

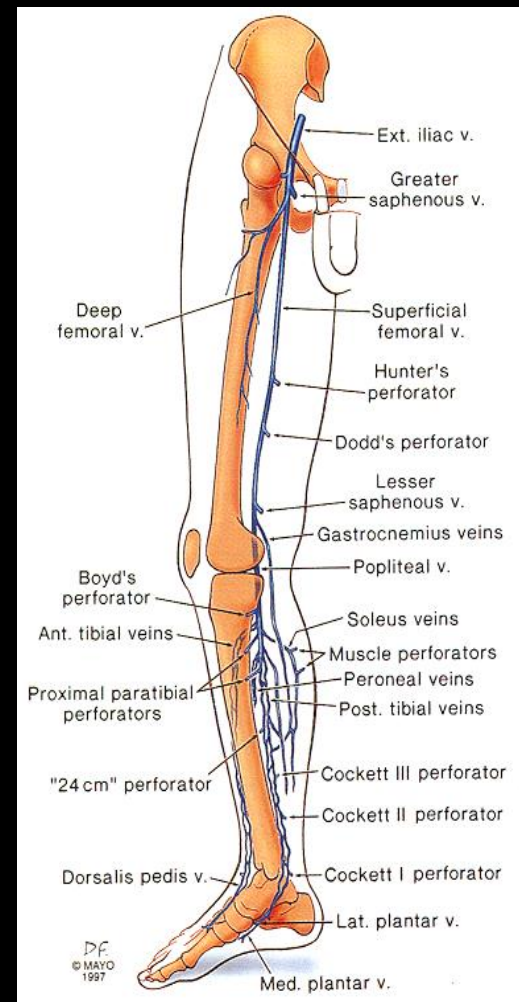
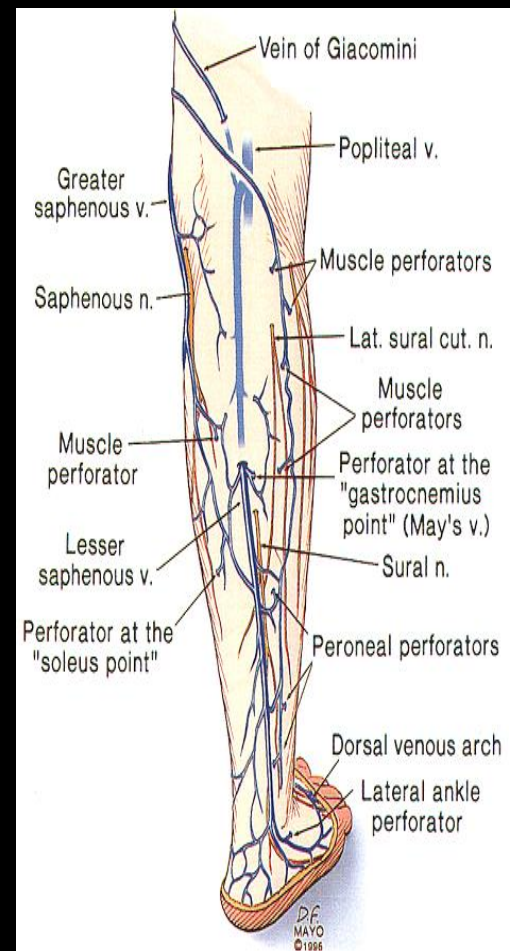
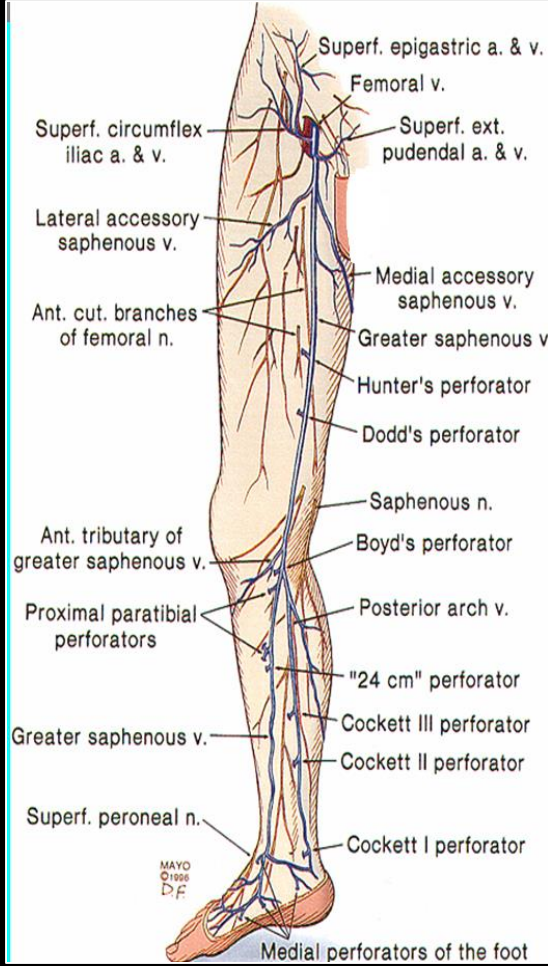


