

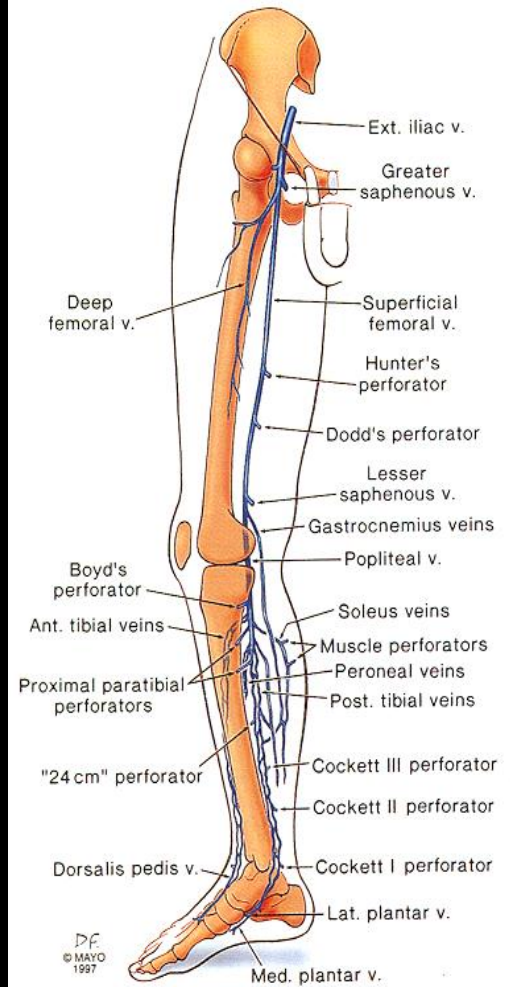
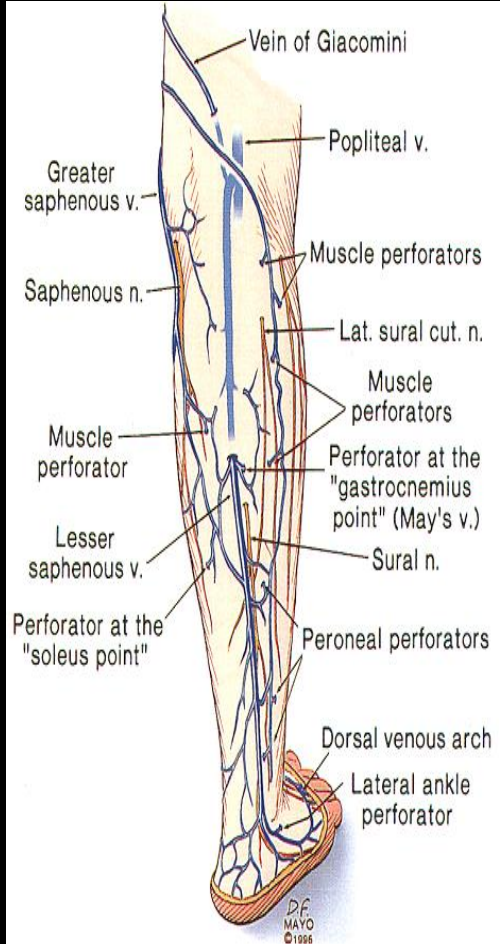
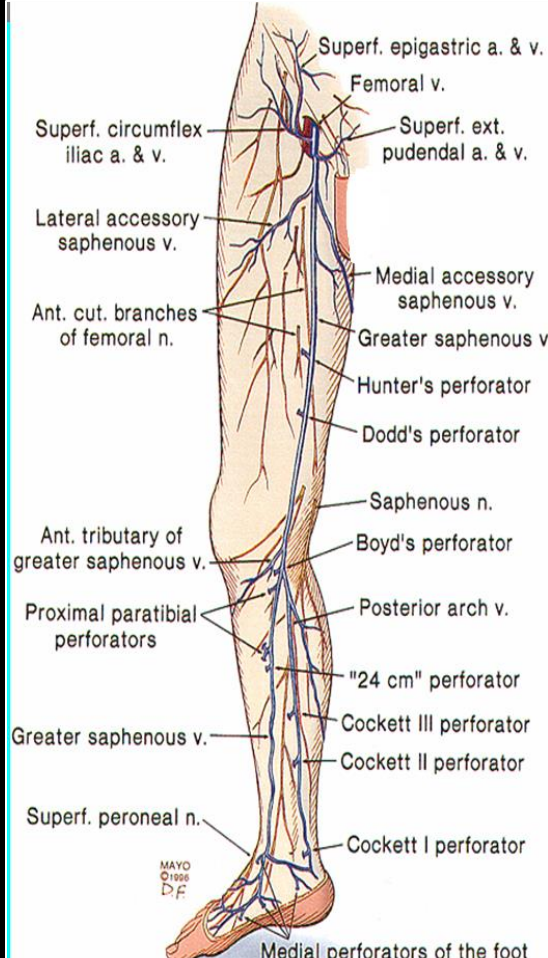


# Chronic Venous Insufficiency

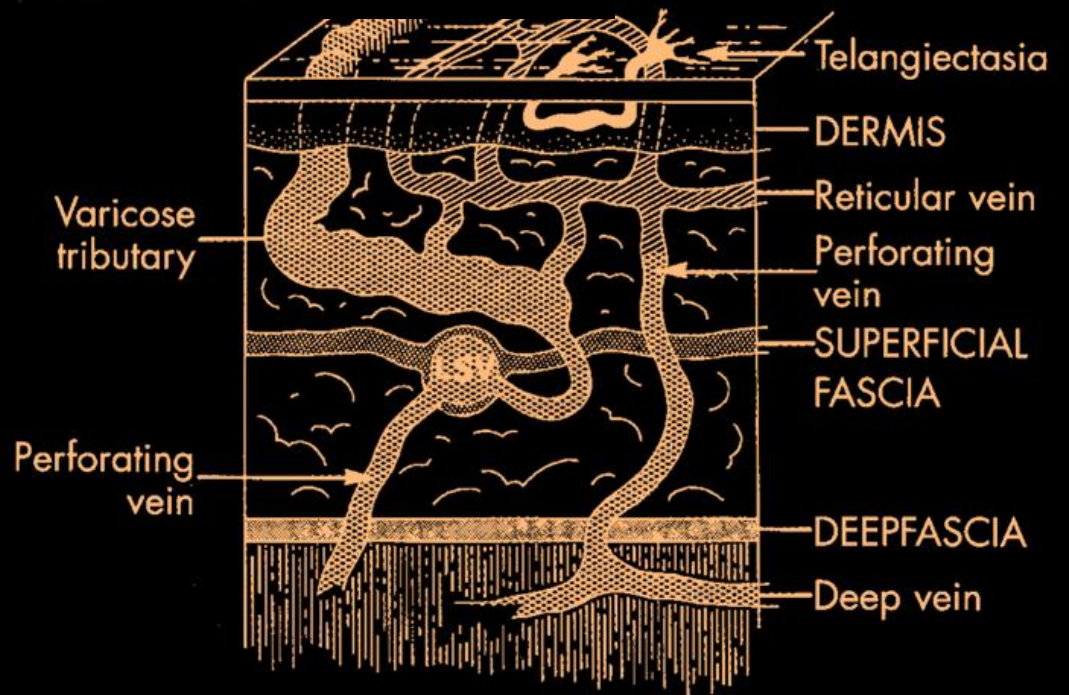
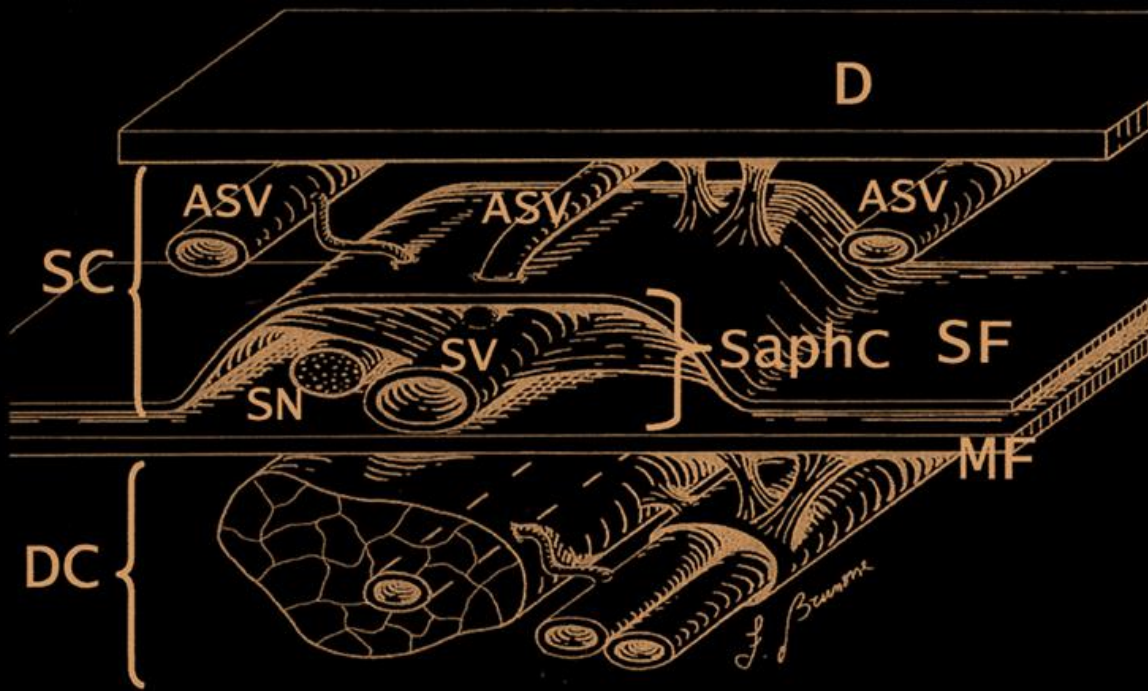
Dr. Talal A. Altuwaijri

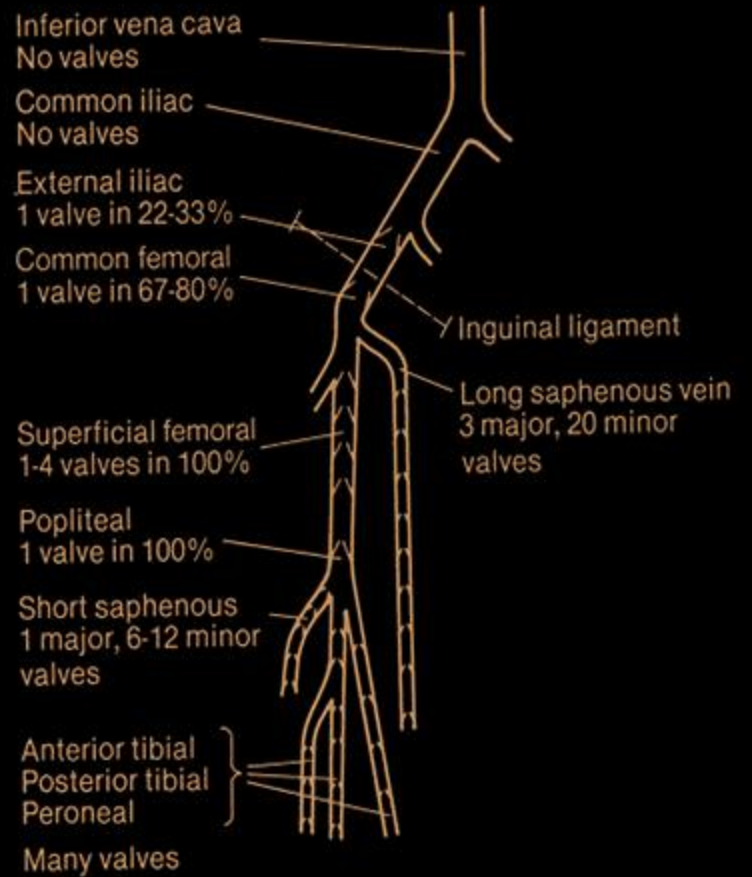
A vertical strip on the left side of the image shows a microscopic view of plant tissue, likely a stem or root, stained with a red dye. The tissue shows distinct cellular structures, including elongated cells and vascular bundles.

