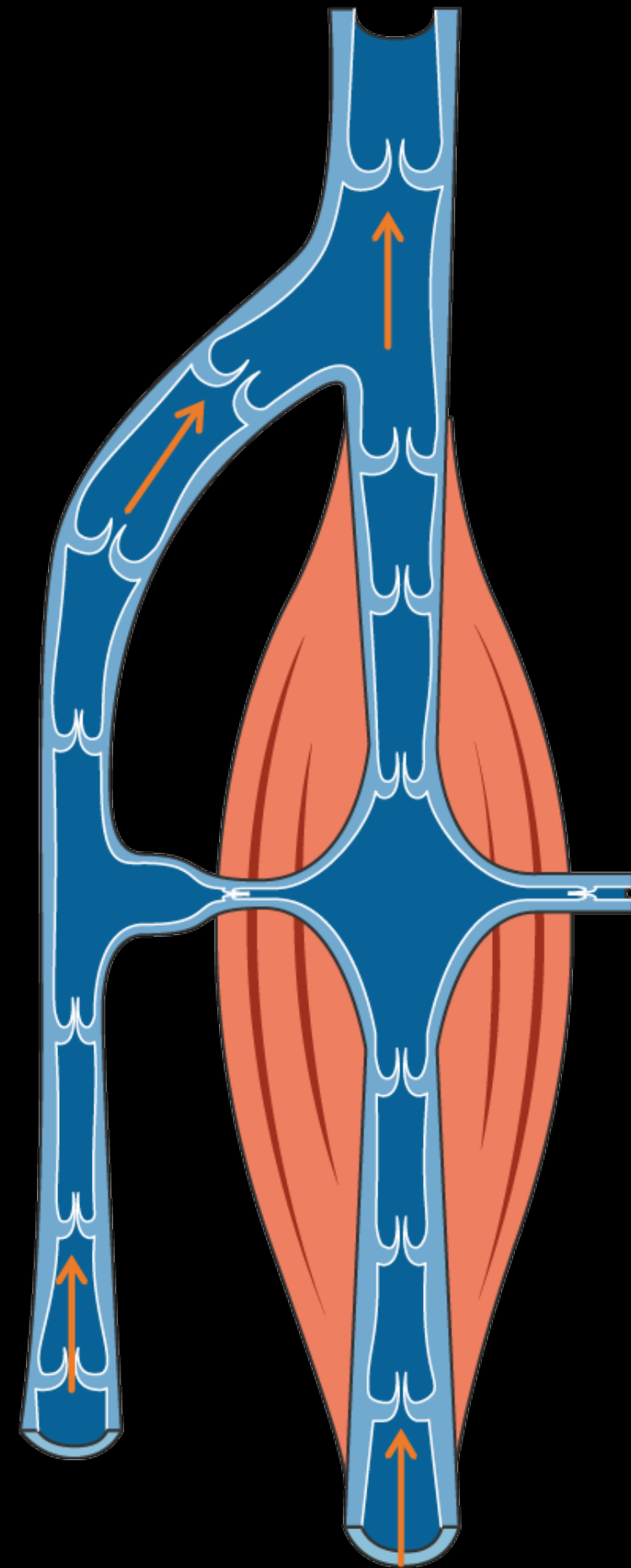


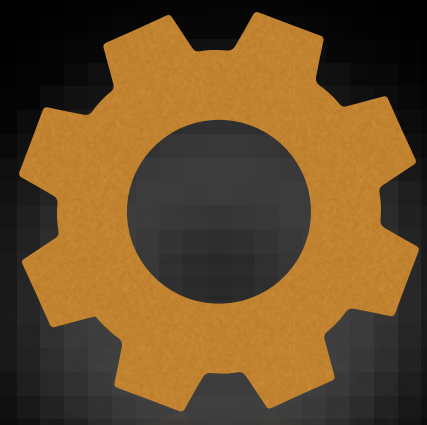
Varicose Vein (Venous Reflux Ds)