# Chronic Venous Insufficiency

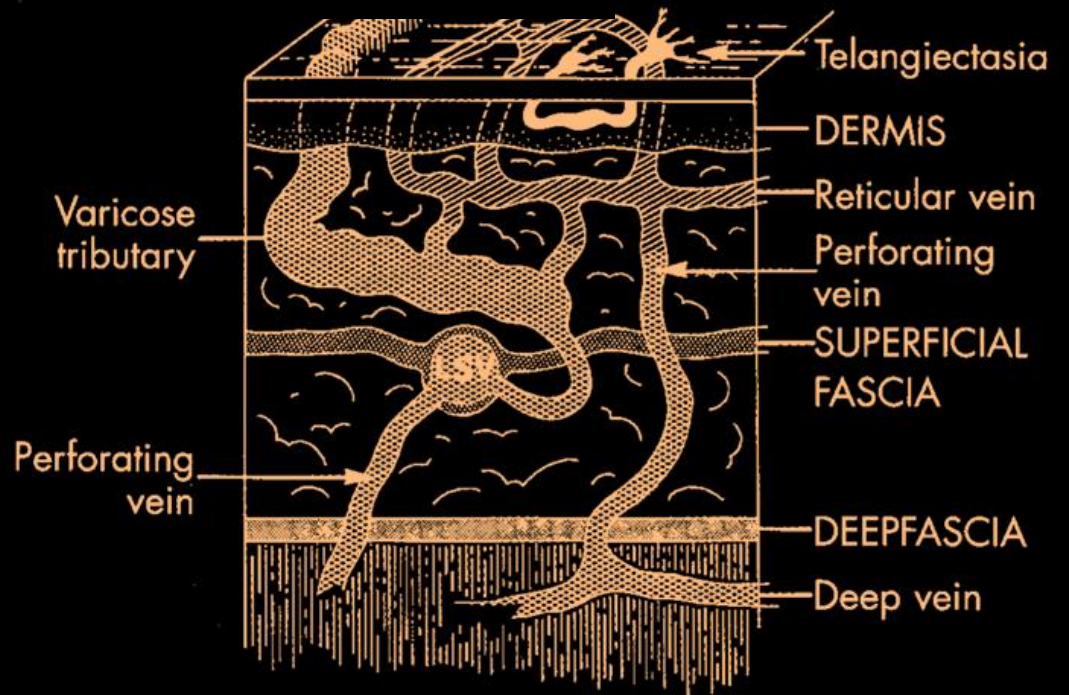
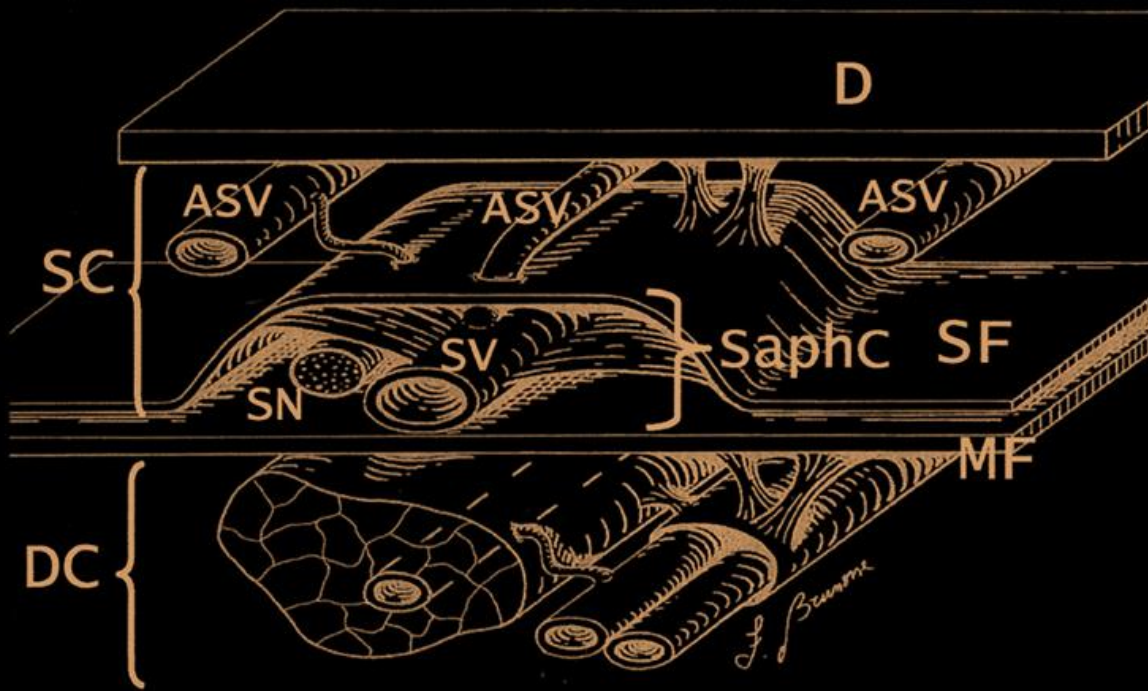
Dr. Talal A. Altuwaijri