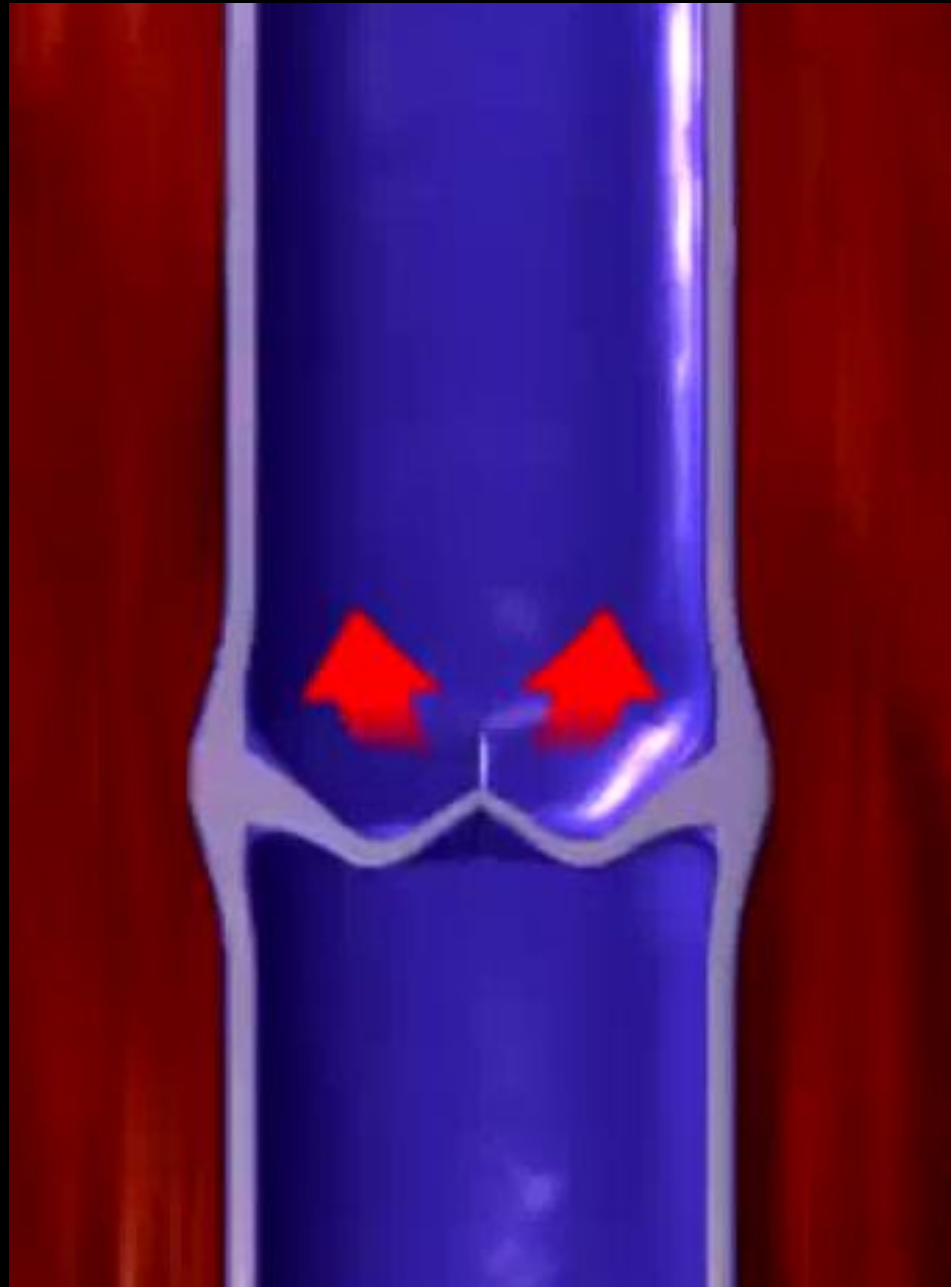
# *Anatomy*



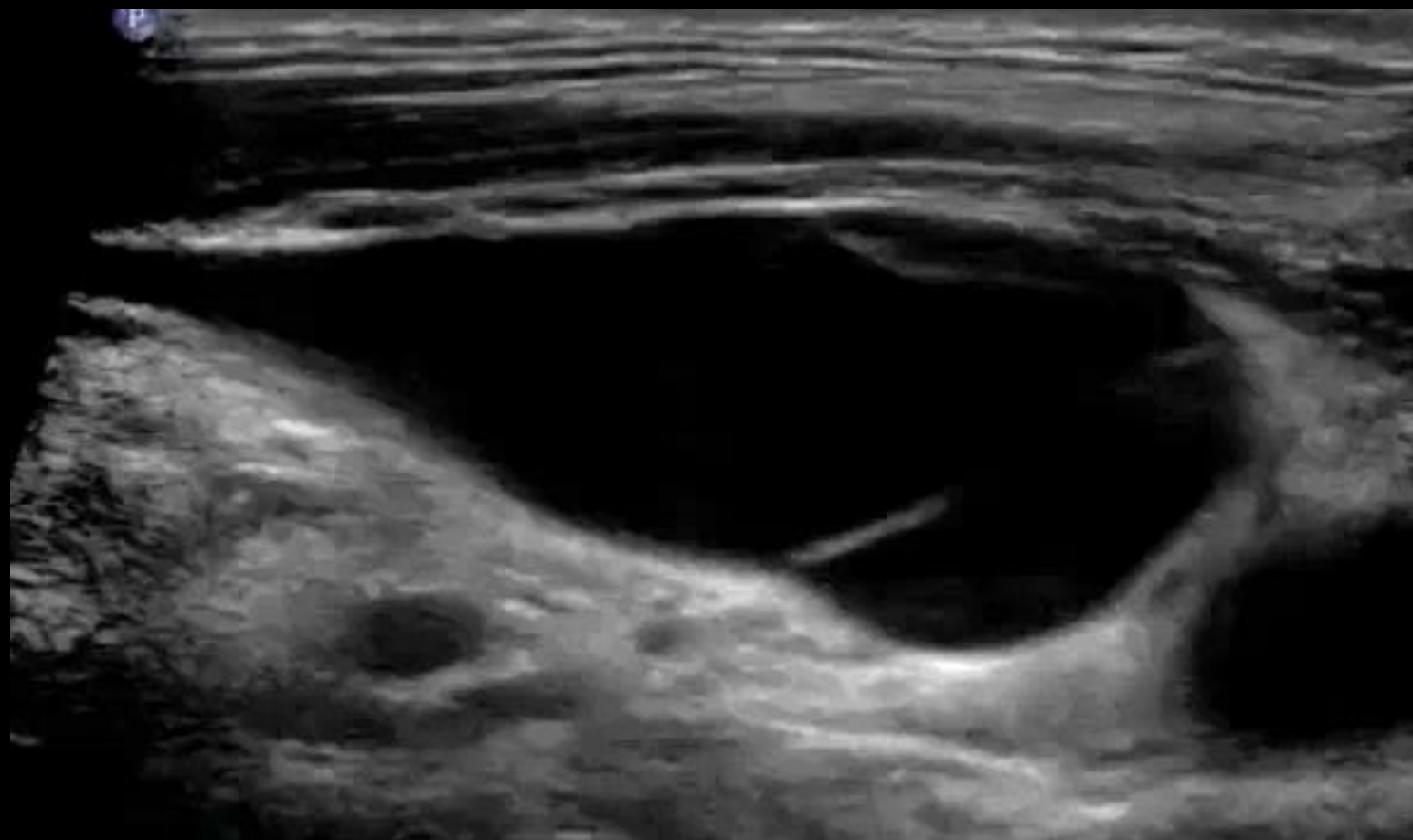








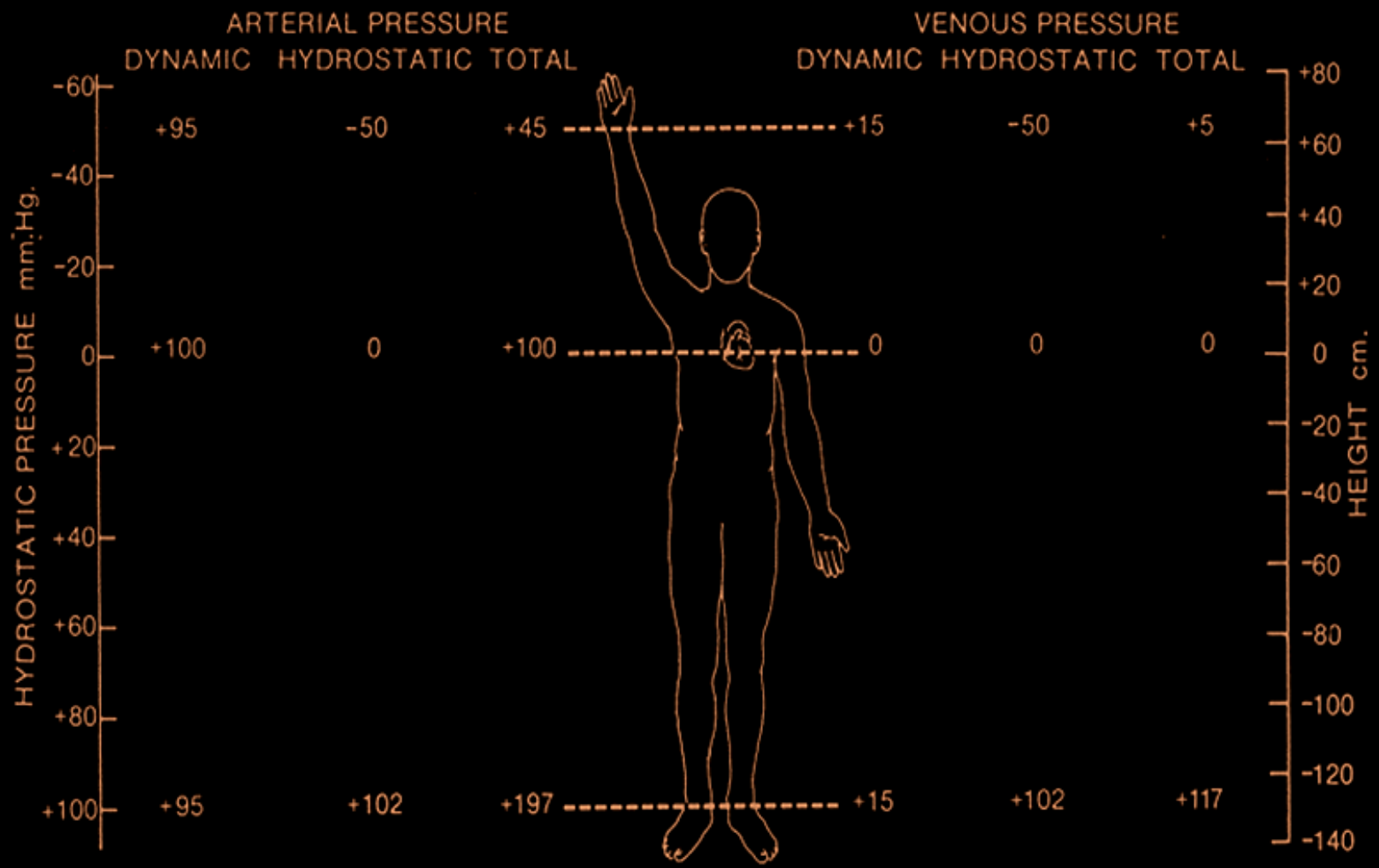


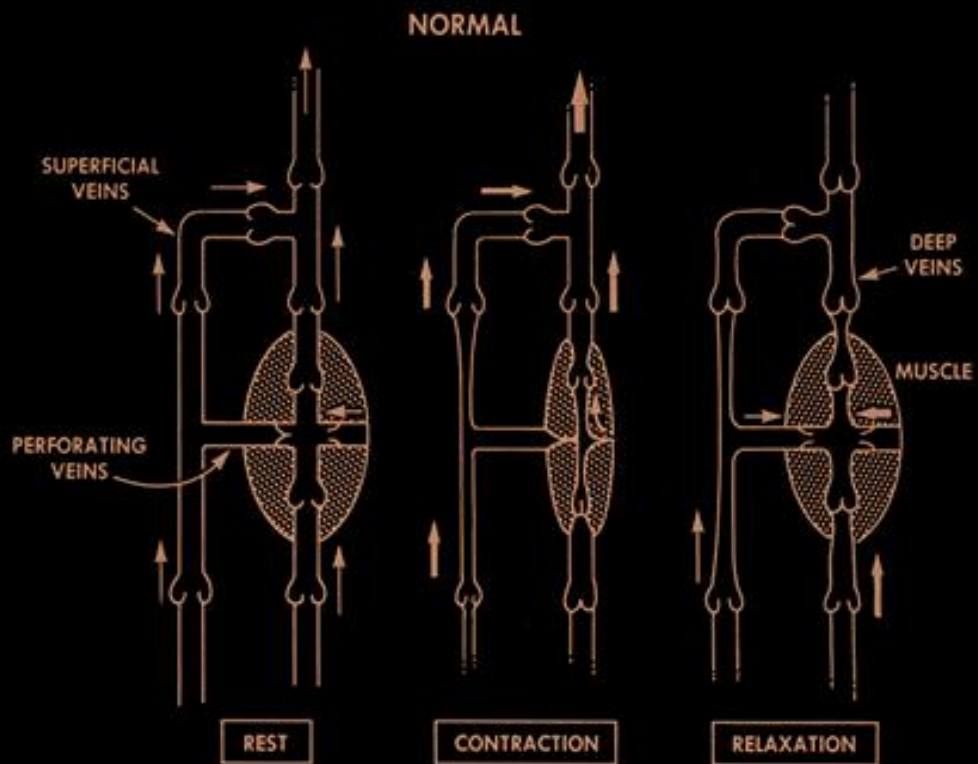
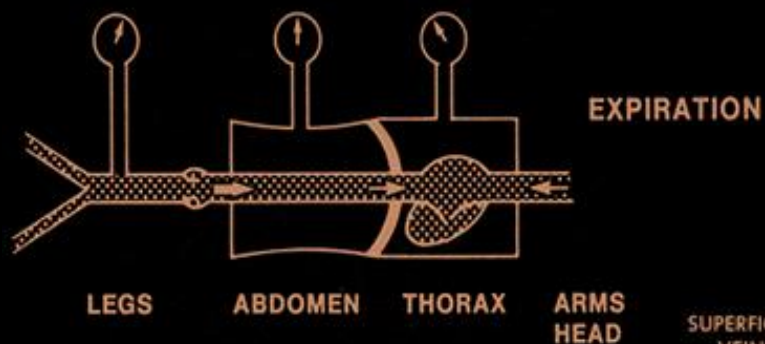
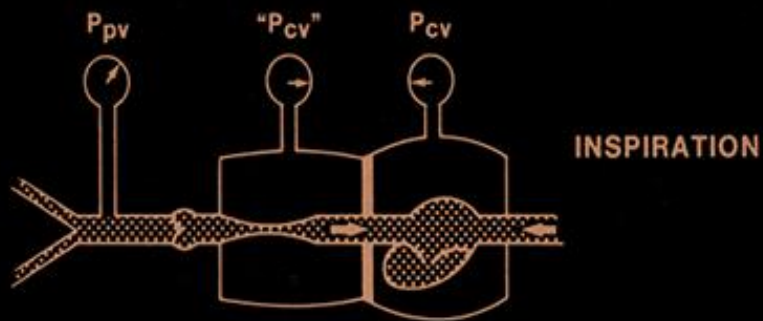


A vertical strip on the left side of the image shows a microscopic view of plant tissue, likely a stem or root, stained with a red dye. The tissue shows distinct cellular structures, including elongated cells and vascular bundles.