Kilsoo Yie M.D
Jeju Soo Cardiovascular Clinic



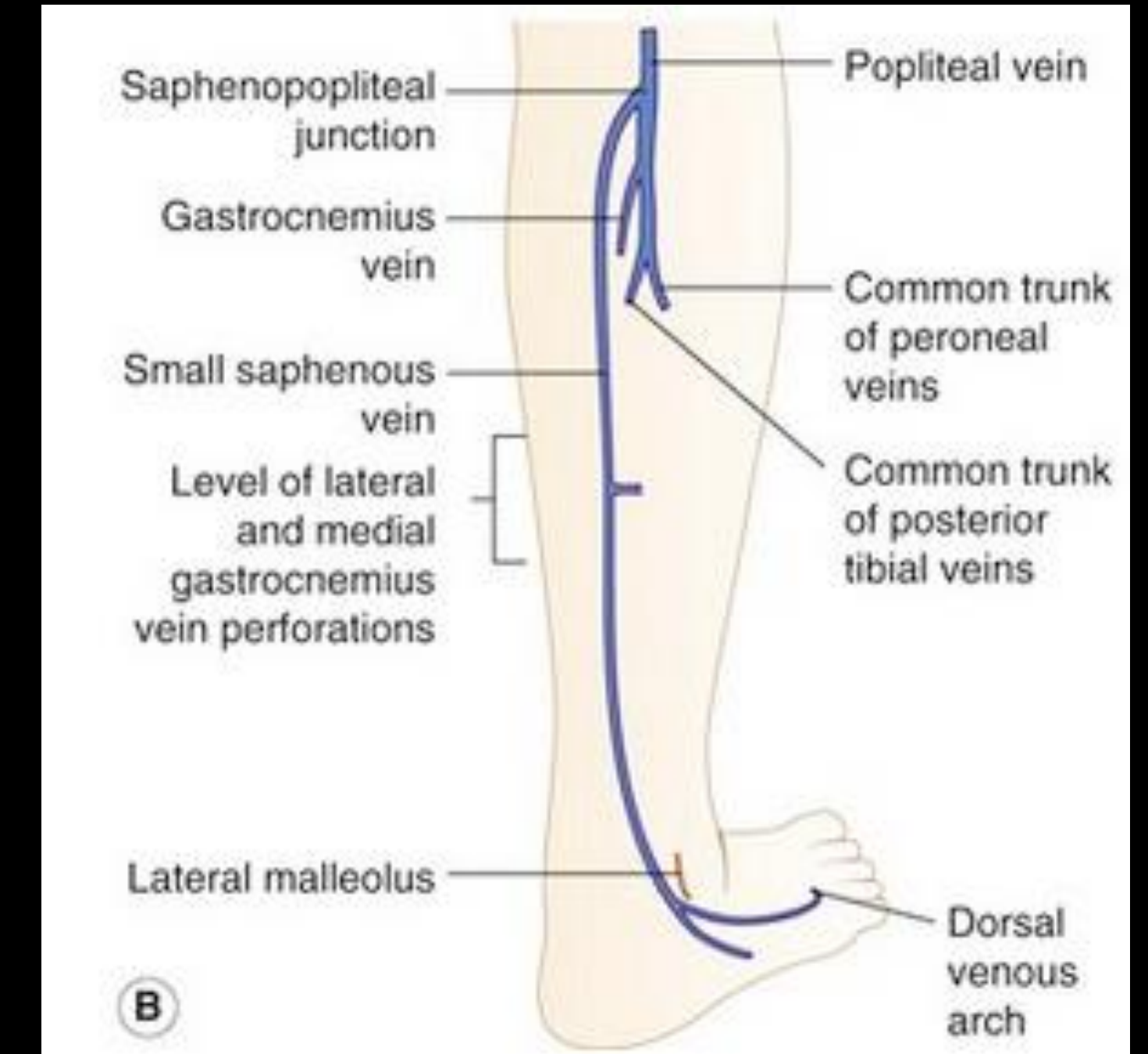
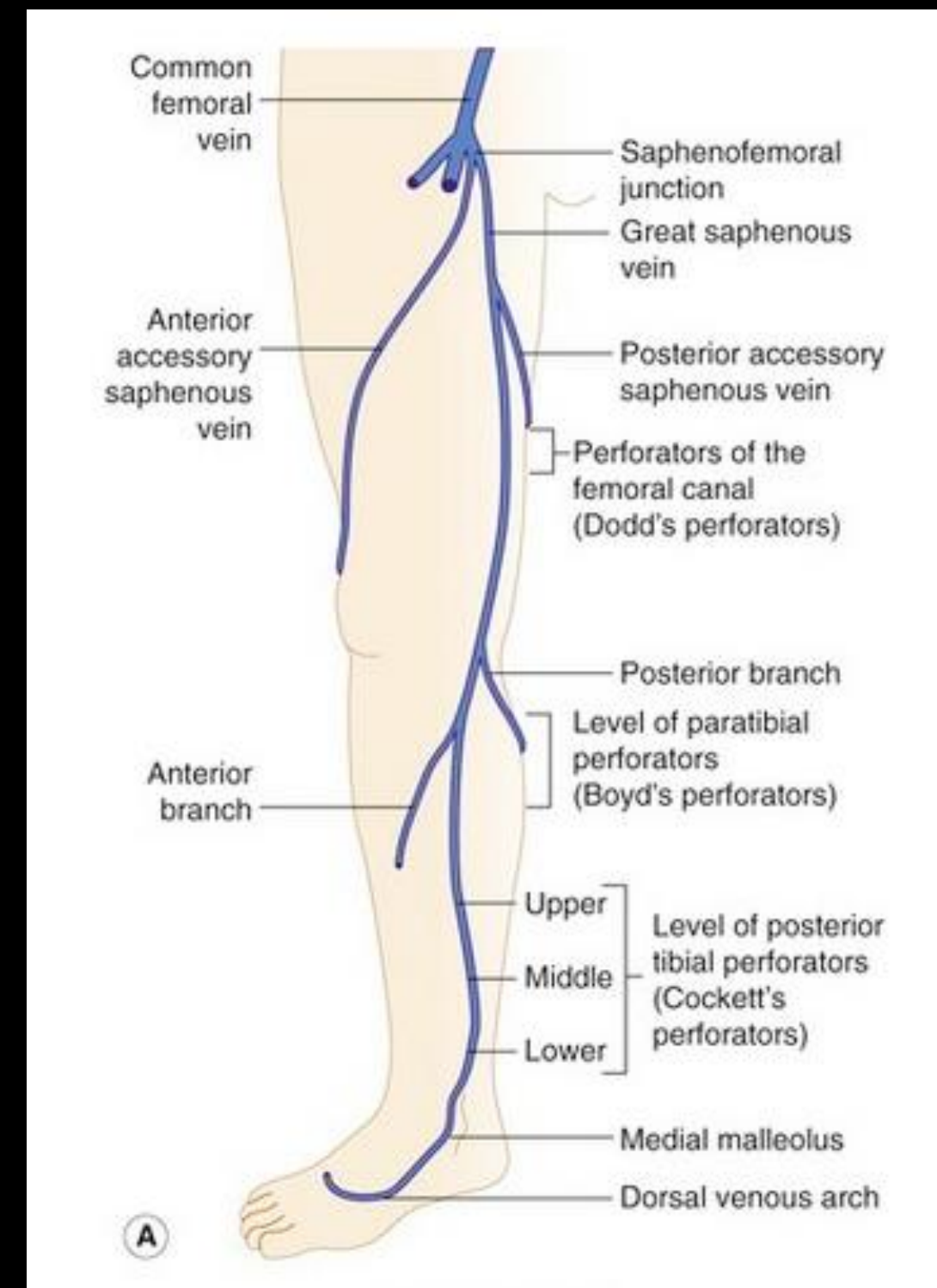
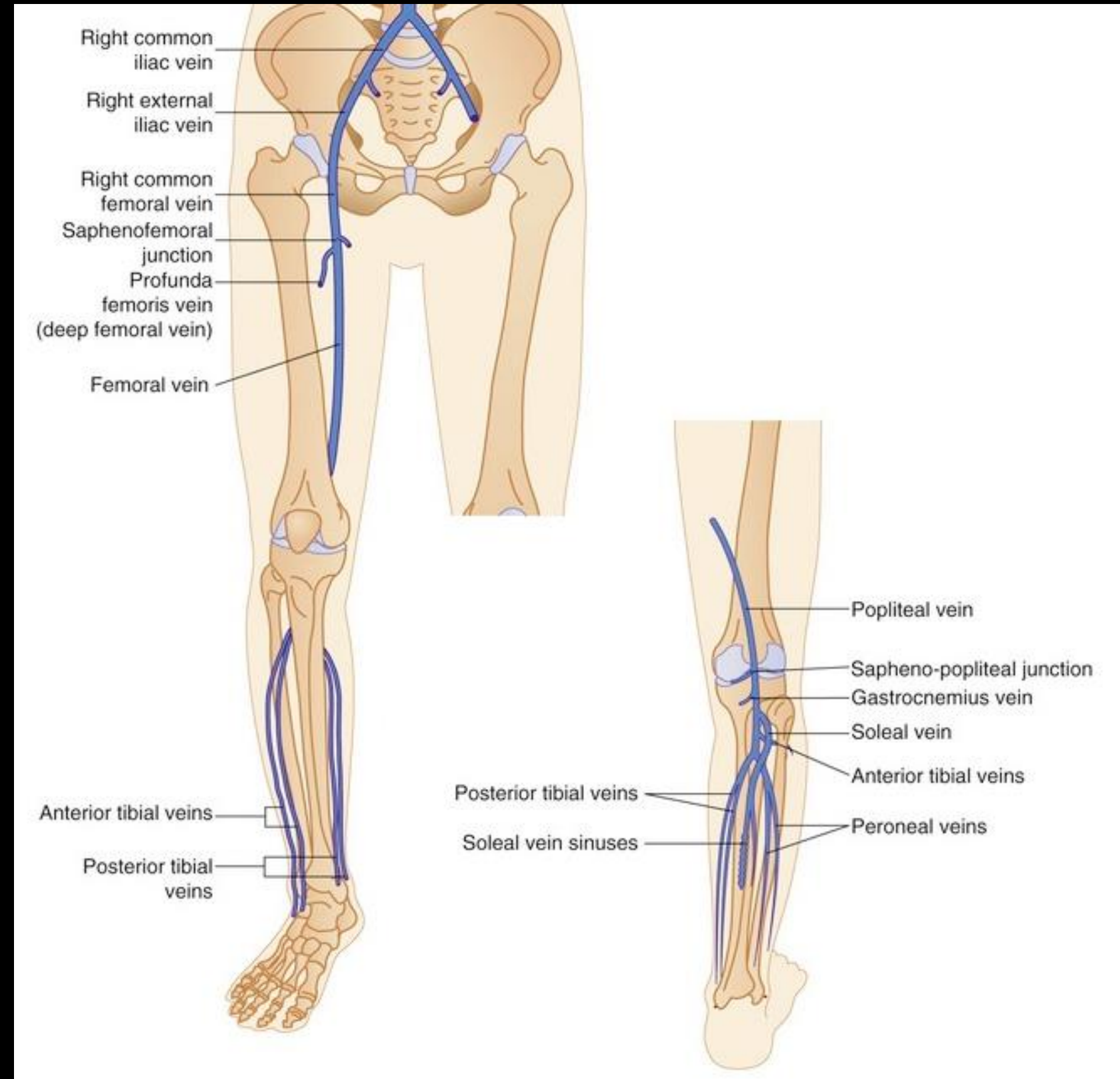
Venous Circulation