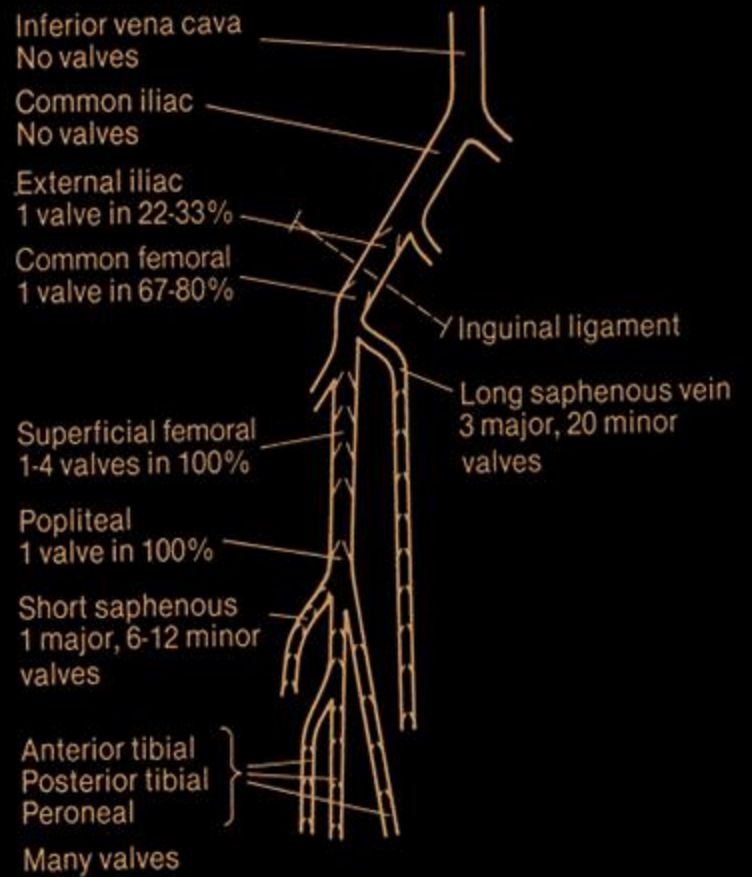
A vertical strip on the left side of the image shows a microscopic view of plant tissue, likely a stem or root, stained with a red dye. The tissue shows distinct cellular structures, including elongated cells and vascular bundles.