# *Physiology*

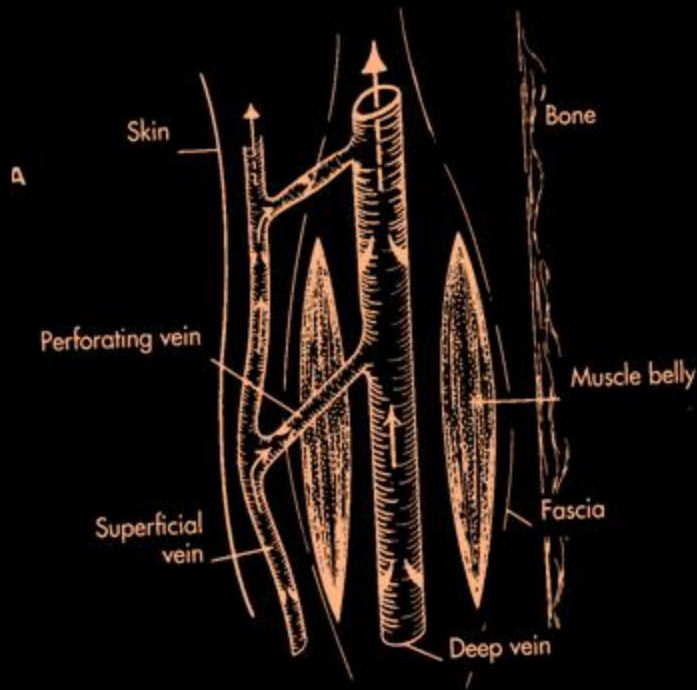






# Calf Muscle Pump

Rest



Contraction




# Ambulatory Venous Pressure

<u>Position</u>	<u>mm Hg</u>
Supine	10
Standing	90
Walking*	25

\* 7 steps = maximum effect





What is Chronic venous  
insufficiency?

A vertical strip on the left side of the slide shows a microscopic view of plant tissue, likely a stem or root, stained with a red dye. The tissue shows distinct cellular structures, including elongated cells and vascular bundles.

# Pathophysiology

Reflux (90%)

Obstruction (10%)