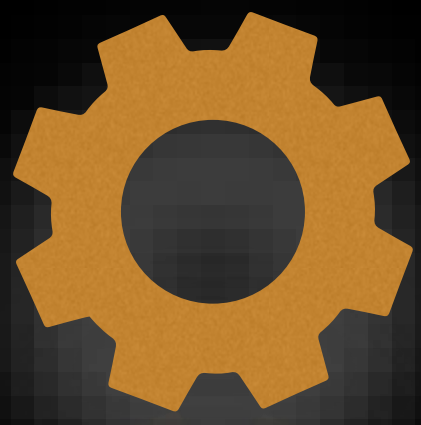




Basic Anatomy

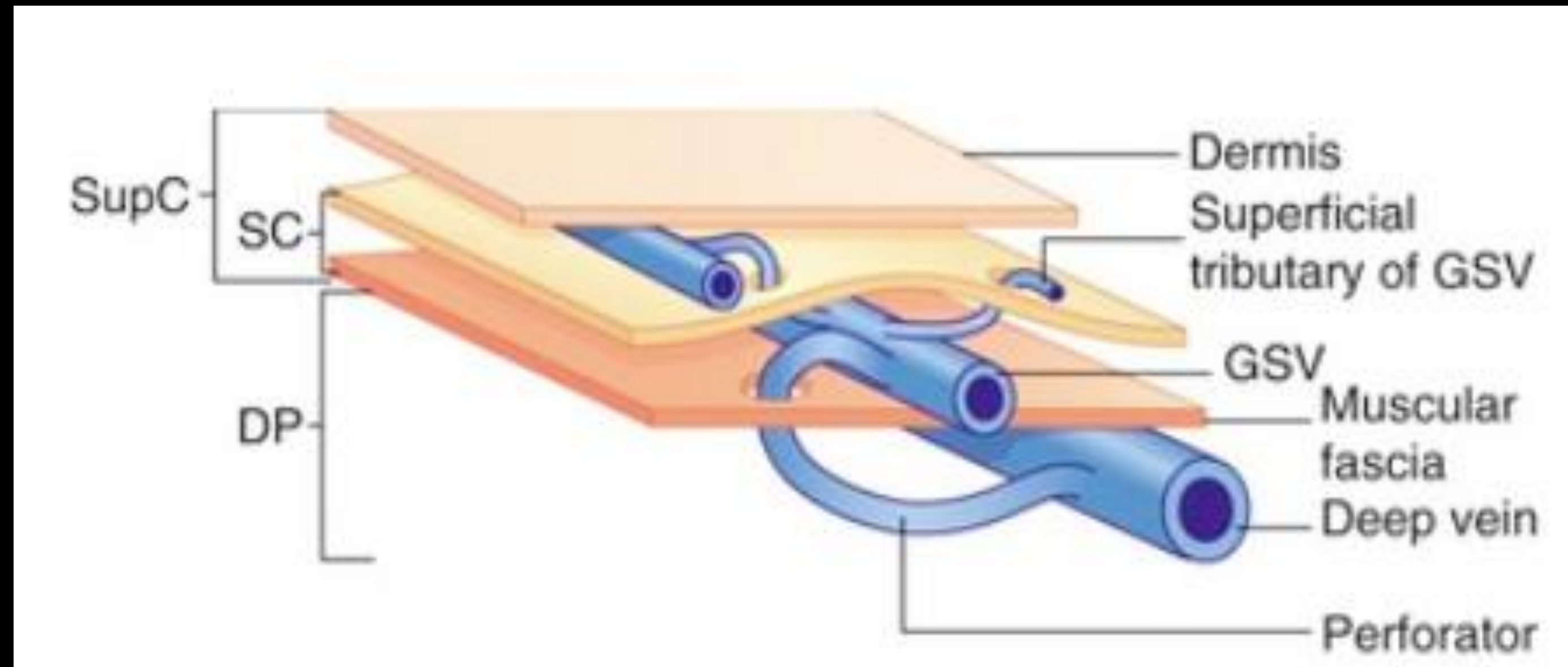
Deep venous system

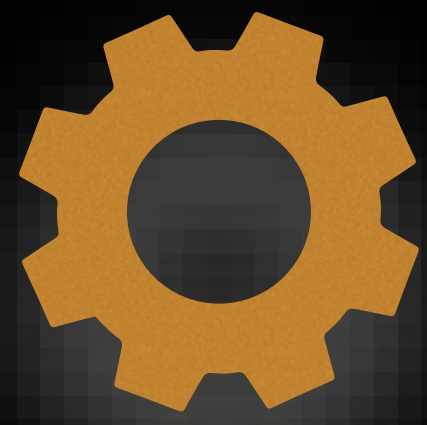




Basic Anatomy

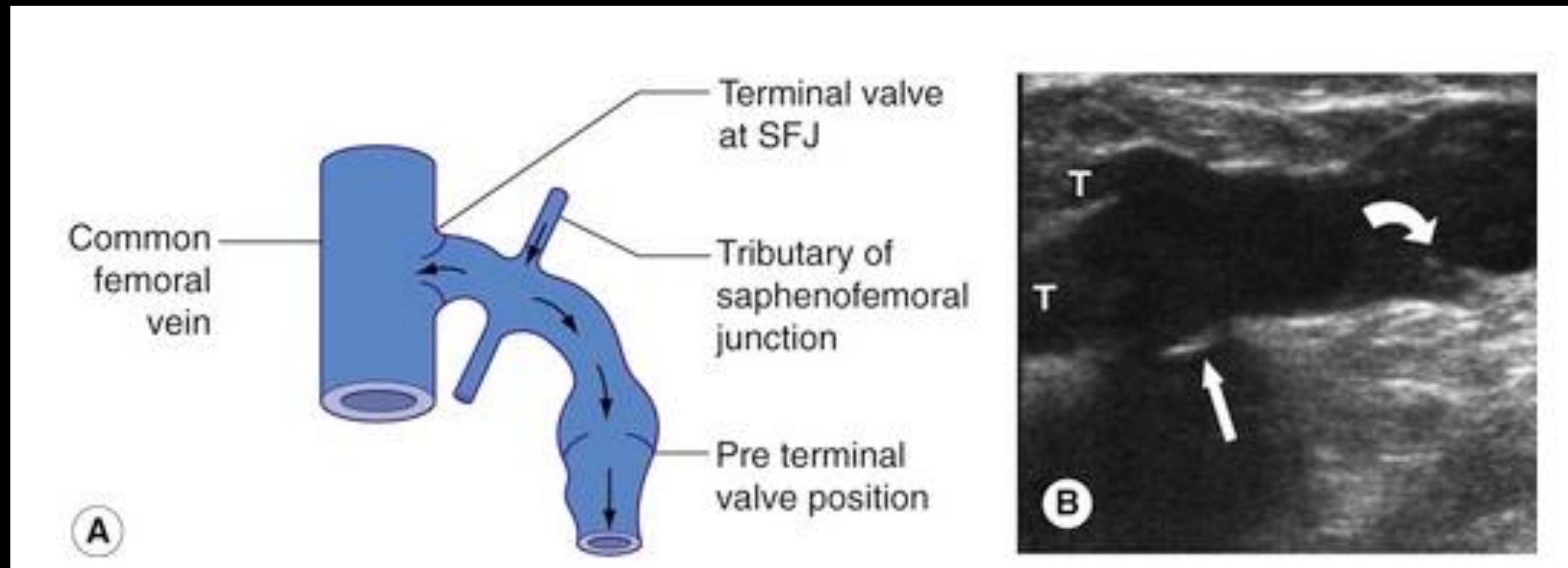
Fascia

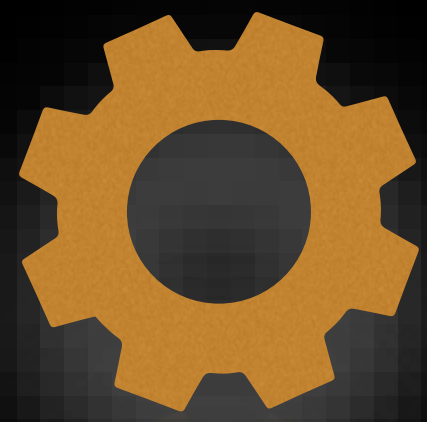




Basic Anatomy

Venous anatomy diagram

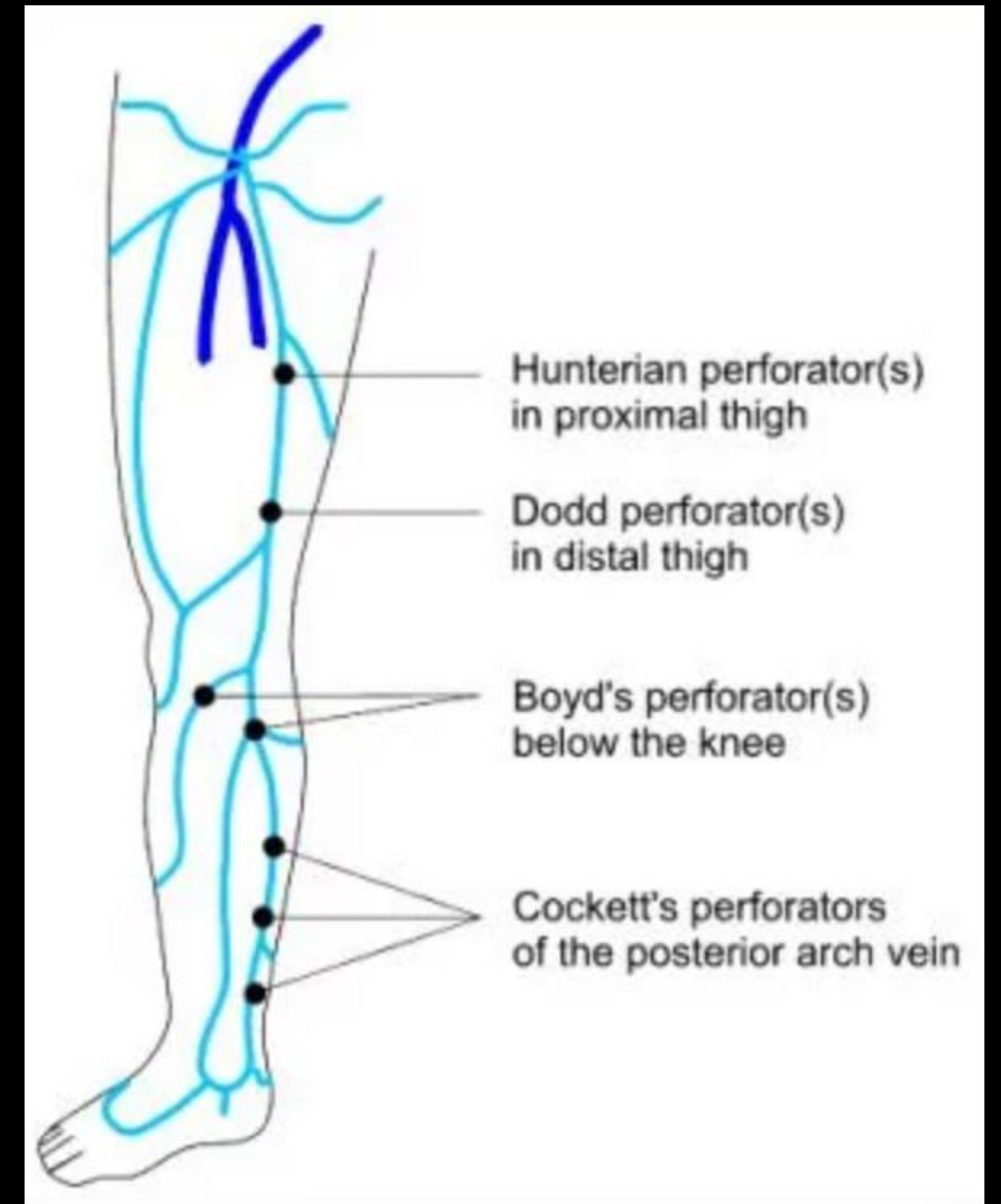


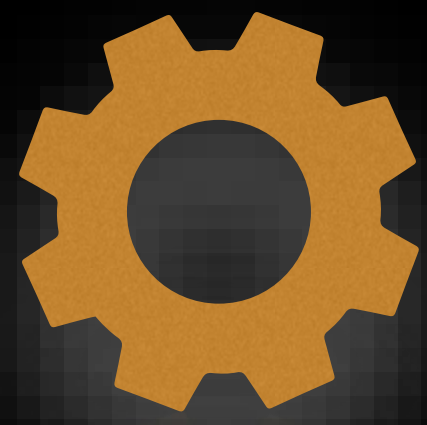


Basic Anatomy

- Hunter : proximal thigh
- Dodd : mid-distal thigh
- Boyd : BTK
- Cockkett : ankle level