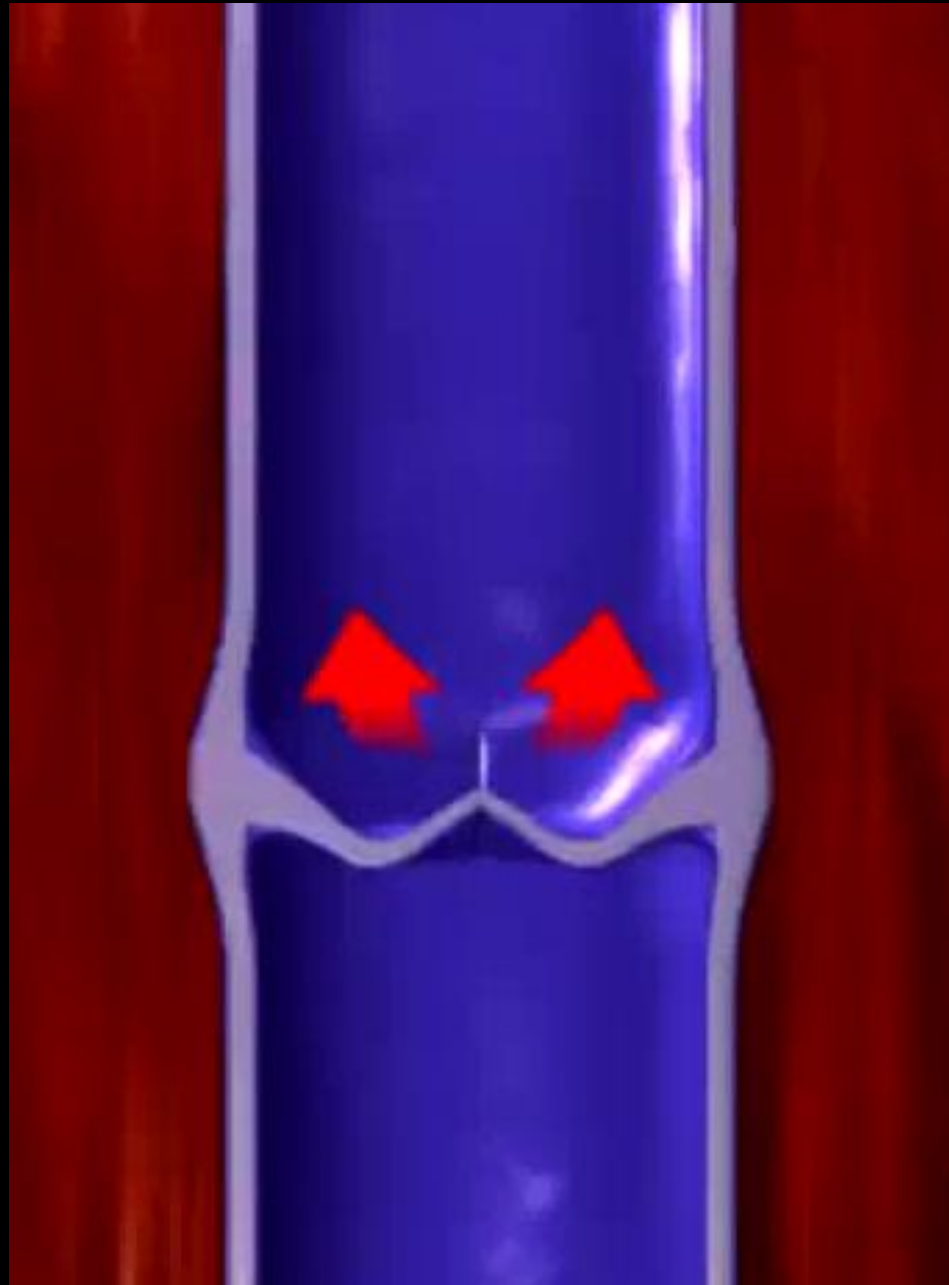
# *Anatomy*



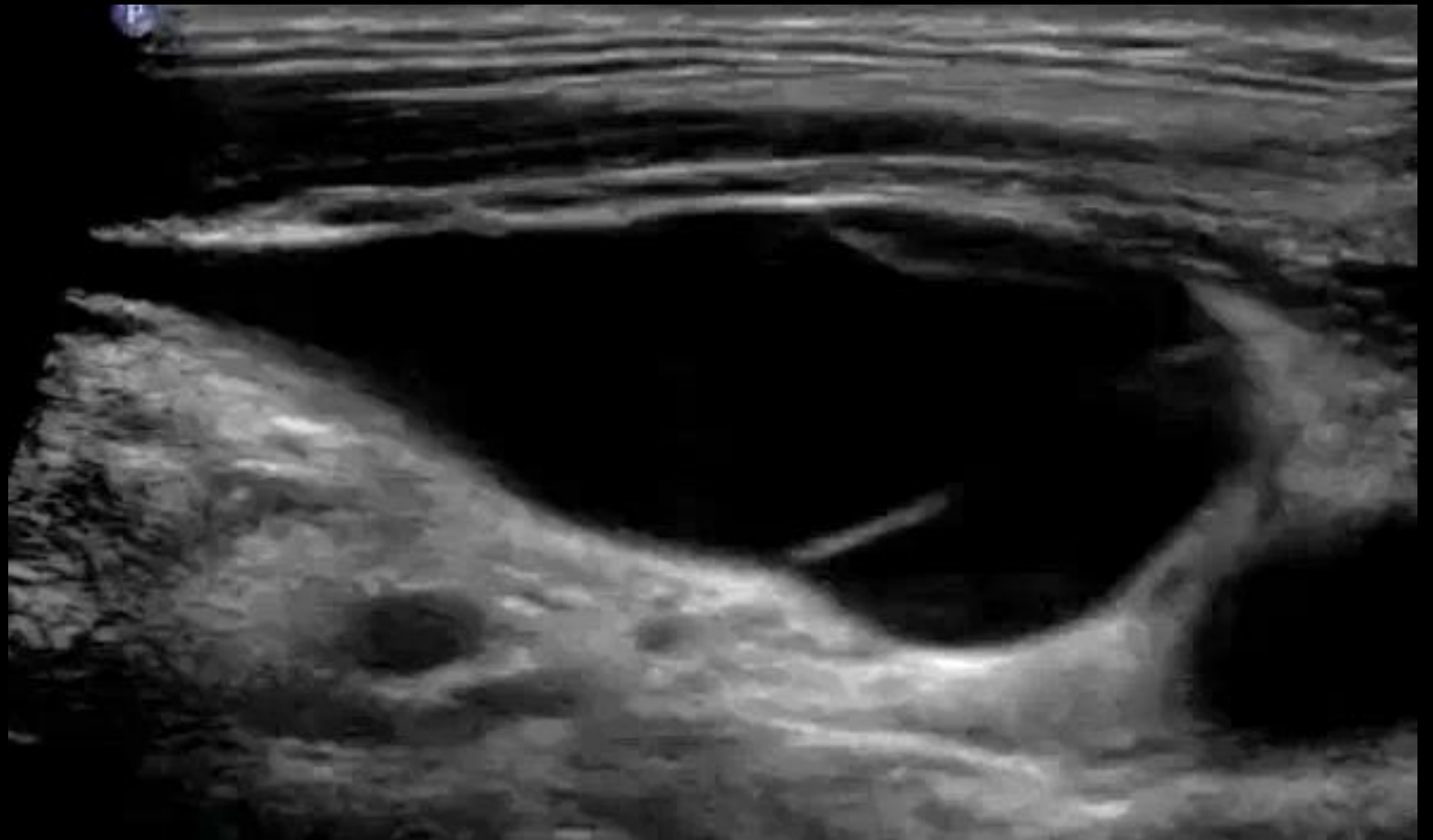








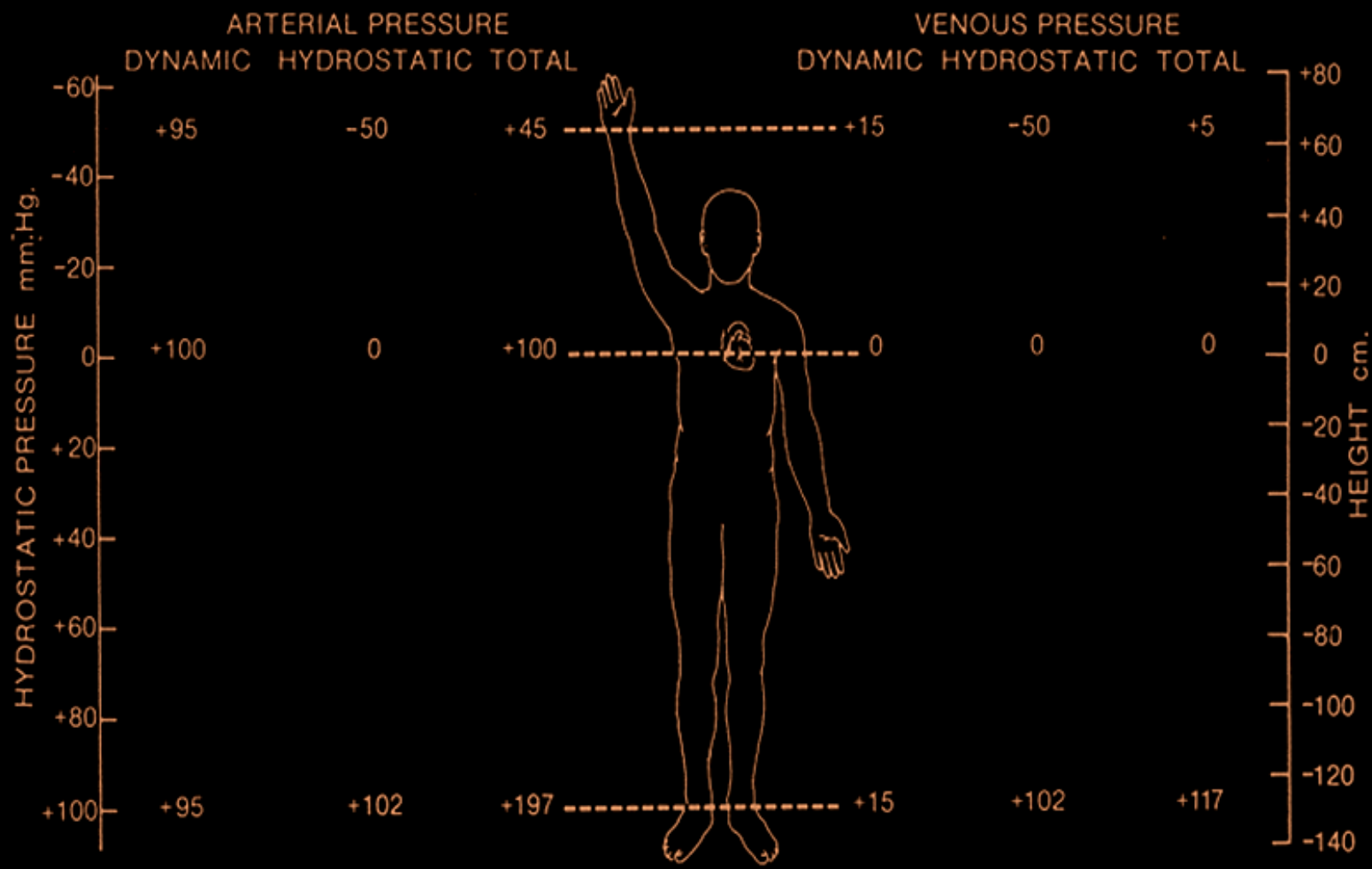