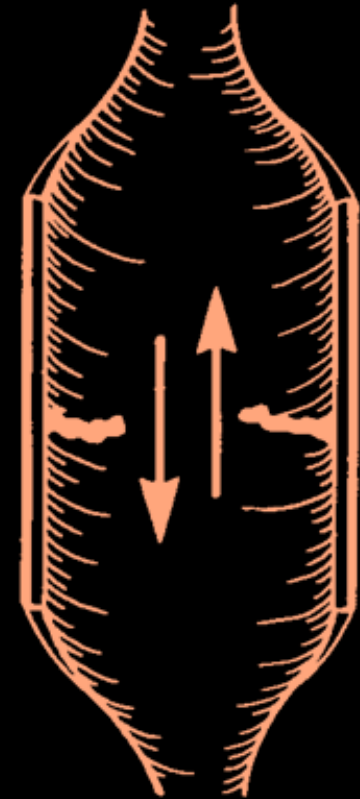
PROXIMAL



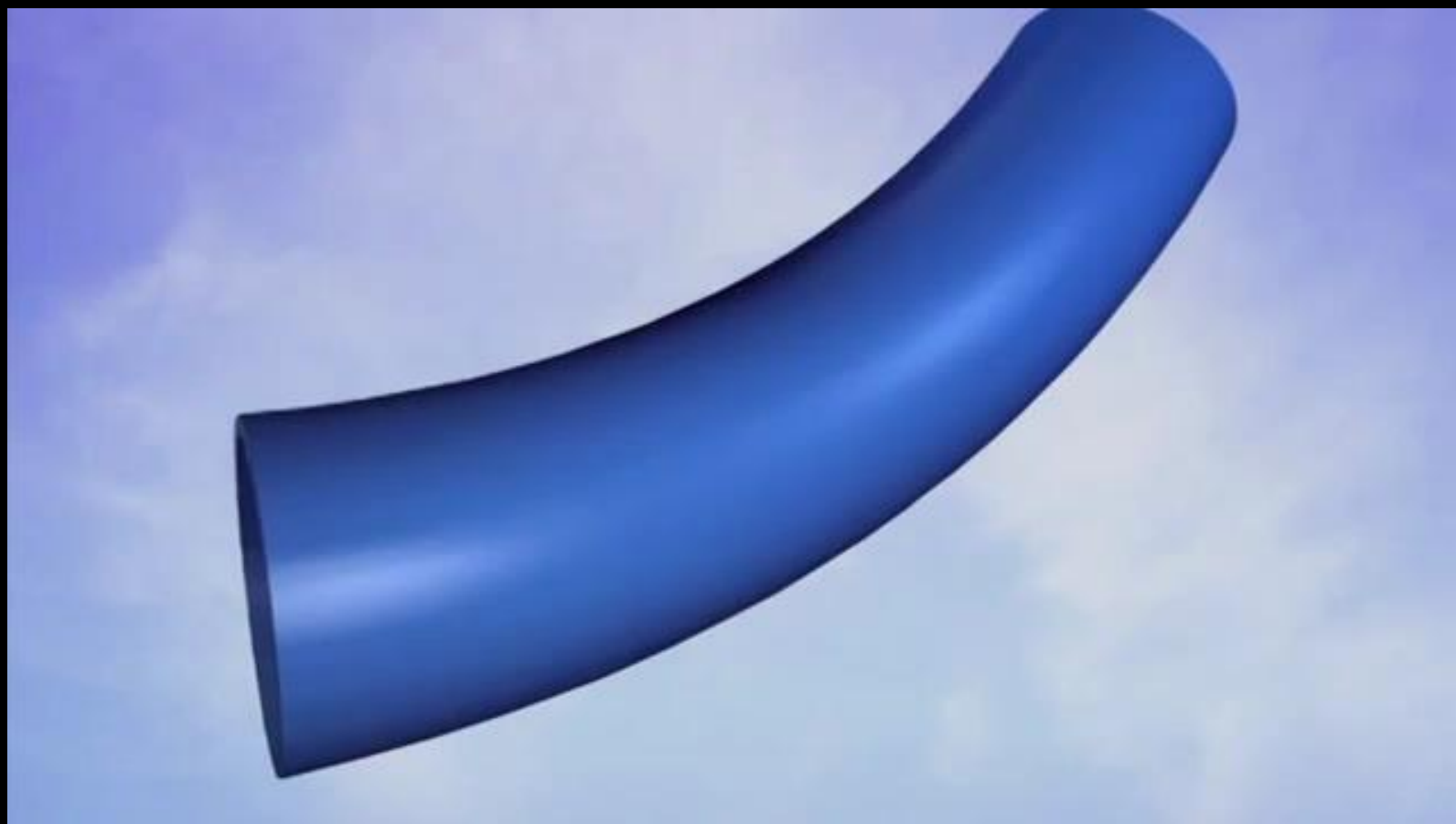
Normal flow  
to heart



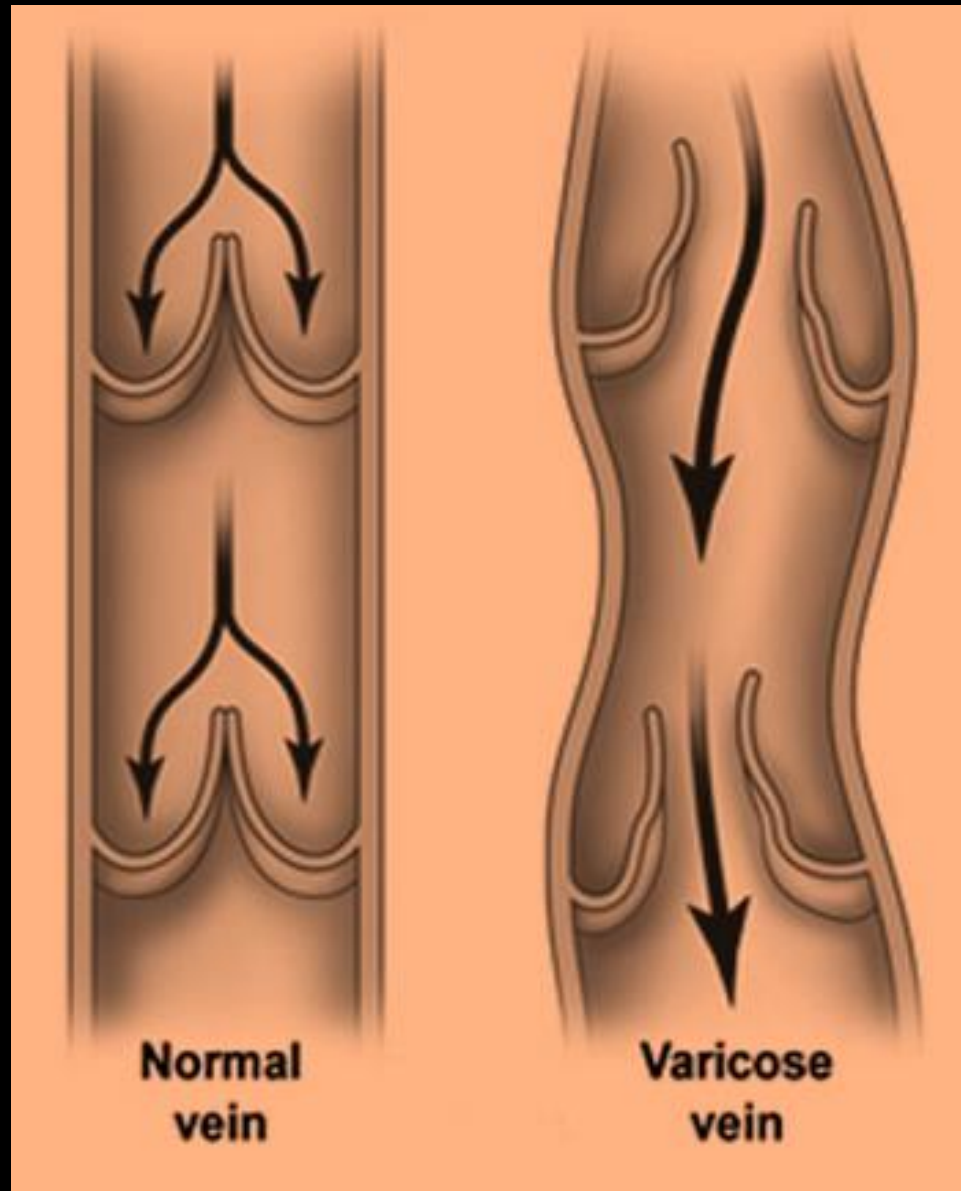
Normal  
valve function



Abnormal  
valve function







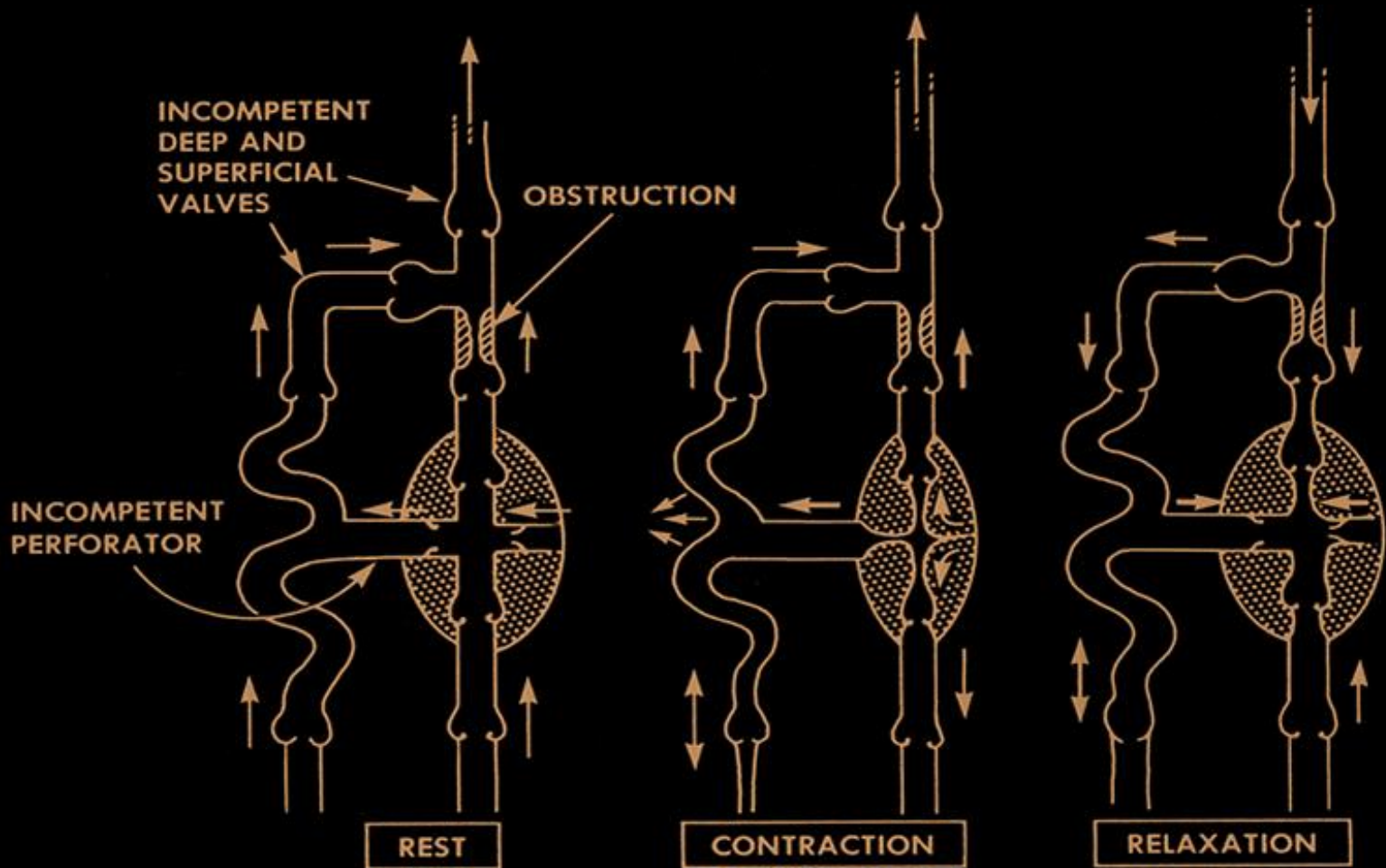
**Normal  
vein**

**Varicose  
vein**

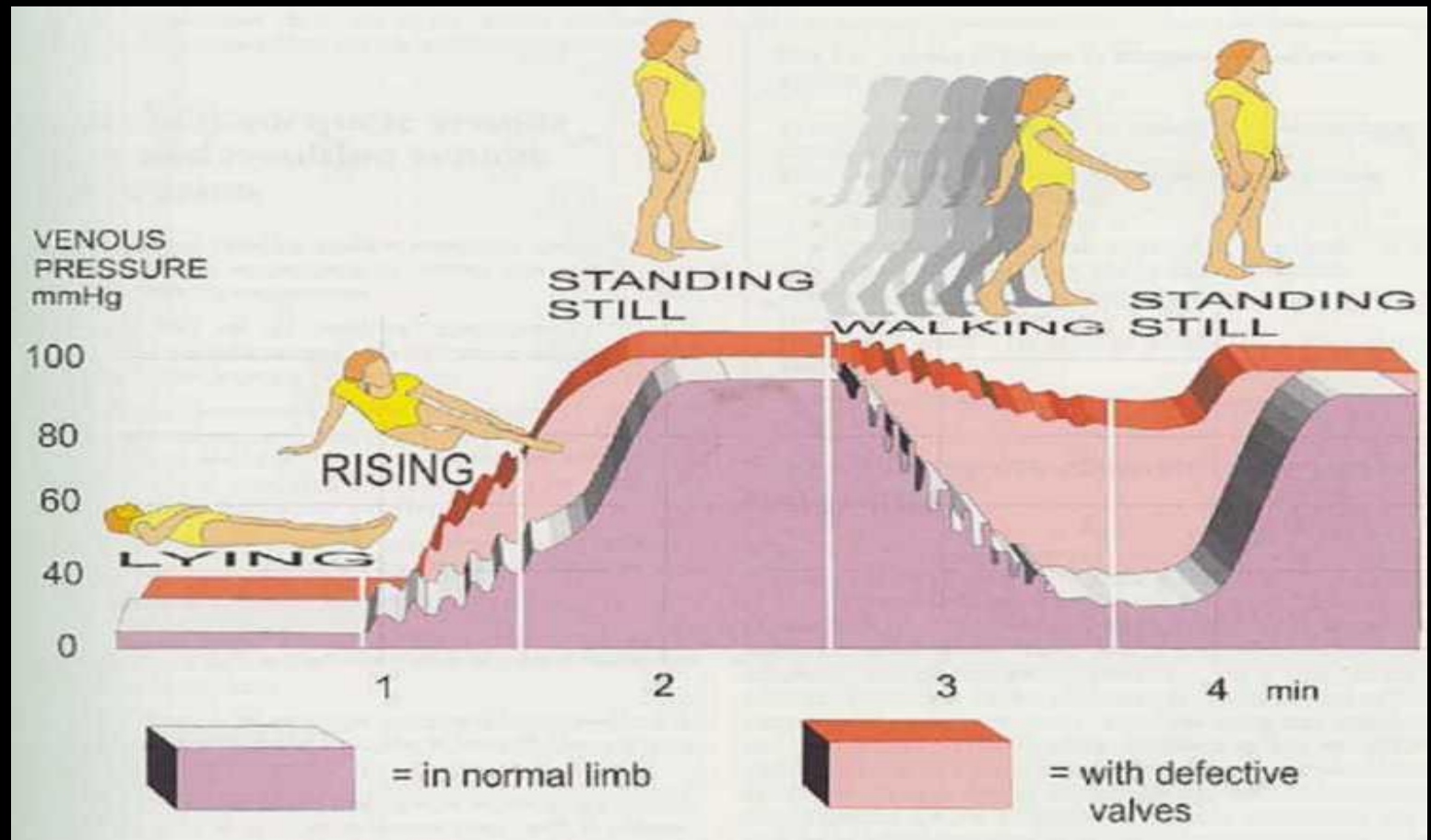
# Primary Valvular Incompetence

“ floppy valve ”

# Secondary Valvular Incompetence



# SO, Waht happens to the Venous Pressure?



# Evaluation

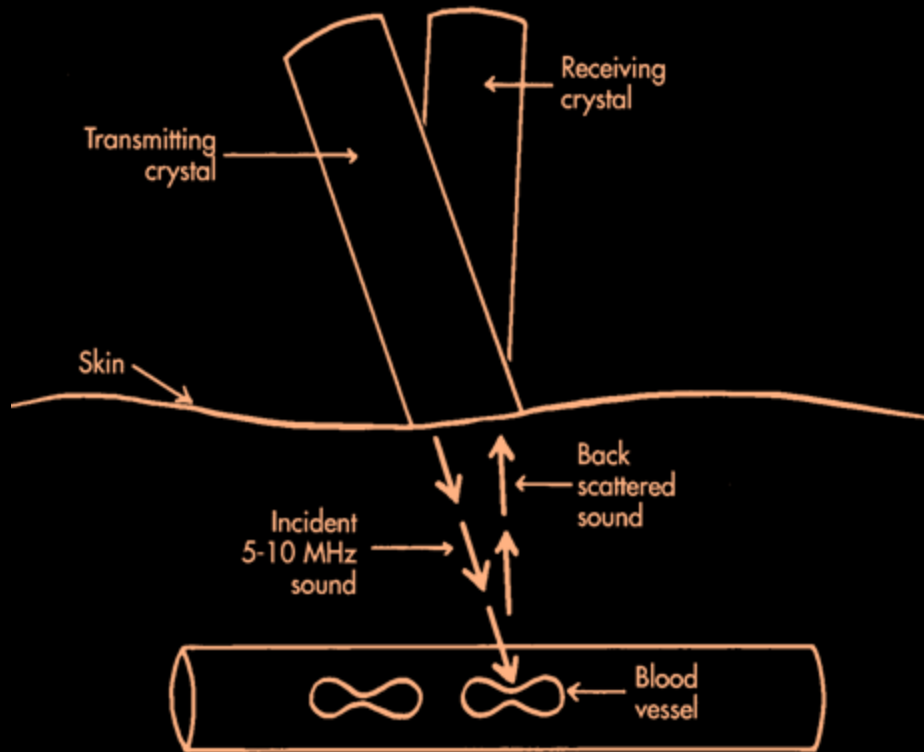
- History
- Physical Examination
- Investigations:
  - Non-invasive (Doppler/Duplex)
  - Invasive (AVP/ Venography)



# Clinical Presentation

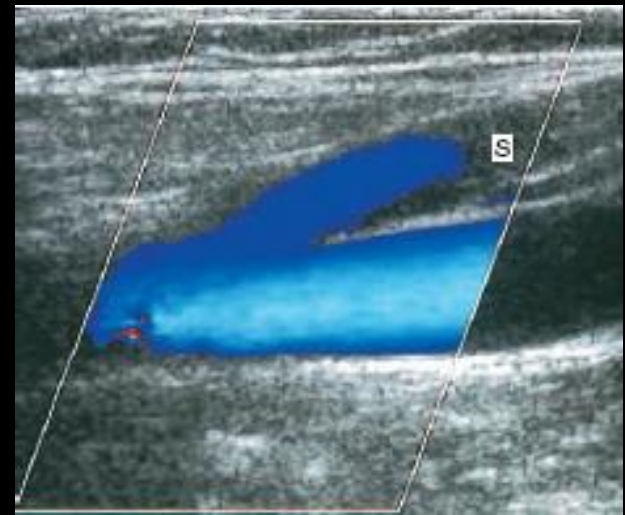
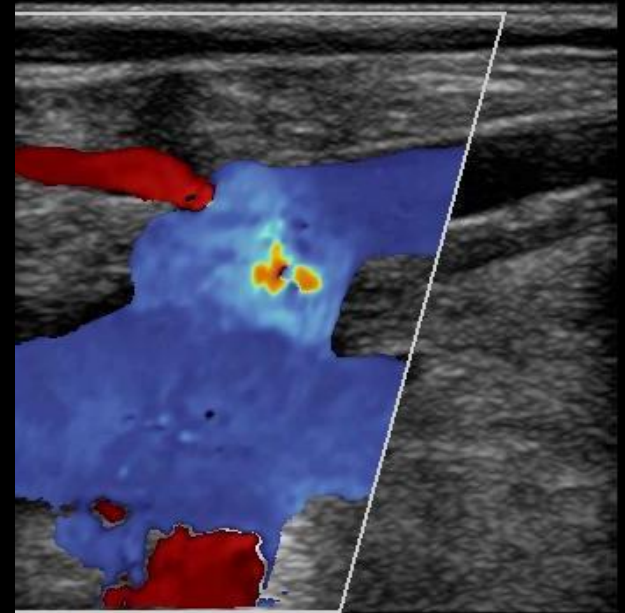