Perforators





Basic Anatomy

Perforators

– Indirect perforators in GCM

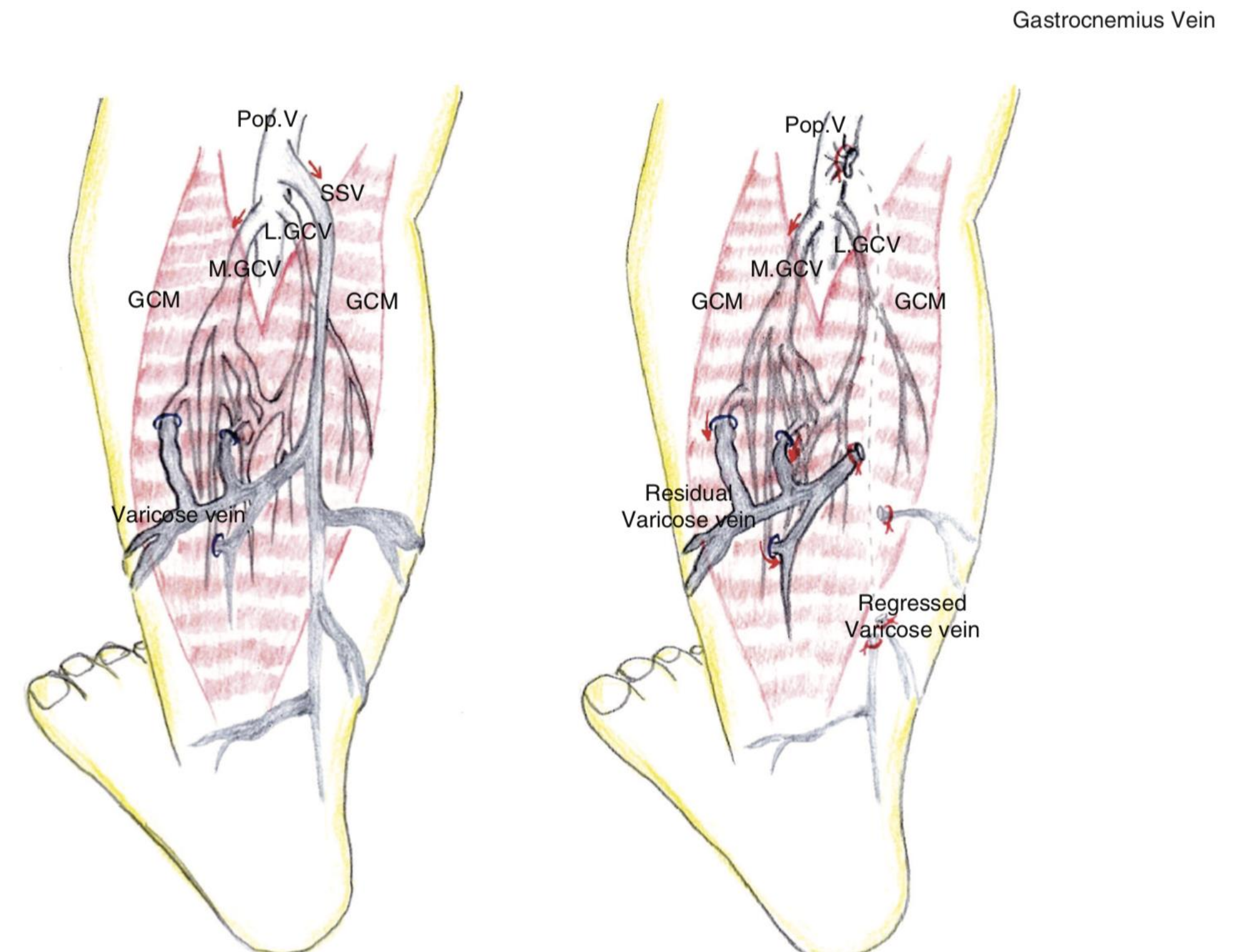
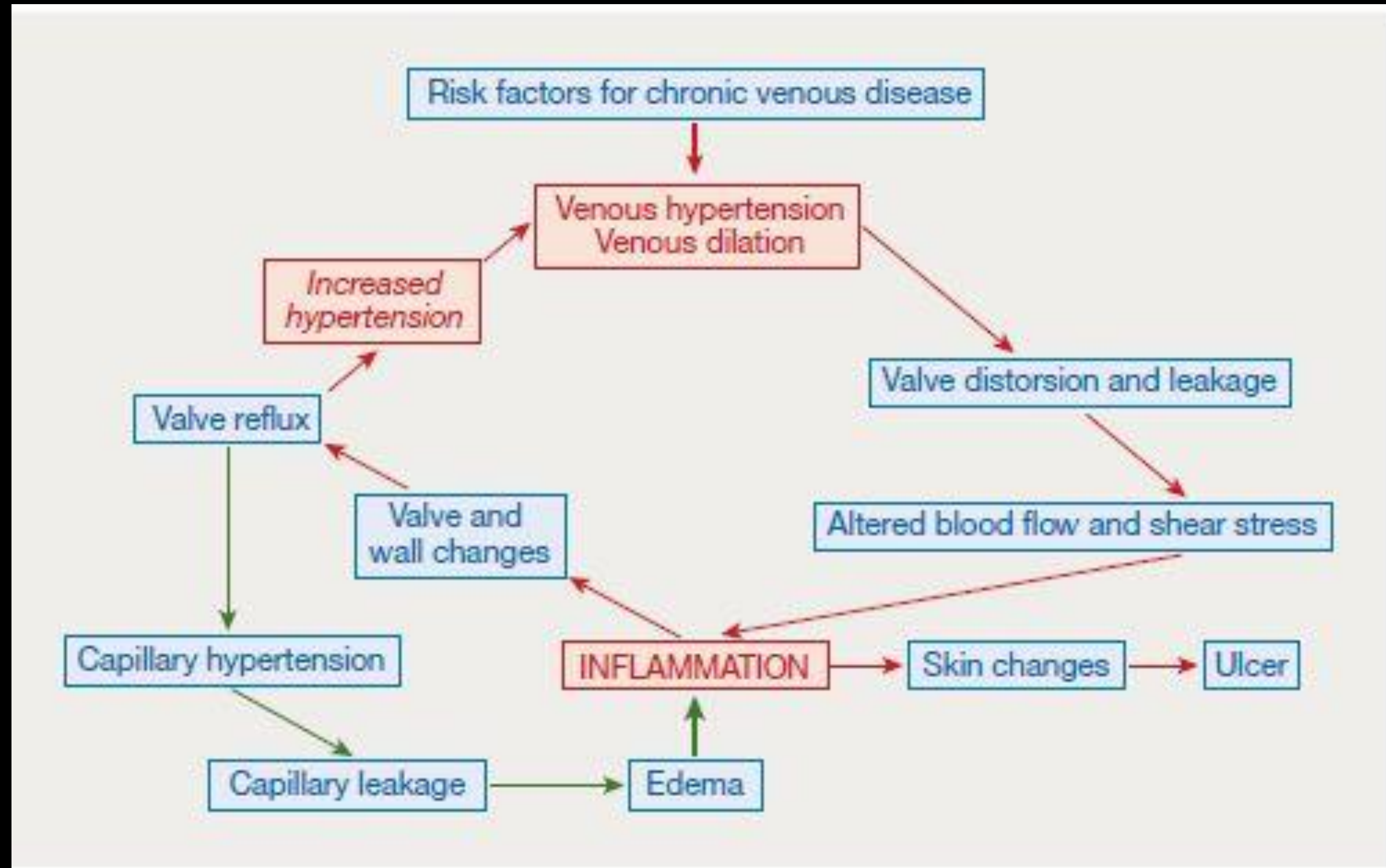