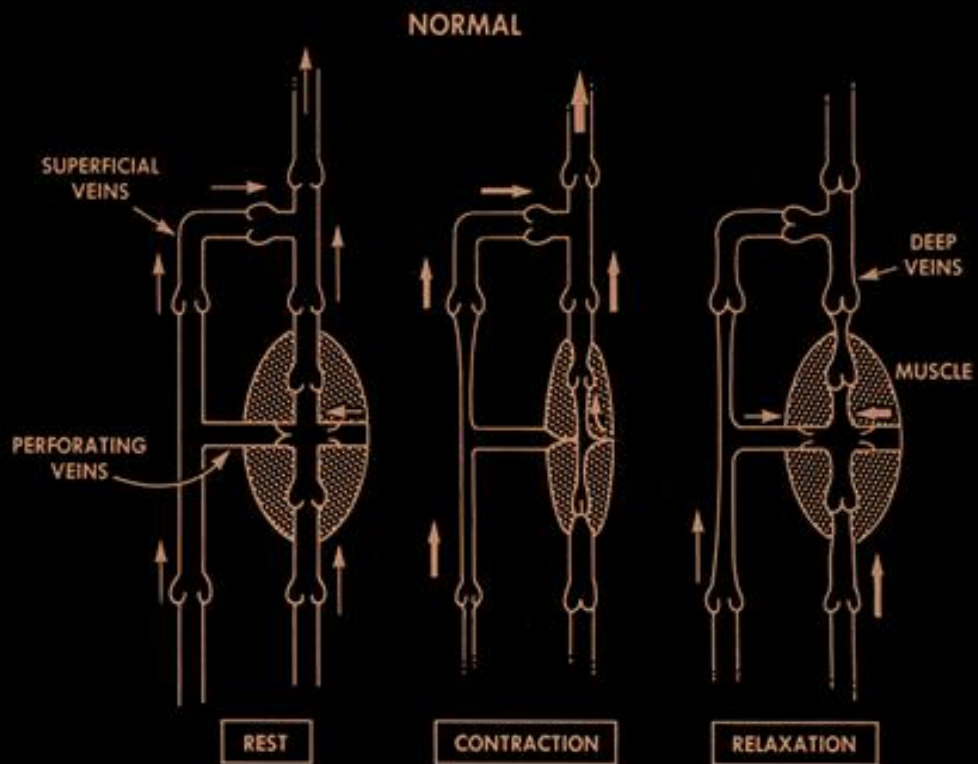
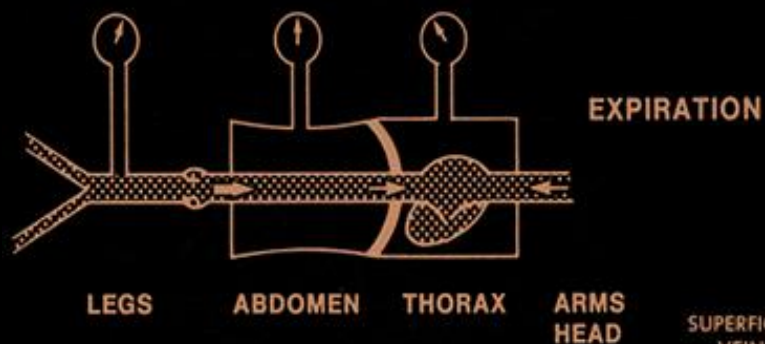
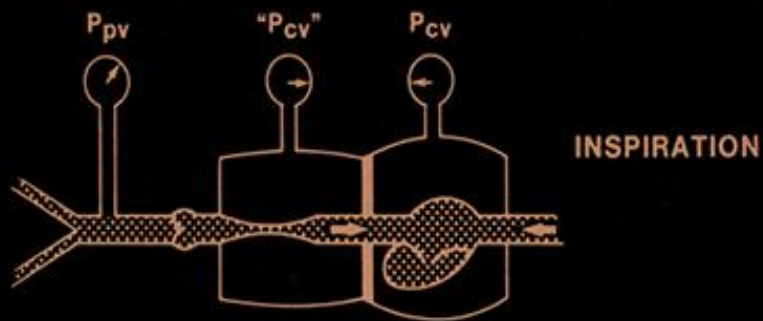


A vertical strip on the left side of the image shows a microscopic view of plant tissue, likely a stem or root, stained with a red dye. The tissue shows distinct cellular structures, including elongated cells and vascular bundles.