# Doppler

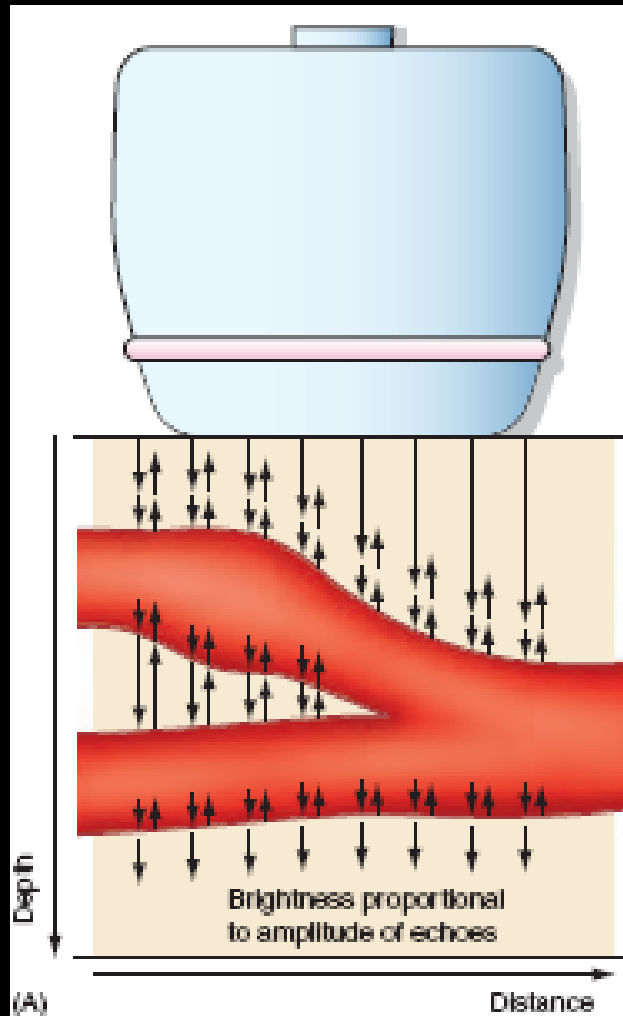




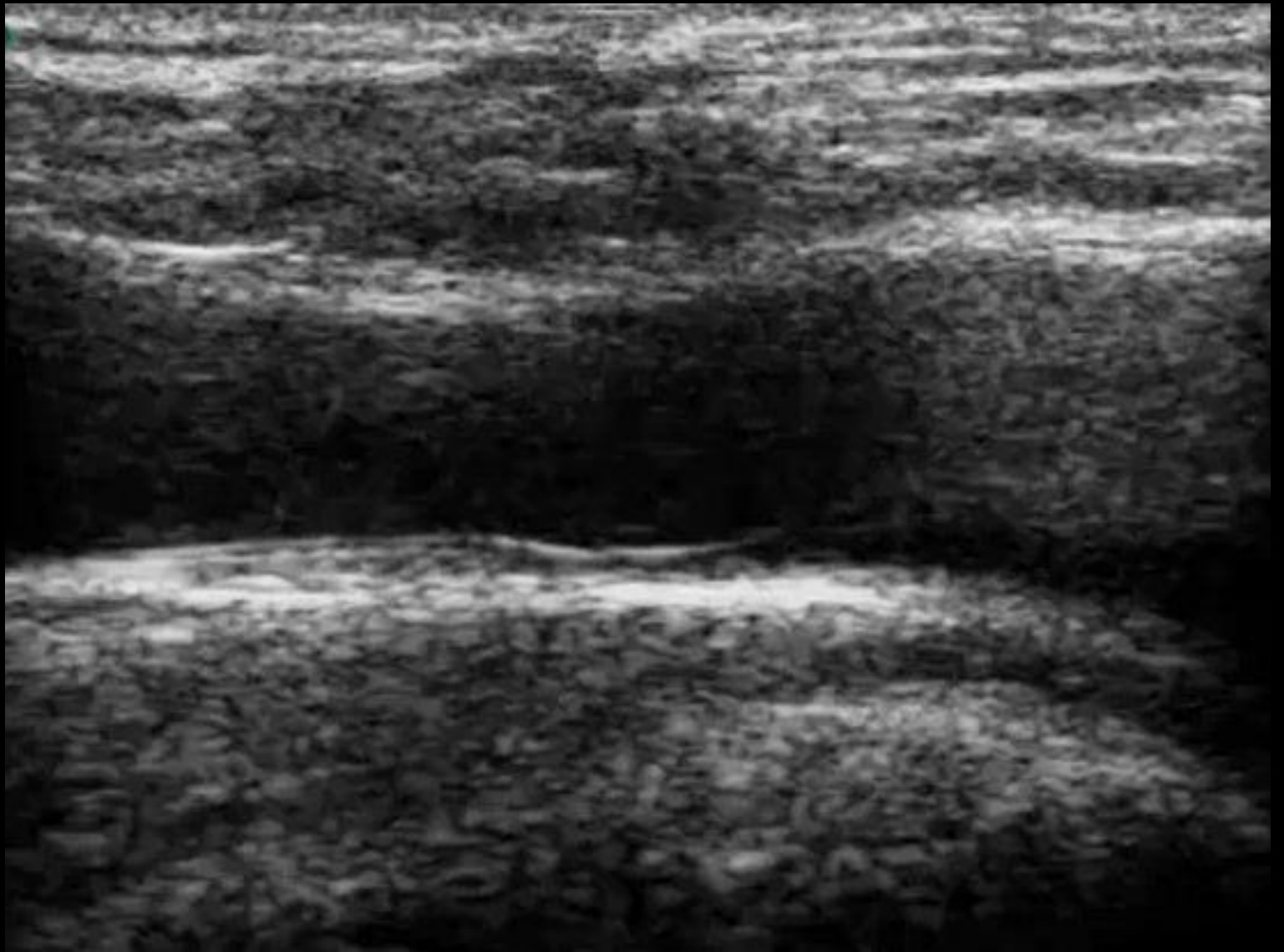
# Duplex-Scanning

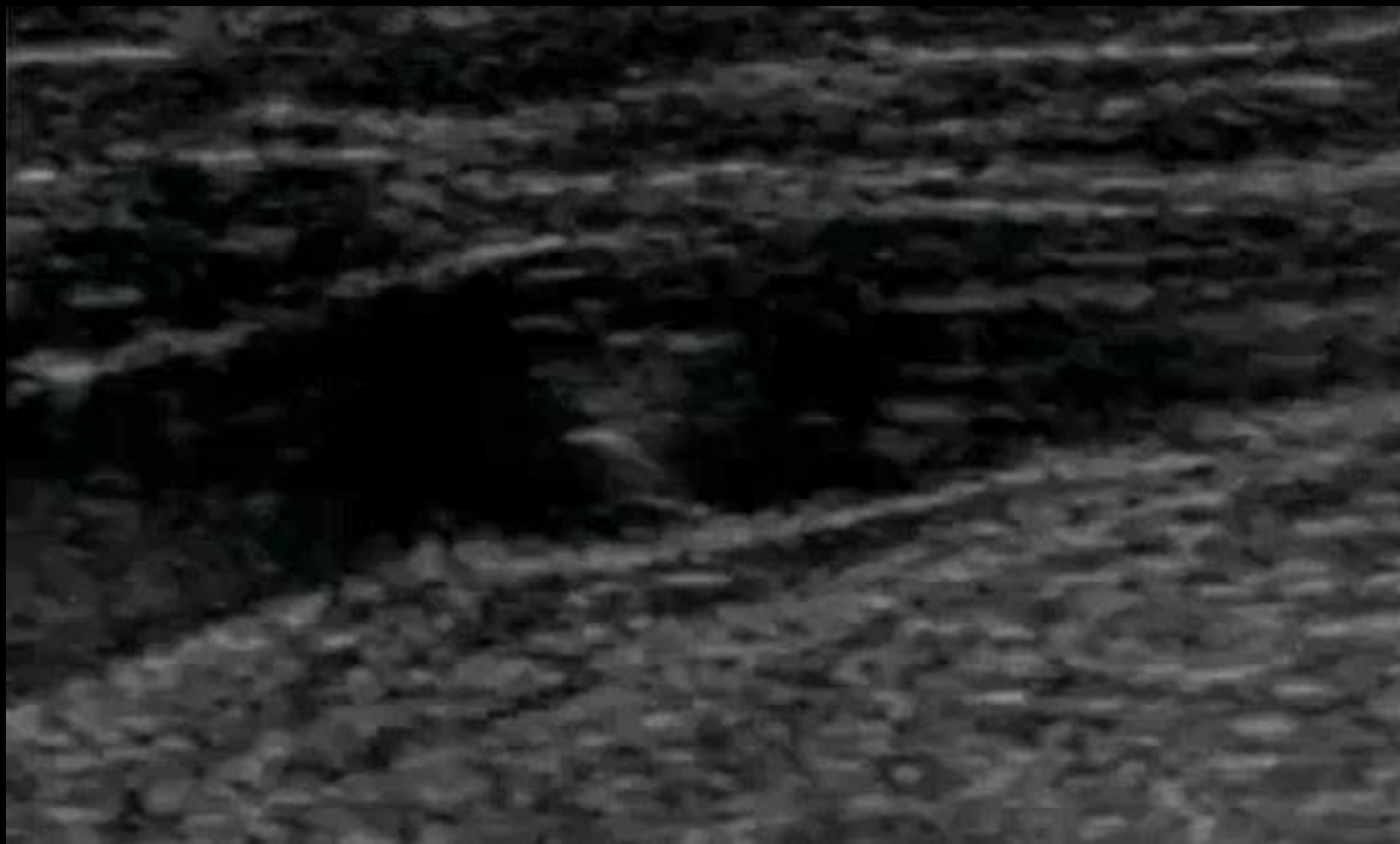


# Duplex-Scanning

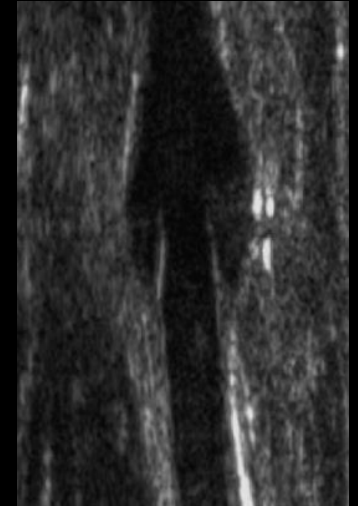
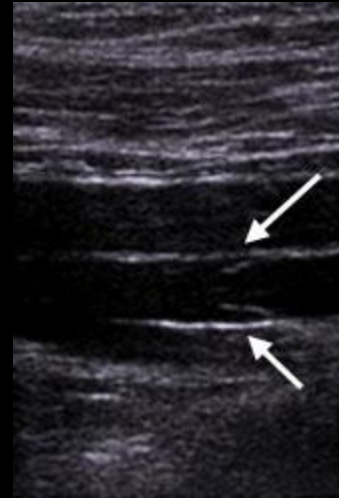
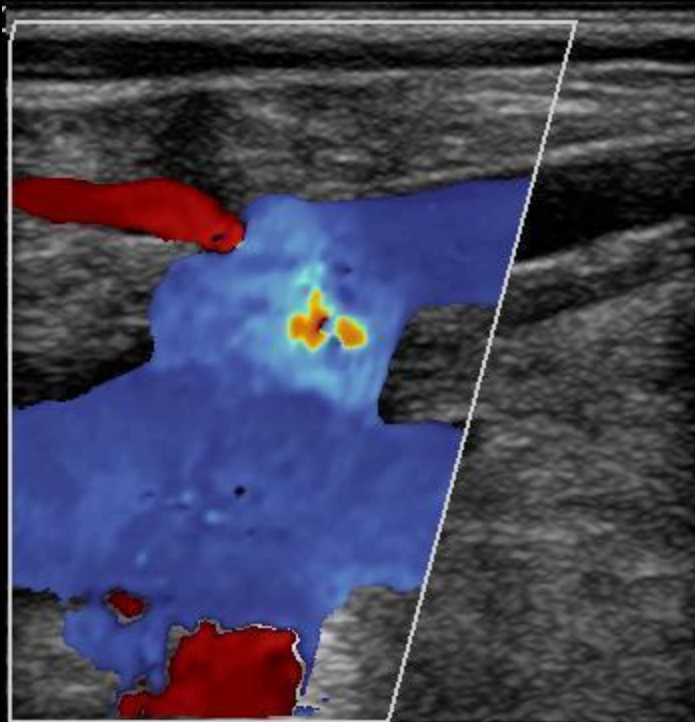




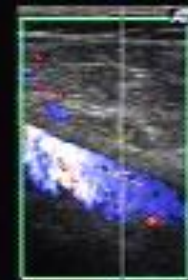




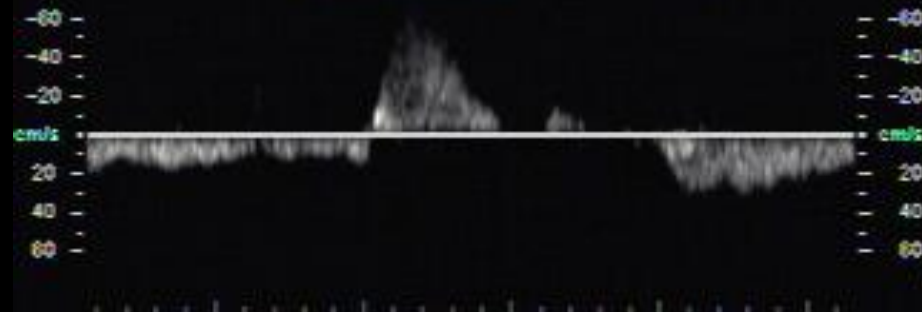
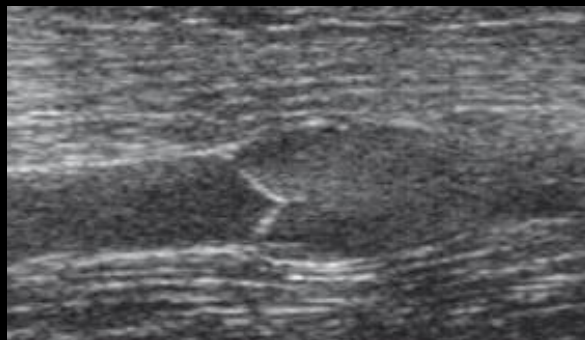
# Duplex-Scanning