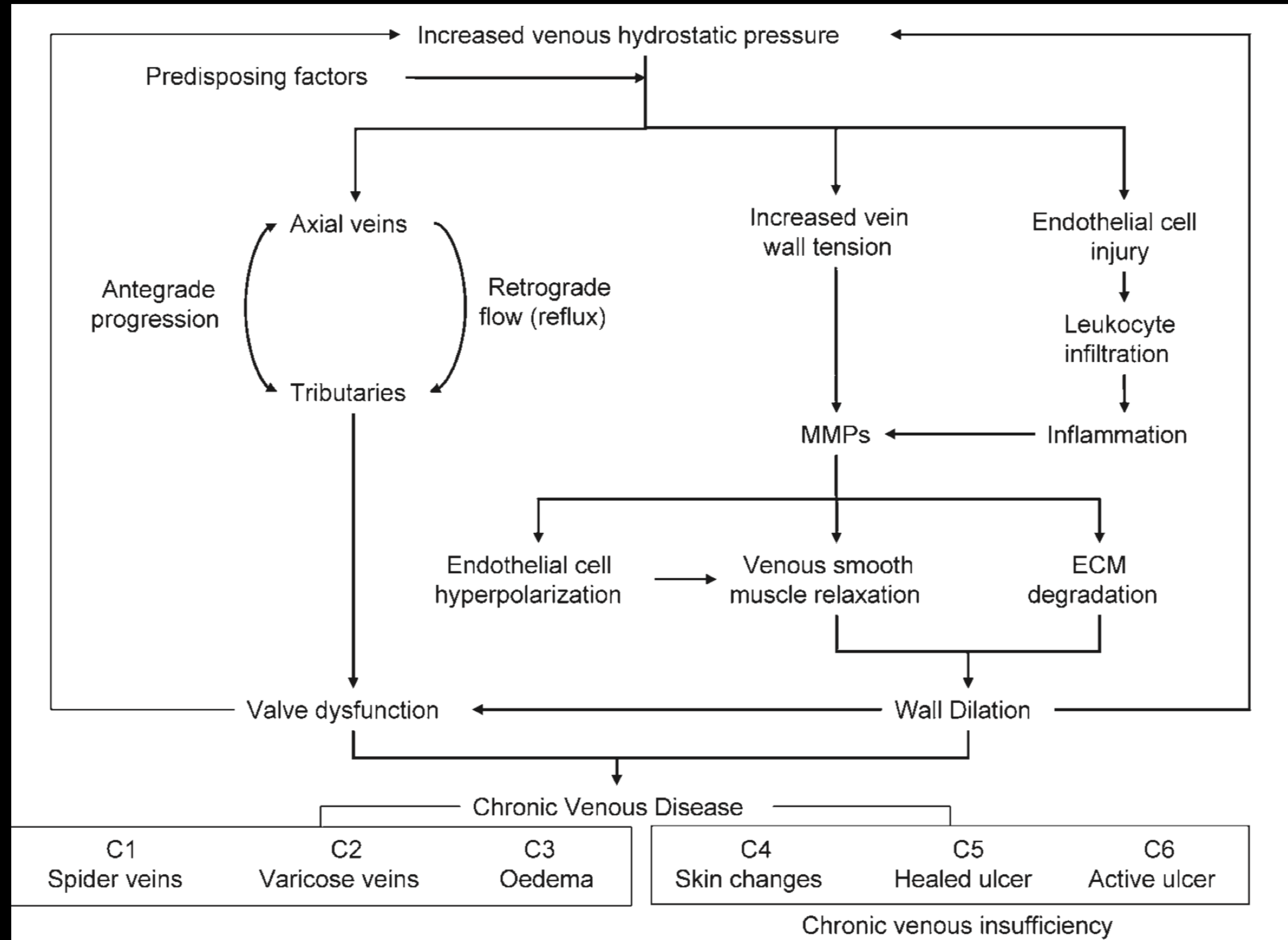
Fig. 3 (Left): The small saphenous vein and medial gastrocnemius vein were both incompetent. The tributaries of the small saphenous vein were varicose, and some of them had communications with the gastrocnemius vein via perforating veins which penetrated the fascia of the gastrocnemius muscle. These were 'indirect perforators' which originated from the *intramuscular* vein (gastrocnemius vein), and were different from 'direct perforators' which originate from the *intermuscular* vein (e.g. the posterior tibial vein). (Right): The postoperative status after stripping the small saphenous vein. Note that the residual varicose vein remains dilated by the refluxing flow via the perforating veins which communicate with the persistent varicose veins and the tributaries of the gastrocnemius vein. PopV: popliteal vein; M.GCV: medial gastrocnemius vein; L.GCV: lateral gastrocnemius vein; GCM: gastrocnemius muscle; SSV: small saphenous vein

Venous Hypertension



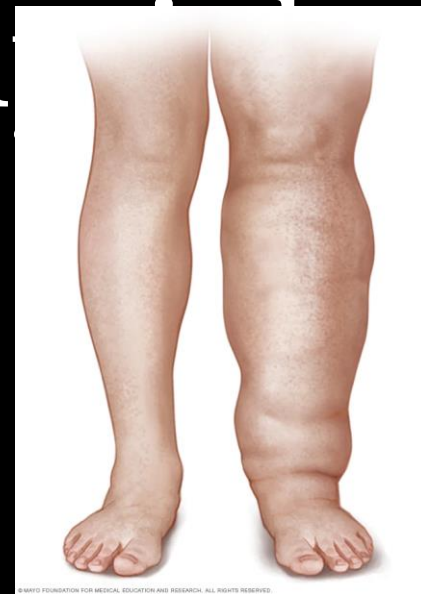
Burnand KG et al. The effect of sustained venous hypertension in the skin capillaries of the canine hind limb. Br J Surg 1982;69:41-4.

Venous Hypertension



악순환의 병태생리 (Pathophysiology)

부종악화



역류악화, 정맥고혈압 심화



피부변형
 궤양

판막 염증화

역류악화

판막파괴

역류발생

정맥확장

위험인자노출

무겁고 쥐





Classification

CEAP classification of chronic venous disease	Clinical classification
C0	No visible or palpable signs of venous disease
C1	Telangiectasies or reticular veins
C2	Varicose veins
C3	Edema
C4a	Pigmentation or eczema
C4b	Lipodermatosclerosis or athrophie blanche
C5	Healed venous ulcer
C6	Active venous ulcer

Etiological classification	Anatomical classification	Pathophysiology
Ec: congenital	As: superficial veins	Pr: reflux
Ep: primary	Ap: perforating veins	Po: obstruction
Es: secondary	Ad: deep veins	Pr,o: reflux and obstruction
En: no venous cause identified	An: no venous location identified	Pn: no venous pathophysiology identifiable

S = Symptomatic, including ache, pain, tightness, skin irritation, heaviness, and muscle cramps, and other complaints attributable to venous dysfunction
 A = Asymptomatic

Reflux Pattern

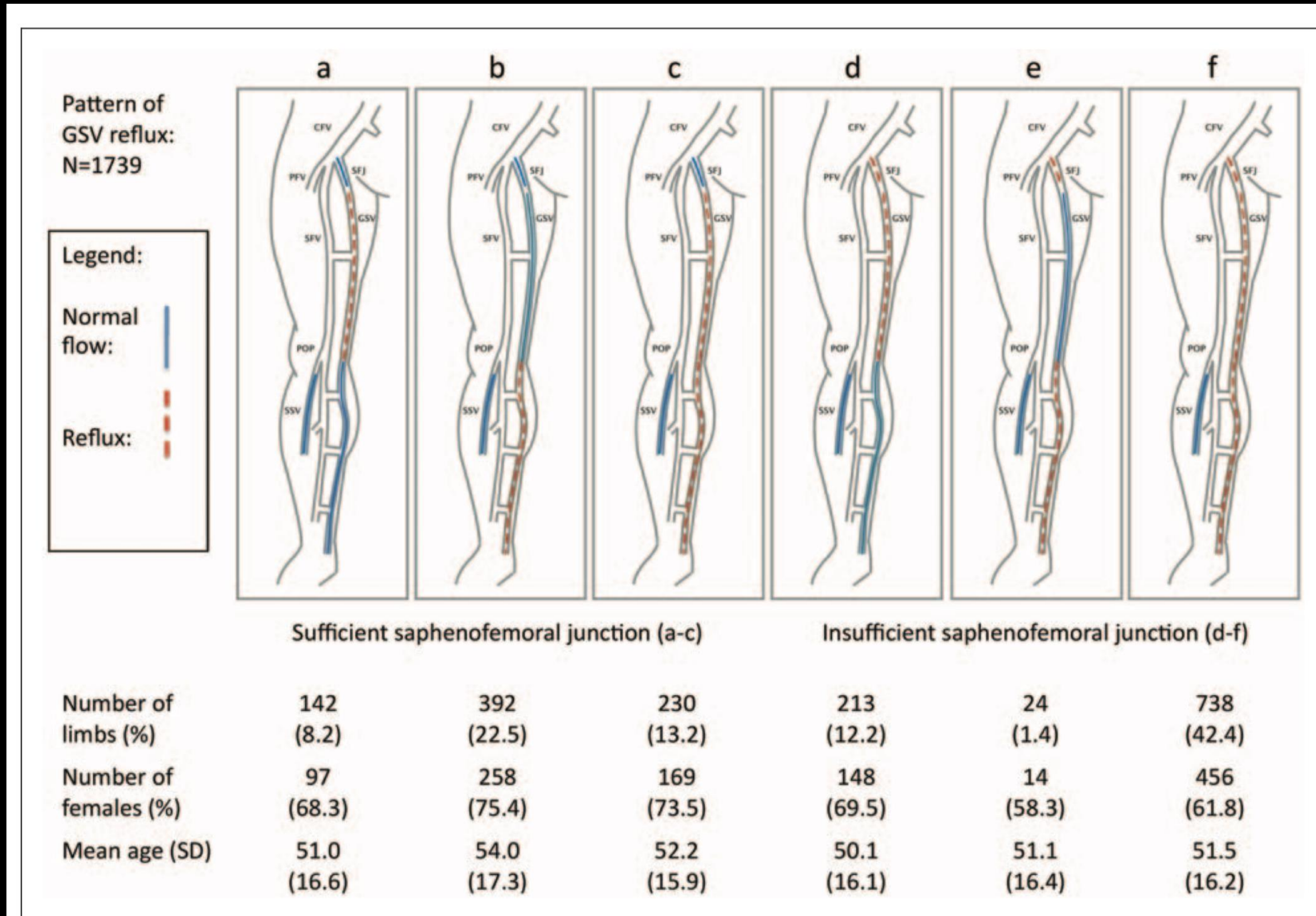


Figure 2. Patterns of GSV incompetence: (a) to (c) sufficient saphenofemoral junction and (d) to (f) insufficient saphenofemoral junction.