Col 75% Map 3 LEFT  
WF Low  
PRF 700 Hz  
Flow Opt: Med V

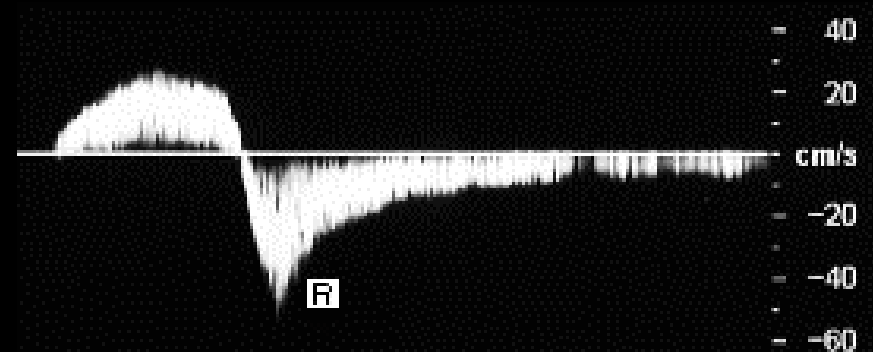
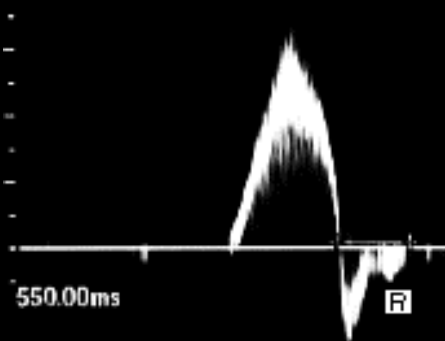
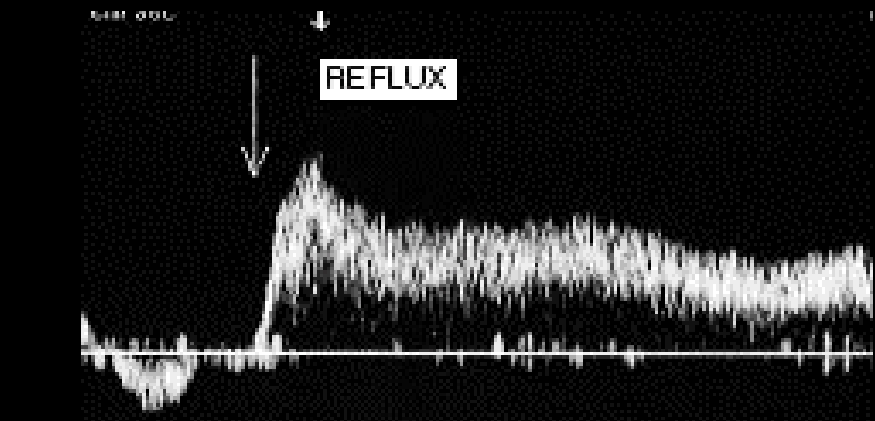
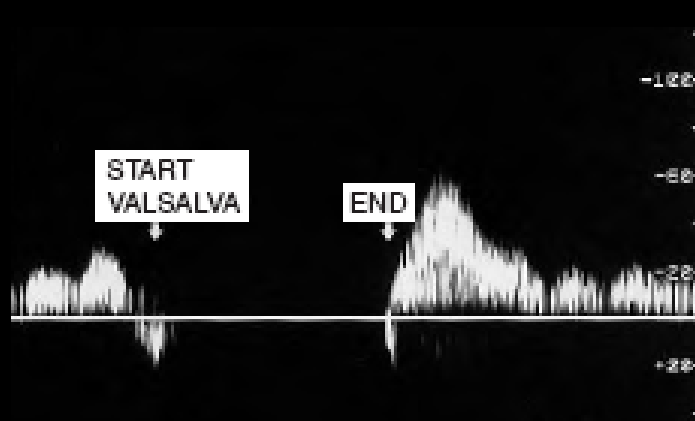
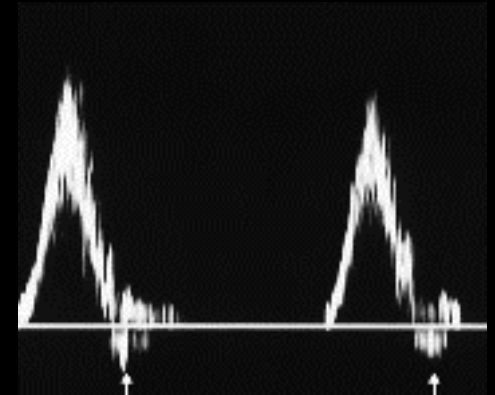
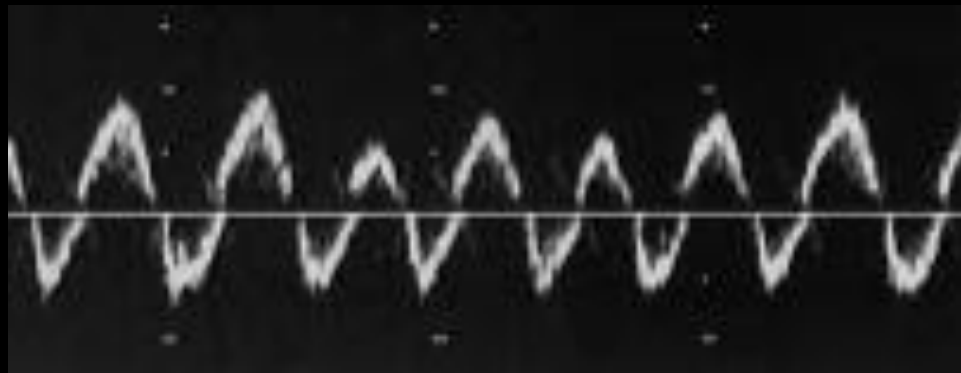


SV Angle 70°  
Dop 3.7 cm  
Size 2.0 mm  
Freq 4.0 MHz  
WF Low  
Dop 64% Map  
PRF 2500 Hz



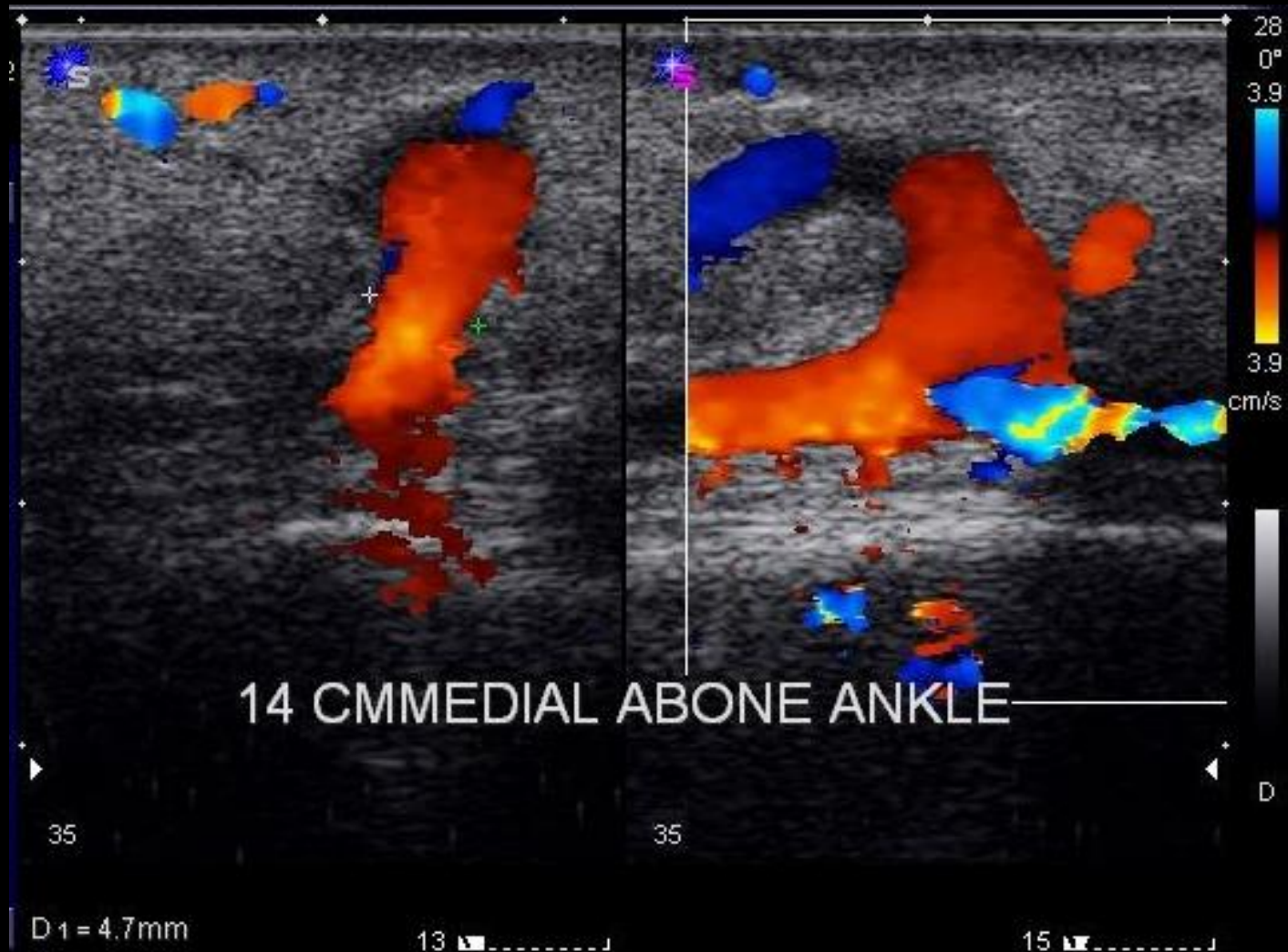


# Duplex-Scanning

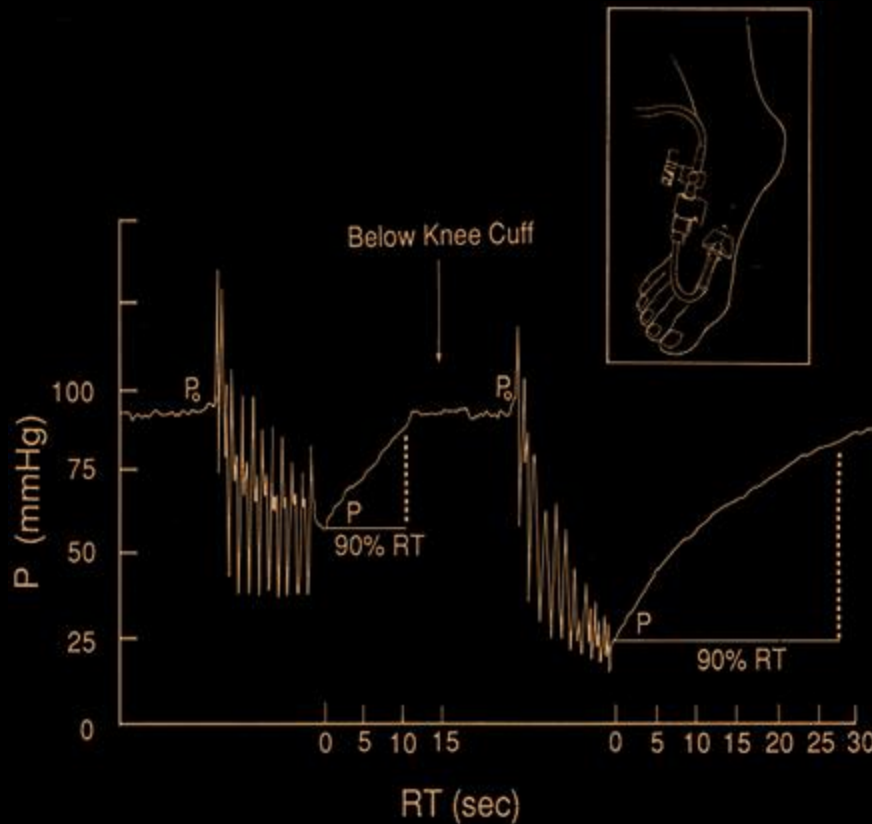




# Incompetent Perforator Vein



# Ambulatory Venous Pressure

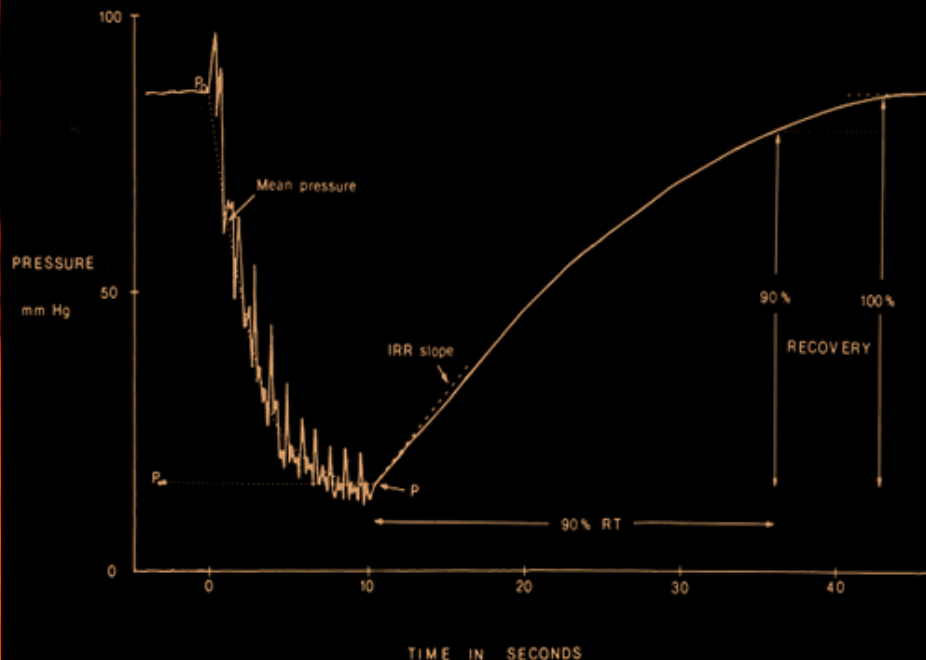


## Reflux

### 20-21gauge Butterfly Needle

- Superficial Dorsal Vein (Foot) or Ankle Vein
- Standing
- Heal Raised
- Measurements