GSV: great saphenous vein.

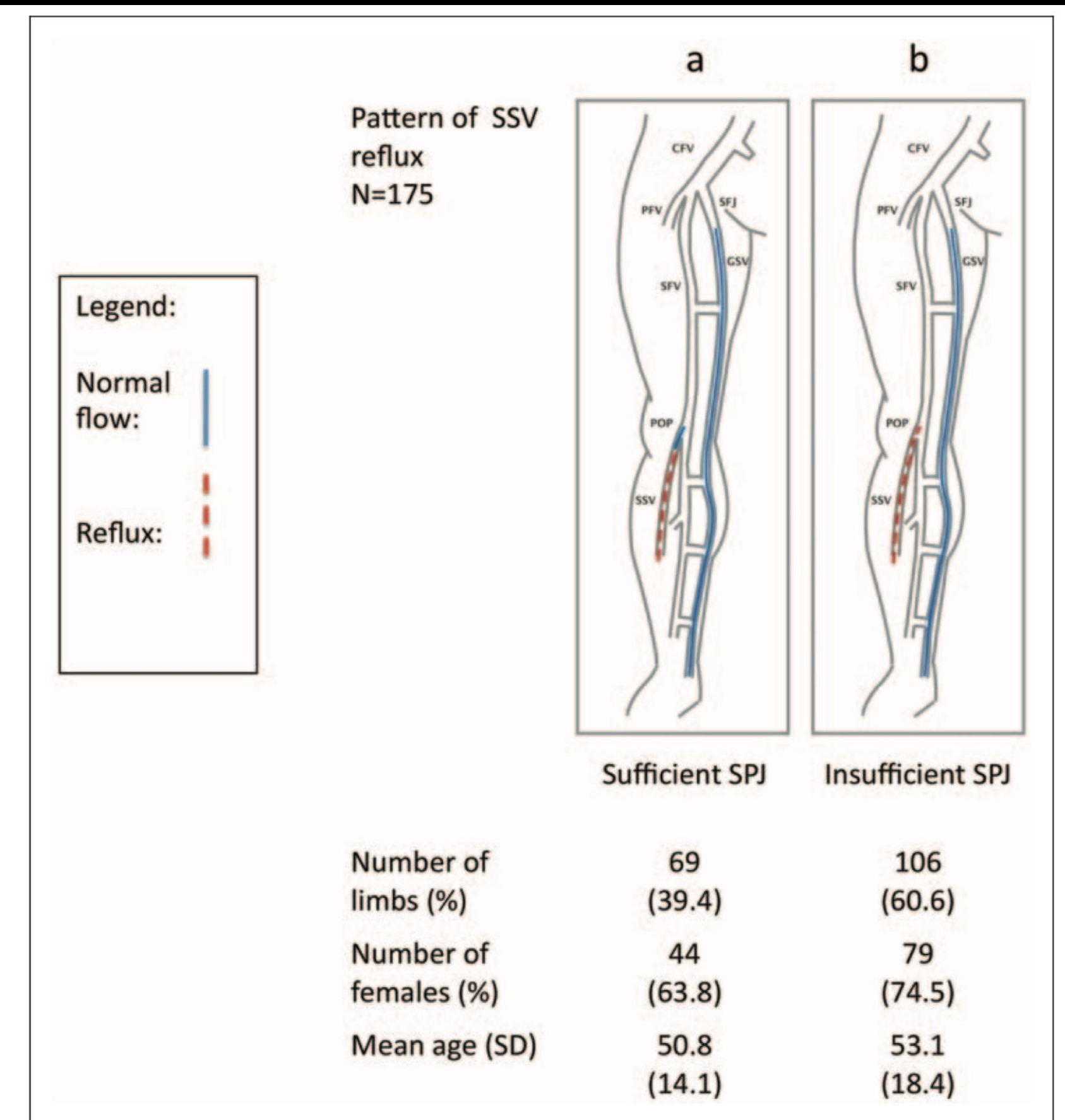


Figure 3. Patterns of SSV reflux: (a) sufficient SPJ and (b) insufficient SPJ.

SSV: small saphenous vein; SPJ: saphenopopliteal junction.



혈관의 변화

조직학적 변화

- collagen↑, smooth muscle cells and elastin ↓
- : muscle components disorganization, elastic fibres disruption, fibrosis.

혈관의 변화

조직학적 변화

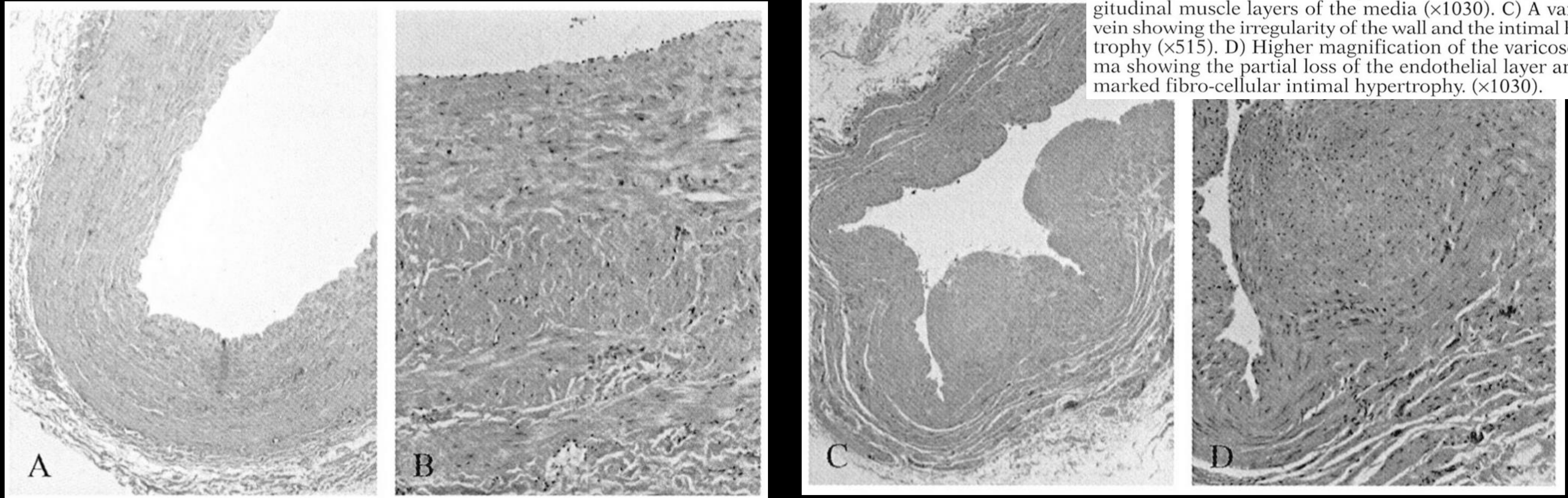
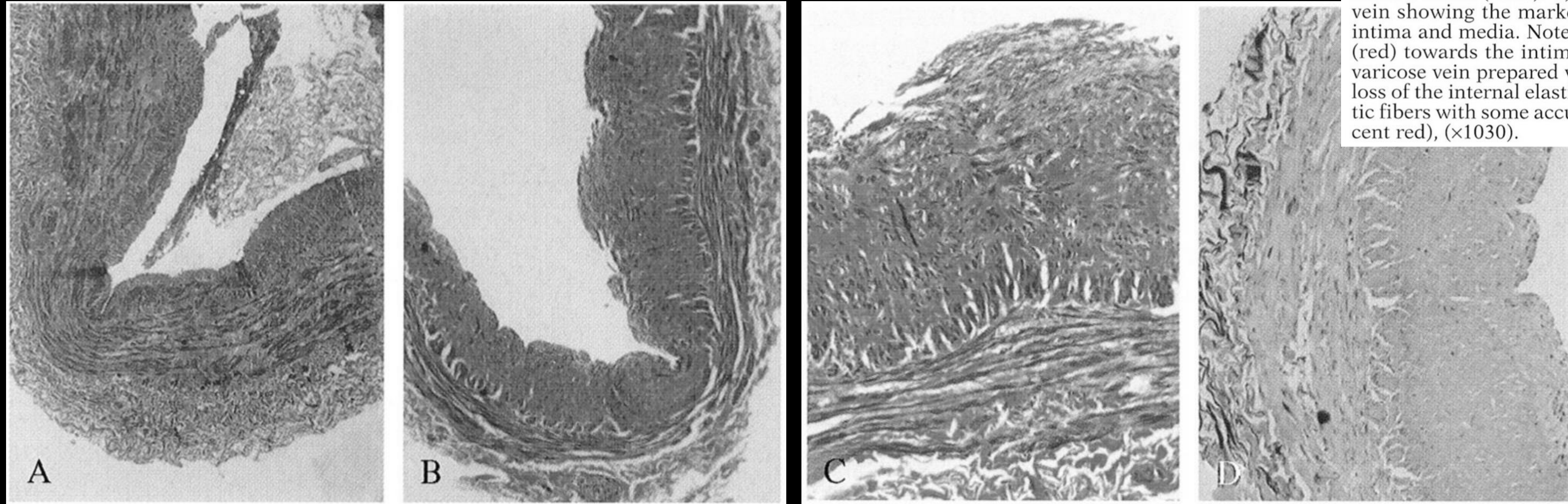


Fig. 1.—Hematoxylin and Eosin sections of normal and varicose veins. A) Control long saphenous vein (LSV) showing the regularity of the wall and the normal thickness of the 3 layers: intima, media and adventitia ($\times 515$). B) A higher magnification of the previous section showing the intact endothelial layer and the normal arrangement of the circular and longitudinal muscle layers of the media ($\times 1030$). C) A varicose vein showing the irregularity of the wall and the intimal hypertrophy ($\times 515$). D) Higher magnification of the varicose intima showing the partial loss of the endothelial layer and the marked fibro-cellular intimal hypertrophy. ($\times 1030$).