# Ambulatory Venous Pressure



## Interpretation

**Normal :**



Pressure 80 - 90mm Hg  
to 20-30 mm Hg  
or > 50% drop

**Venous RF Time:  $\geq 20$  SEC**

# Abnormal AVP

I

Lack of sufficient drop  
in pressure with  
ambulation



**P < 50%**

II

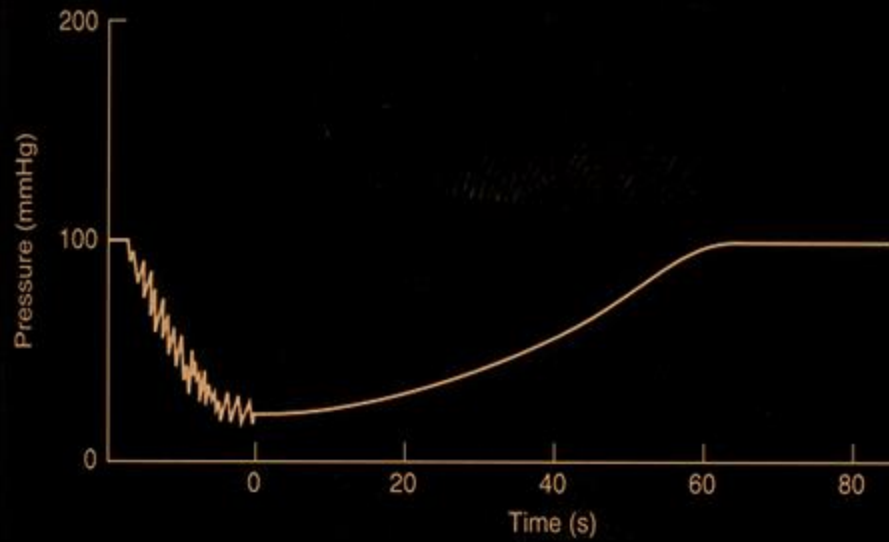
Short Venous Refill Time

**VRT < 20 sec**

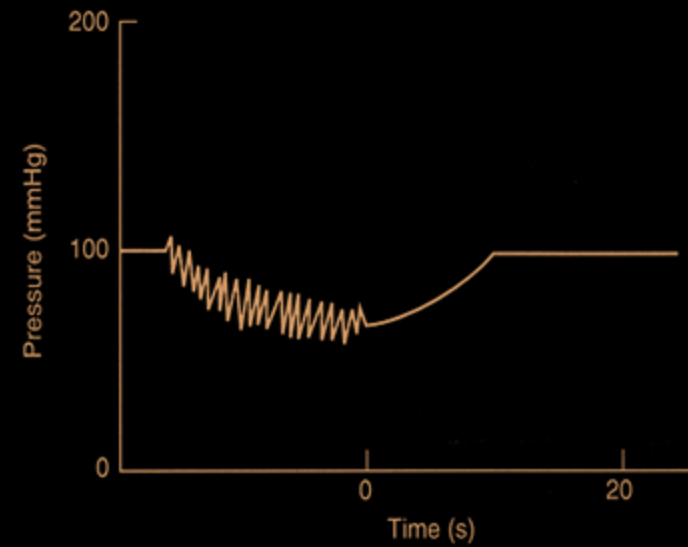


# AVP

Normal



Deep venous  
incompetence



# Phlebography

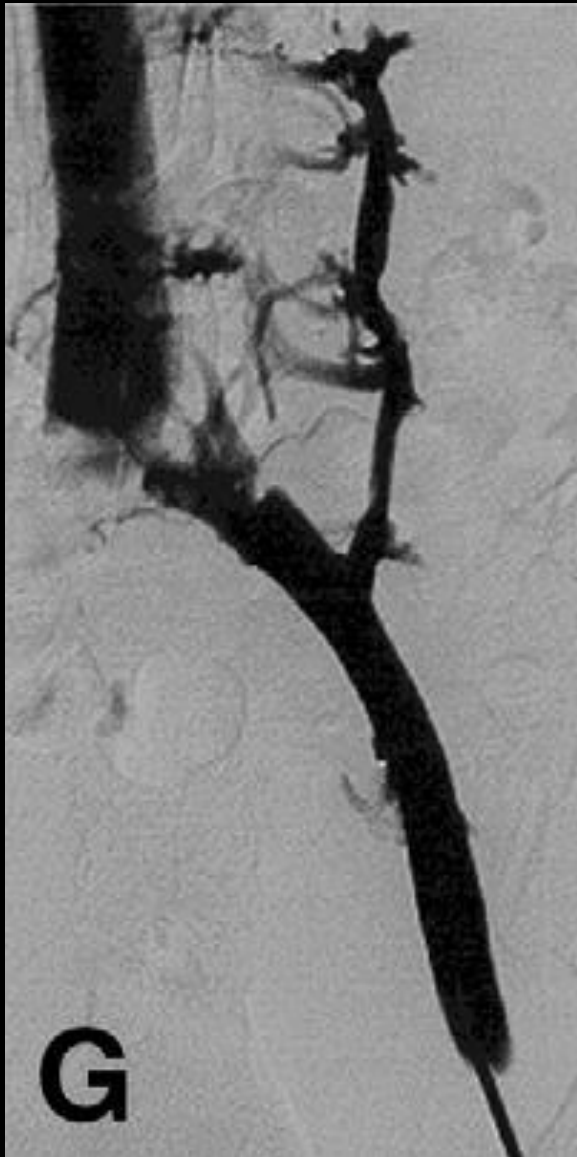


# Phlebography





# Phlebography







# Treatment

# Treatment

Telangiectasias  
& Reticular veins



Stocking and/or Sclero-Rx



# Treatment



Varicose Veins



Stocking  
USG-Sclero-Rx  
EVLT/Surgery



Edema

Cutaneous Ulcer

Local Wound



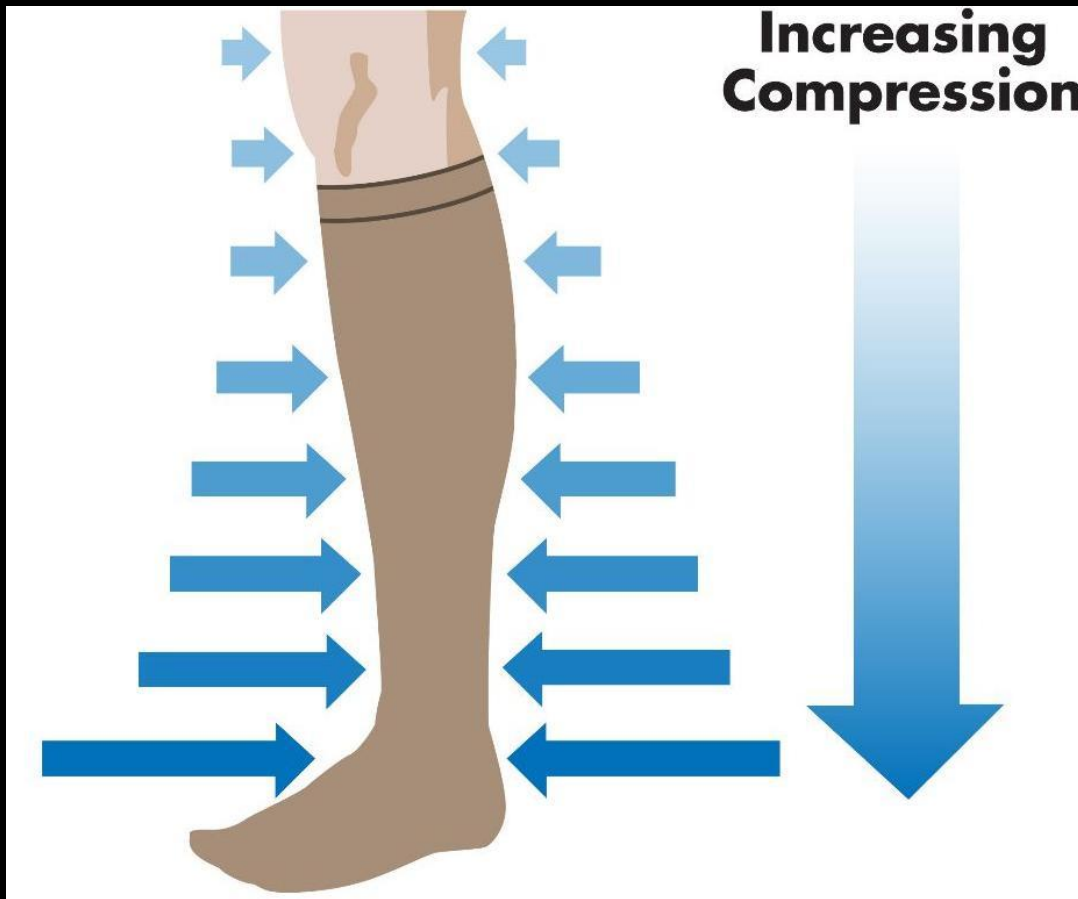
Stocking

USG-Sclero

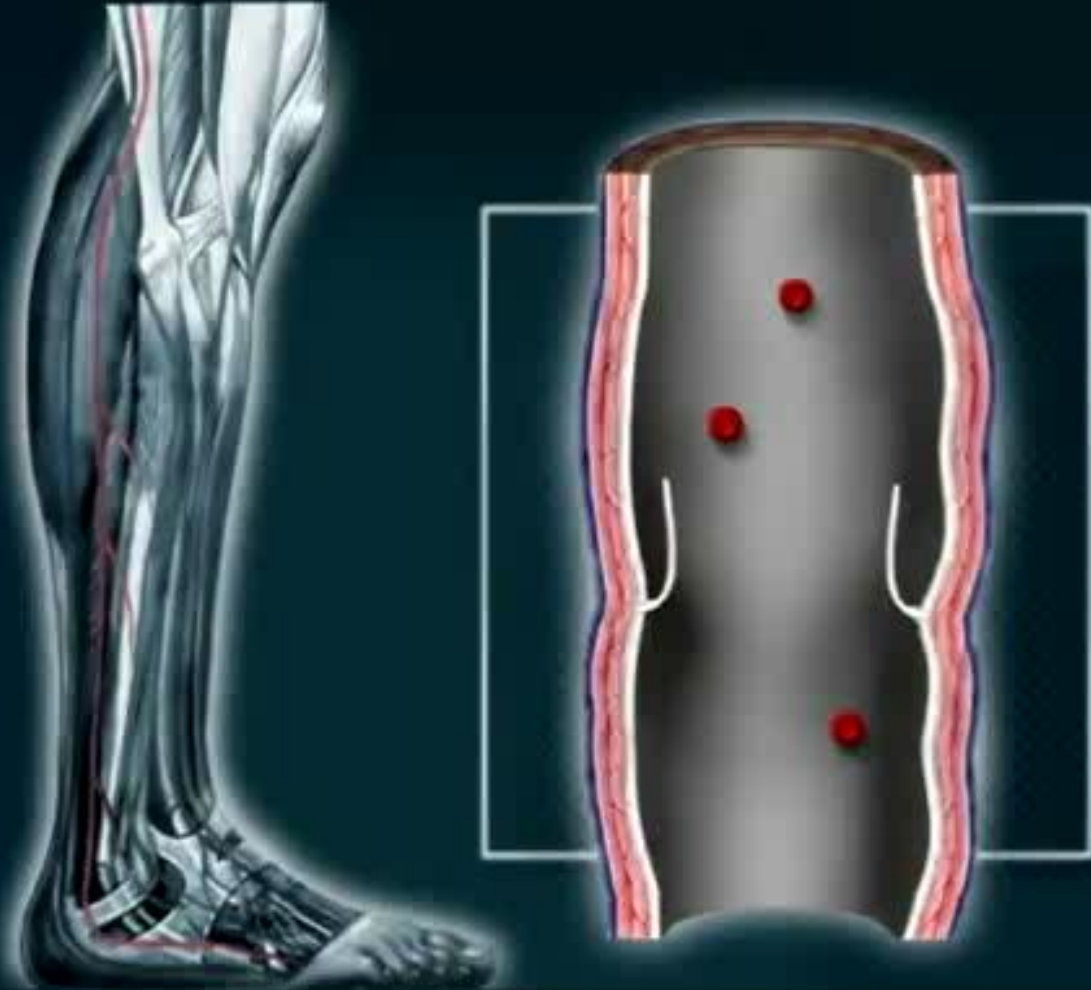
ELVT/Surgery



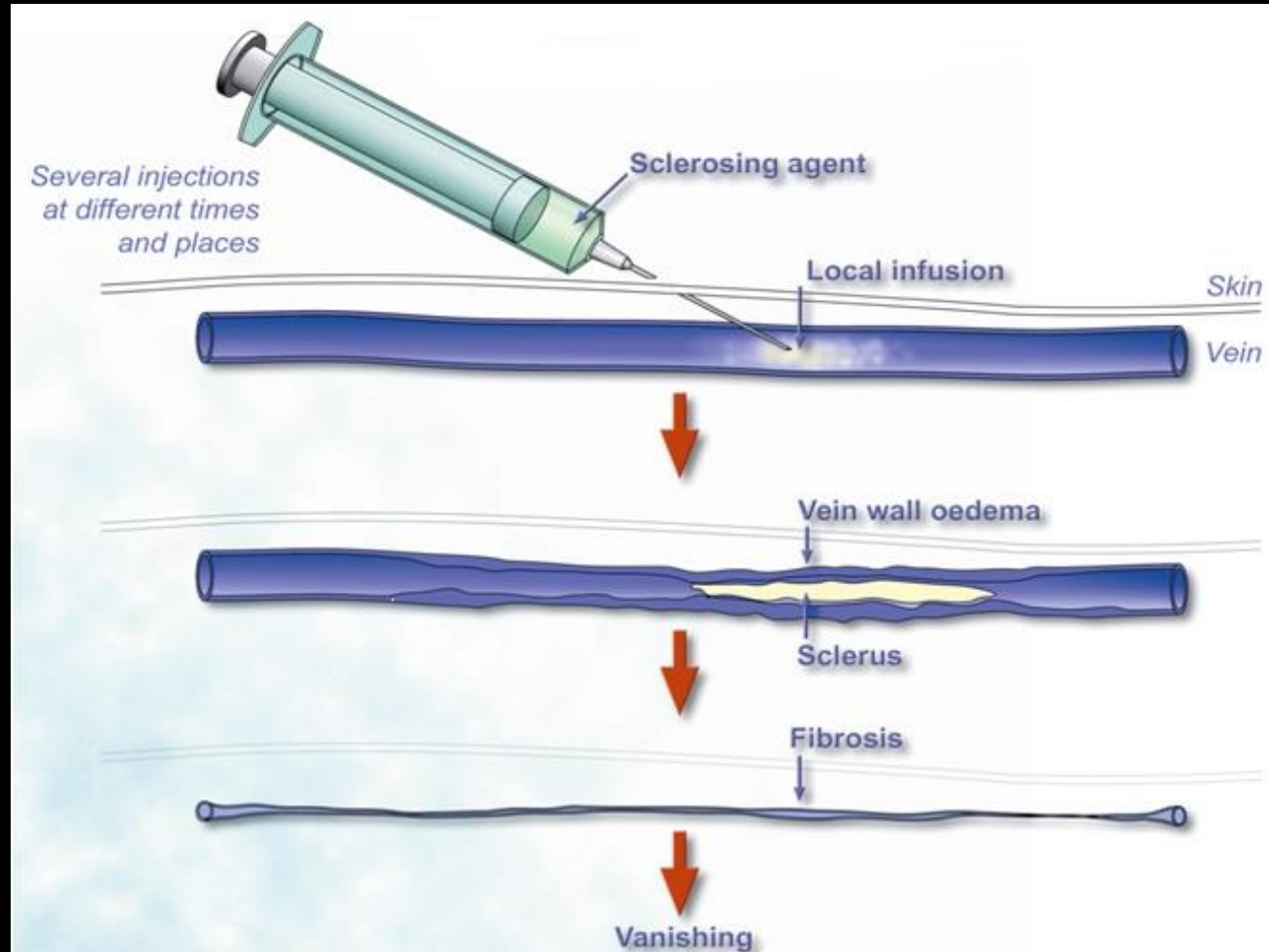
# Compression Stockings



# Compression Stockings



# Sclerotherapy





# Sclerotherapy



## SCLERODEX<sup>®</sup>

5 vials of 10 mL  
Dextrose USP 250mg/mL  
Sodium Chloride USP  
100mg/mL