혈관의 변화

조직학적 변화

Fig. 2.—Masson's trichrome and von Gieson sections of normal and varicose veins. A) A control LSV showing the normal quantity and arrangement of both the intimal and medial smooth muscle cells (red), ($\times 515$). B) A varicose vein showing the disproportionate increase in the thickness of the intima and the decrease in thickness of the media. Note the loss of both the normal arrangement and concentration of the intimal SMCs ($\times 515$). C) Higher magnification of a varicose vein showing the marked fibrous infiltration (blue) of the intima and media. Note the migration of the intimal SMCs (red) towards the intimal surface ($\times 1030$). D) Section of a varicose vein prepared with von Gieson's stain showing the loss of the internal elastic lamina and scattering of few elastic fibers with some accumulation in the adventitia (fluorescent red), ($\times 1030$).



Types of venous reflux pattern

정맥류의 형태적 분류



정맥류의 증상

- : 오후에 무거워요
- : 쥐가나요 (불면증)
- : 엉치통, 허리통
- : 종아리 저리고 뻣김
- : 발바닥 뜨거움



정맥류의 합병증 1



Lipodermatosclerosis
(LDS, C4)



Venous Ulcer
(C5)

정맥류의 합병증 2

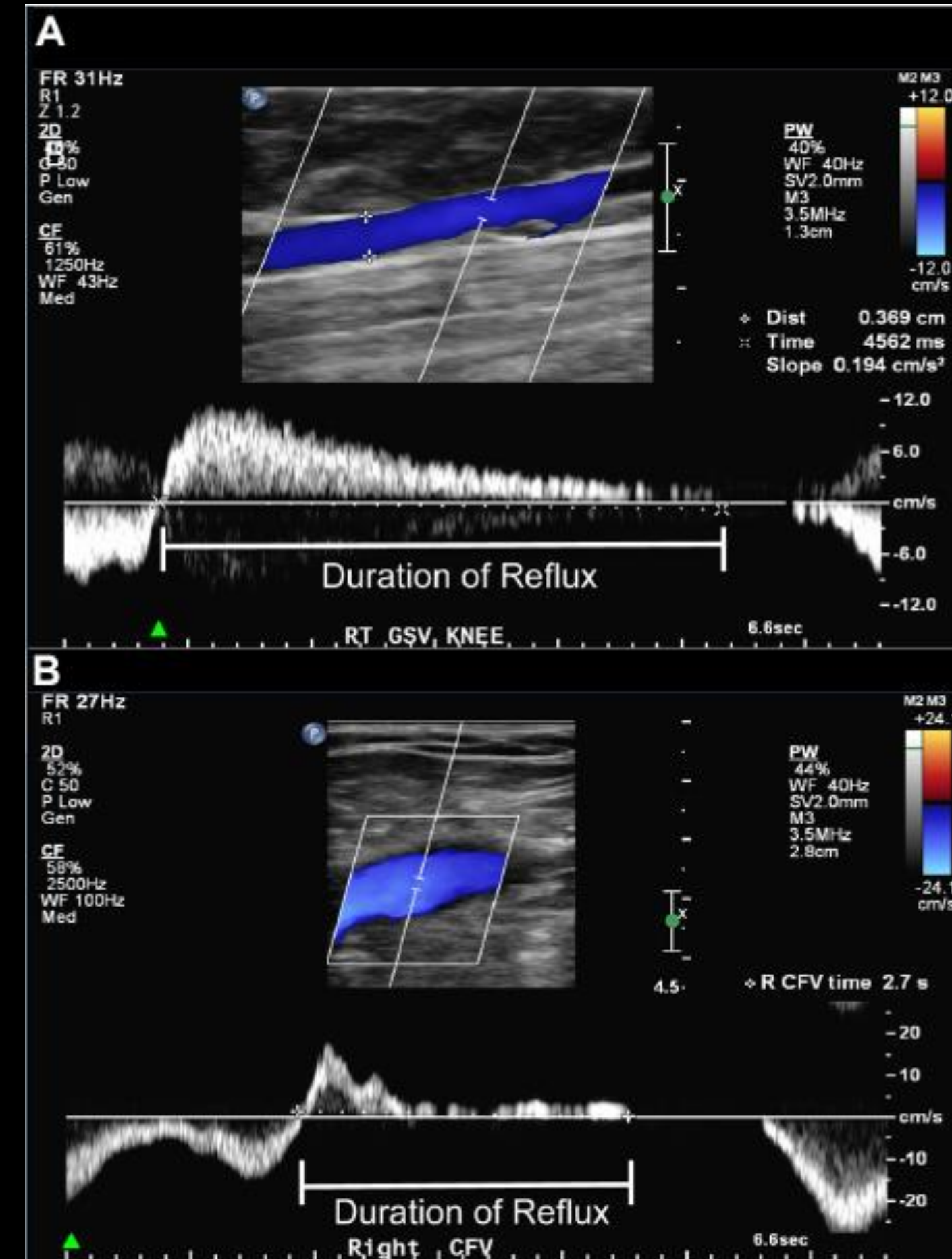
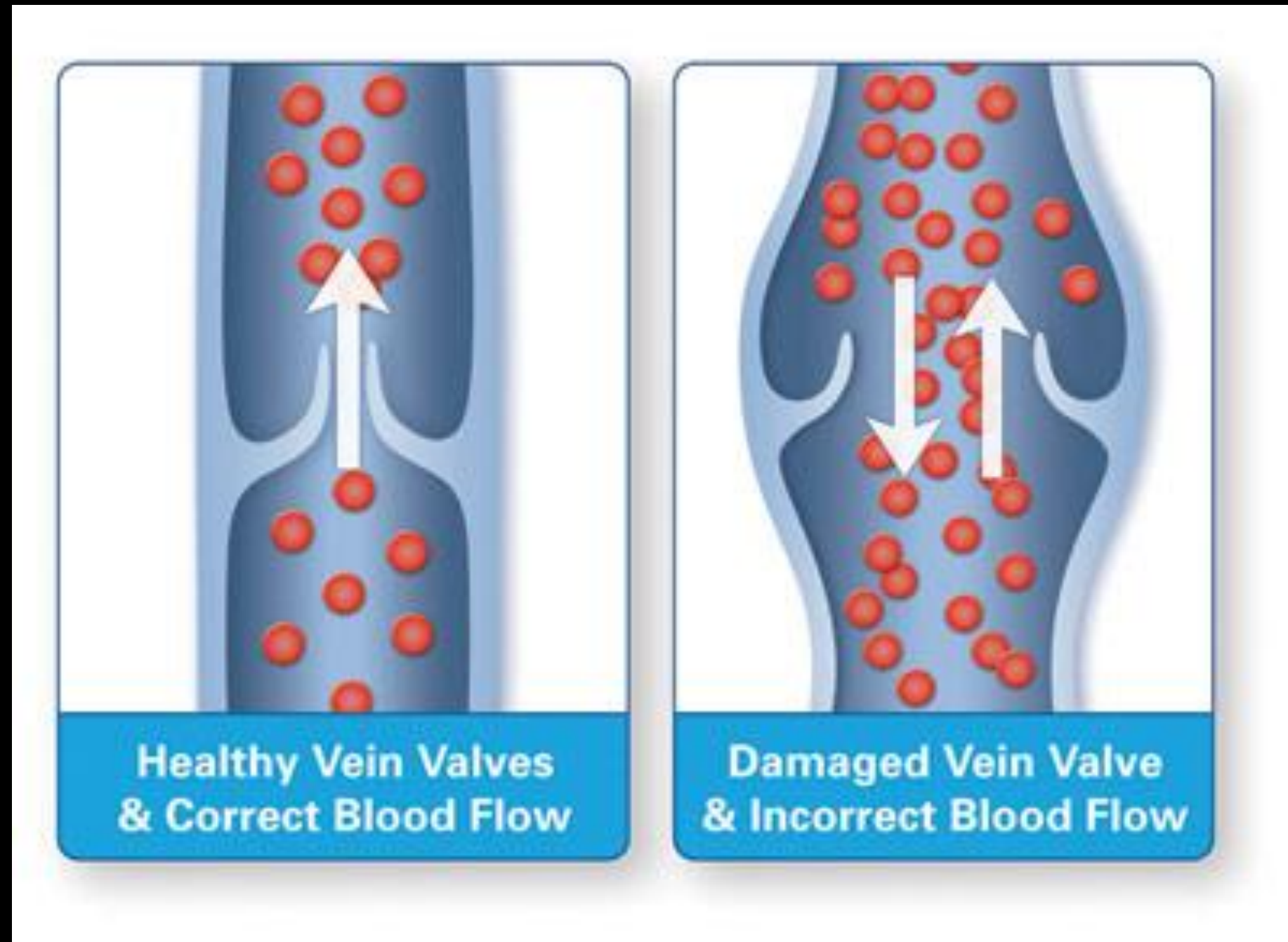


Eczema



Spontaneous Bleeding

정맥류의 정밀 초음파 검사



Treatment Protocol

Guidelines	
SVS/AVF	Endothermal ablation → surgery Truncal varicosity에서 Endothermal ablation → foam sclerotherapy Open surgery: SFJ 에서 ligation
NICE	Endothermal ablation → Ultrasound guided foam sclerotherapy → surgery → compression
SIR etc	AP, EVTA, sclerotherapy
KSVS	*RFA
ESVS	Endothermal ablation → Ultrasound guided foam sclerotherapy → surgery → compression



Medical Observation



Compressive Treatment



Compression Therapy

Types

★ Anti Embolic Stockings

: to reduce the risk of DVT

: provide gradient compression

: designed for bed-ridden pts and do not meet for ambulatoriers.

: Although often used interchangeably, they have different levels of compression and indications



Compression Therapy

Types

- ★ Graduated or Medical Compression Stockings (MCS)
 - : greatest degree of compression at the ankle, and gradually decreases
 - : to treat CVD and edema, designed for ambulatory patients
 - : manufactured under strict medical and technical specifications, including consistency and durability, to provide a specific level of ankle pressure and graduation of compression



Sclerotherapy



Venous Stripping



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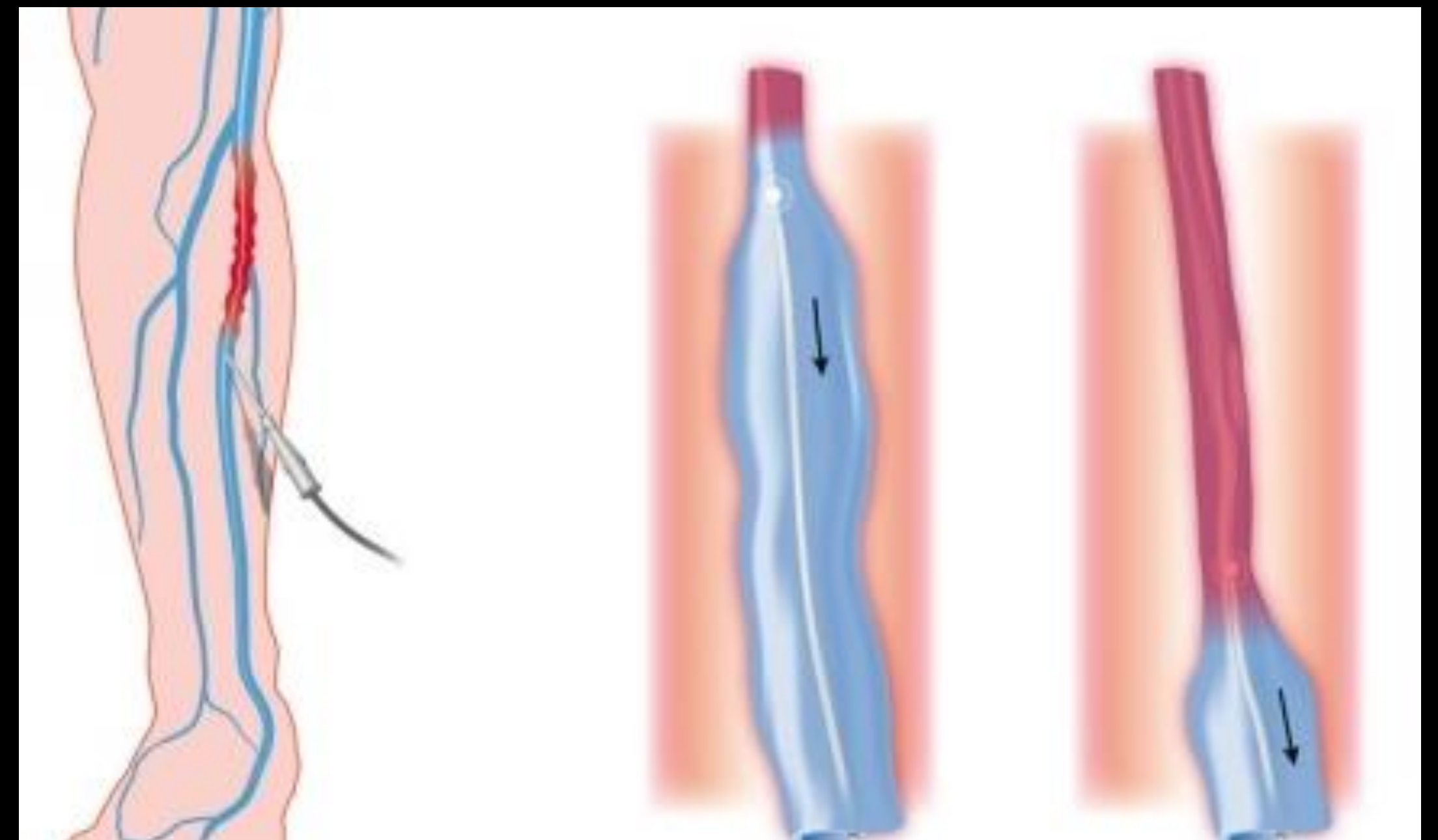
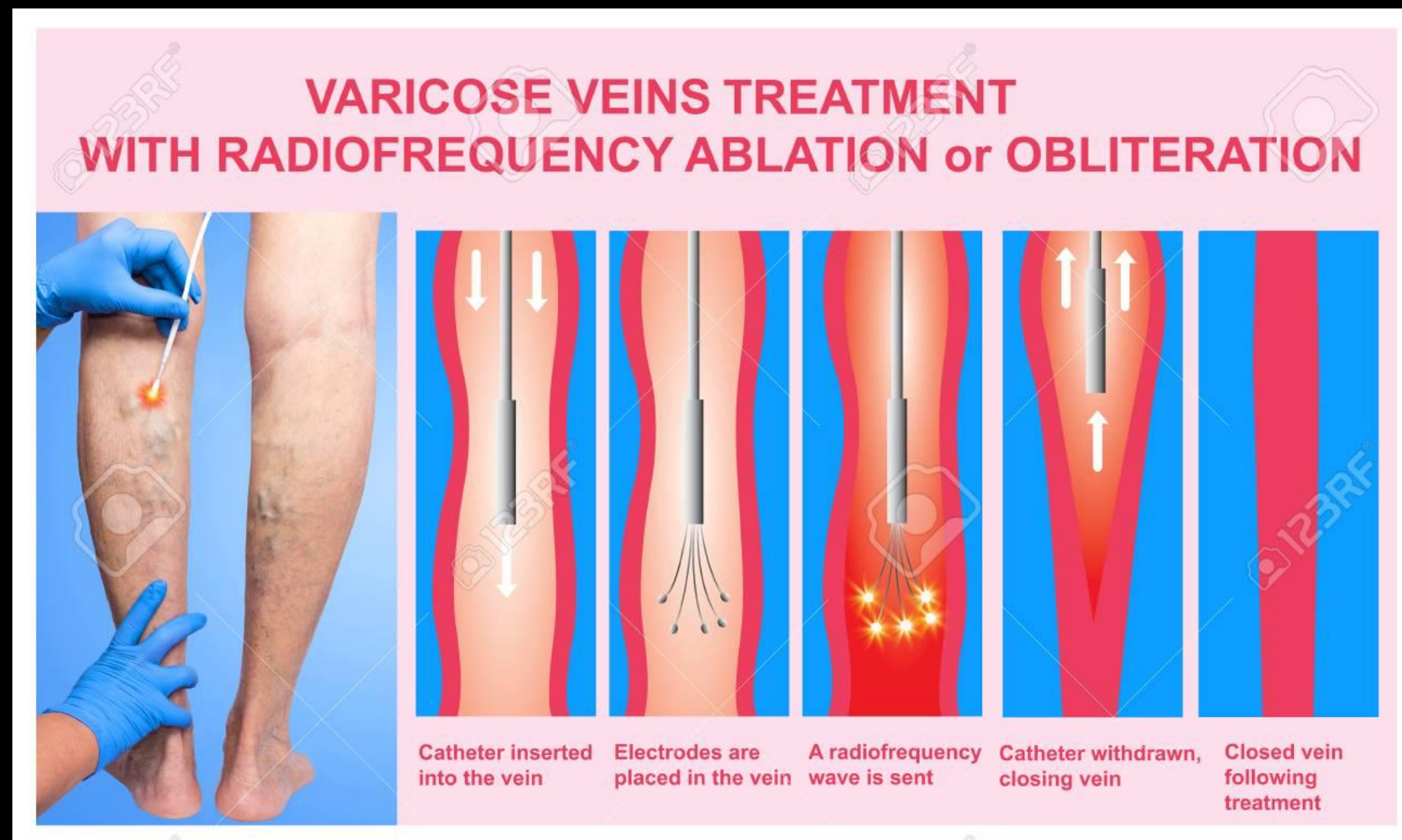
Ambulatory Phlebectomy (AMP)

Recommendation 51	Class	Level	References
When performing endovenous thermal ablation of a refluxing saphenous trunk, adding concomitant phlebectomies should be considered.	Ila	B	447, 448
Recommendation 52			
To treat tributary varicose veins, ambulatory phlebectomy should be considered.	Ila	C	15, 434-437, 443, 444

2015 Eur J Vasc Endovasc Sur.49;678-737



Endovenous Treatment



Ambulatory Phlebectomy (AMP)

Technique