## SCLERODINE<sup>®</sup> 6

Iodine 600mg/10mL (60mg/mL)  
Sodium Iodine  
900mg/10mL (90mg/mL)



## TROMBOJECT<sup>®</sup>

Sodium Tetradecyl Sulfate Omg.Std  
10mg/mL 10 vials of 2mL  
30mg/mL 10 vials of 2mL  
30mg/mL 10 vials of 5mL



## SALIJECT<sup>®</sup>

Sodium Salicylate Omg.Std.  
5.7g/10mL (570mg/mL)



# Sclero-Rx - Complications

Solution	Pigmentation	Allergic reaction	Necrosis	Pain
Sodium morrhuate	++	++	+++*	+++
Sodium tetradecyl sulfate	++	+	++*	+
Ethanolamine oleate	+	++	++*	++
Polidocanol	+	+	+*	0
Hypertonic saline	+	0	+++*	+++
Sclerodex(10% saline + 5% dextrose)	+	0	+	++
Chromated glycerin	0	+	0	++
Polyiodinated iodine	++	+	+++*	+++

+, Minimal; ++, moderate; +++, significant.

\*Concentration dependent.

# Endovenous Ablation Techniques

Denaturation of vein wall collagen



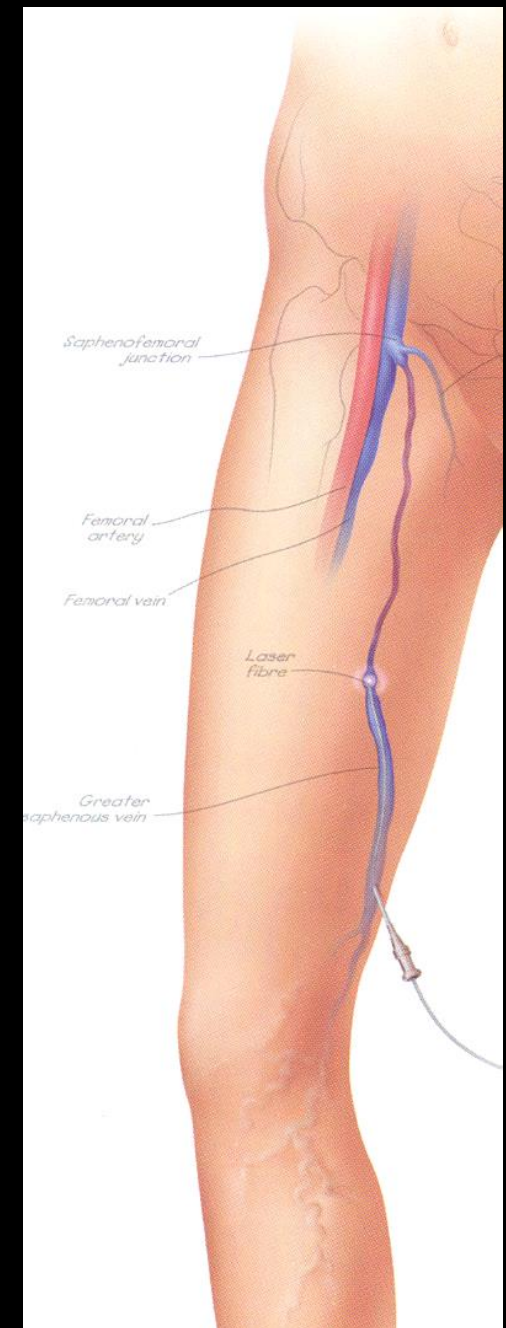
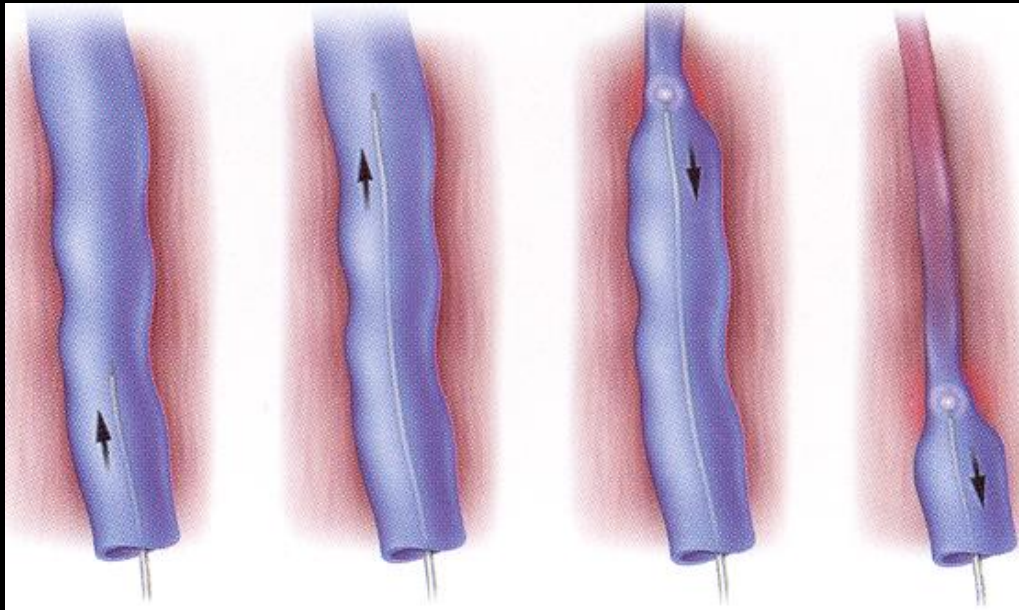
Contraction



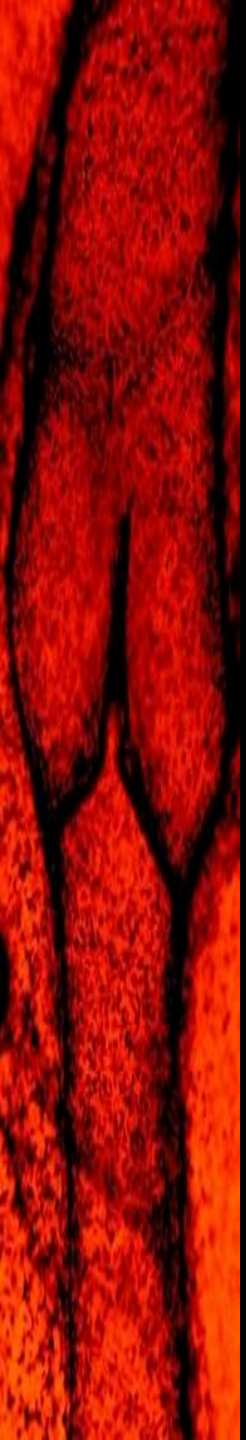
Fibrous obliteration



# EndoVenous Laser Therapy(EVLT)

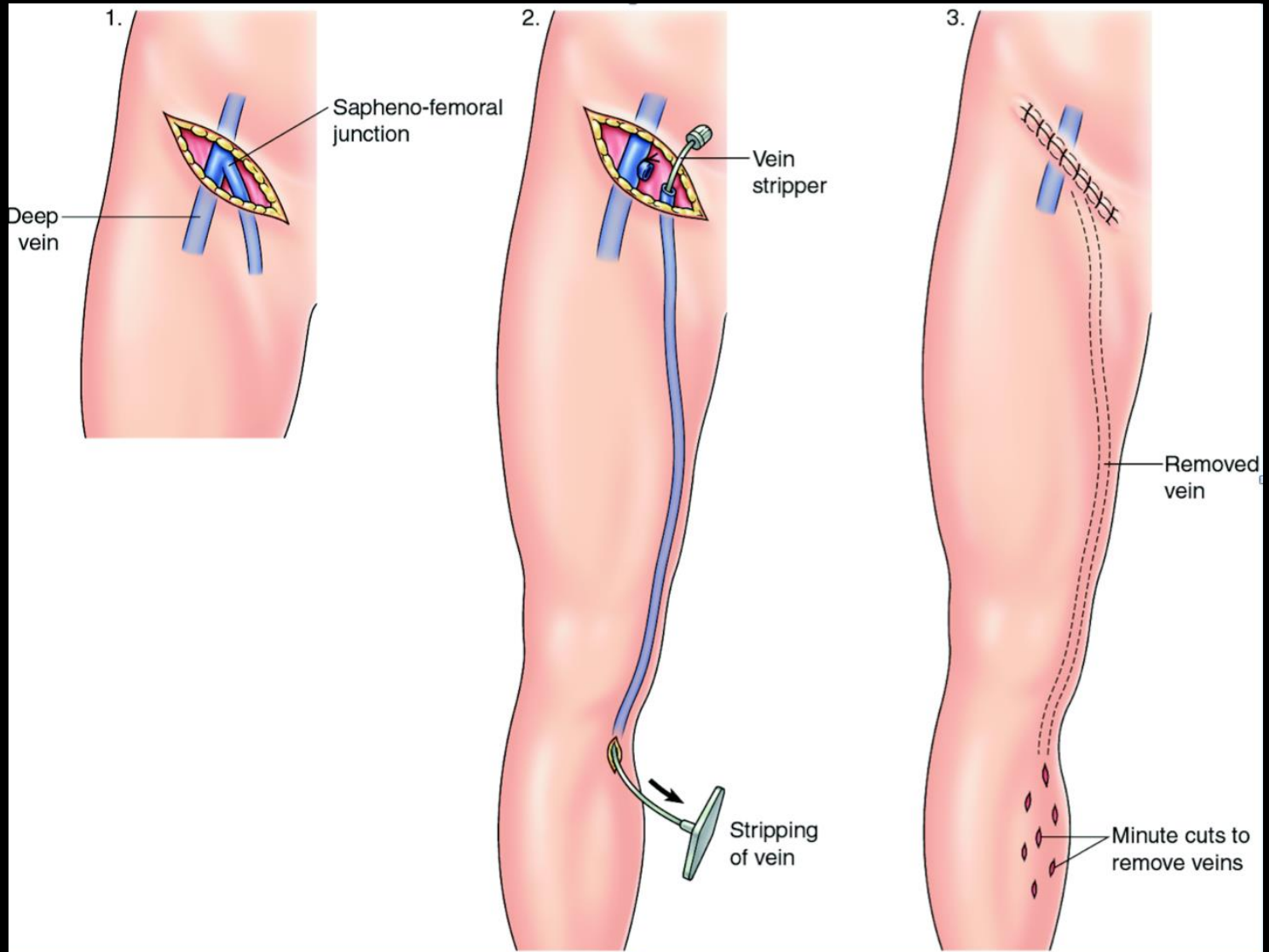


# EndoVenous Laser Therapy(EVLT)





# Surgery





*Thank You*