# *Physiology*



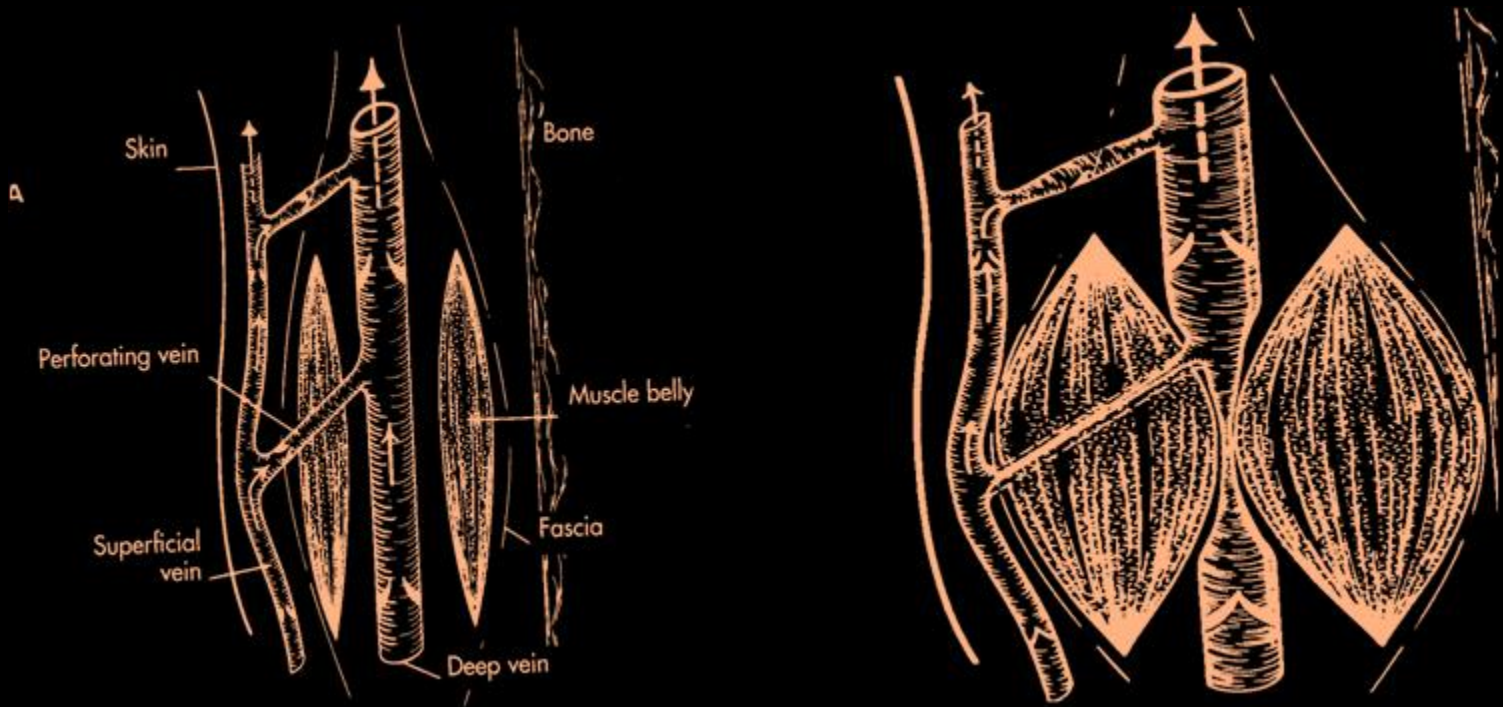




# Calf Muscle Pump

Rest

Contraction




# Ambulatory Venous Pressure

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

\* 7 steps = maximum effect



A vertical strip on the left side of the slide shows a microscopic view of a vein. The vein is stained with a bright red or orange dye, highlighting its structure. The lumen is at the top, and the vessel wall is visible below. The overall background of the slide is black.

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%)

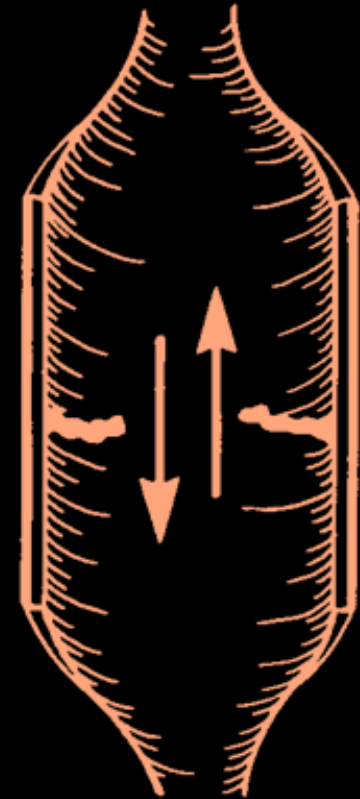
PROXIMAL



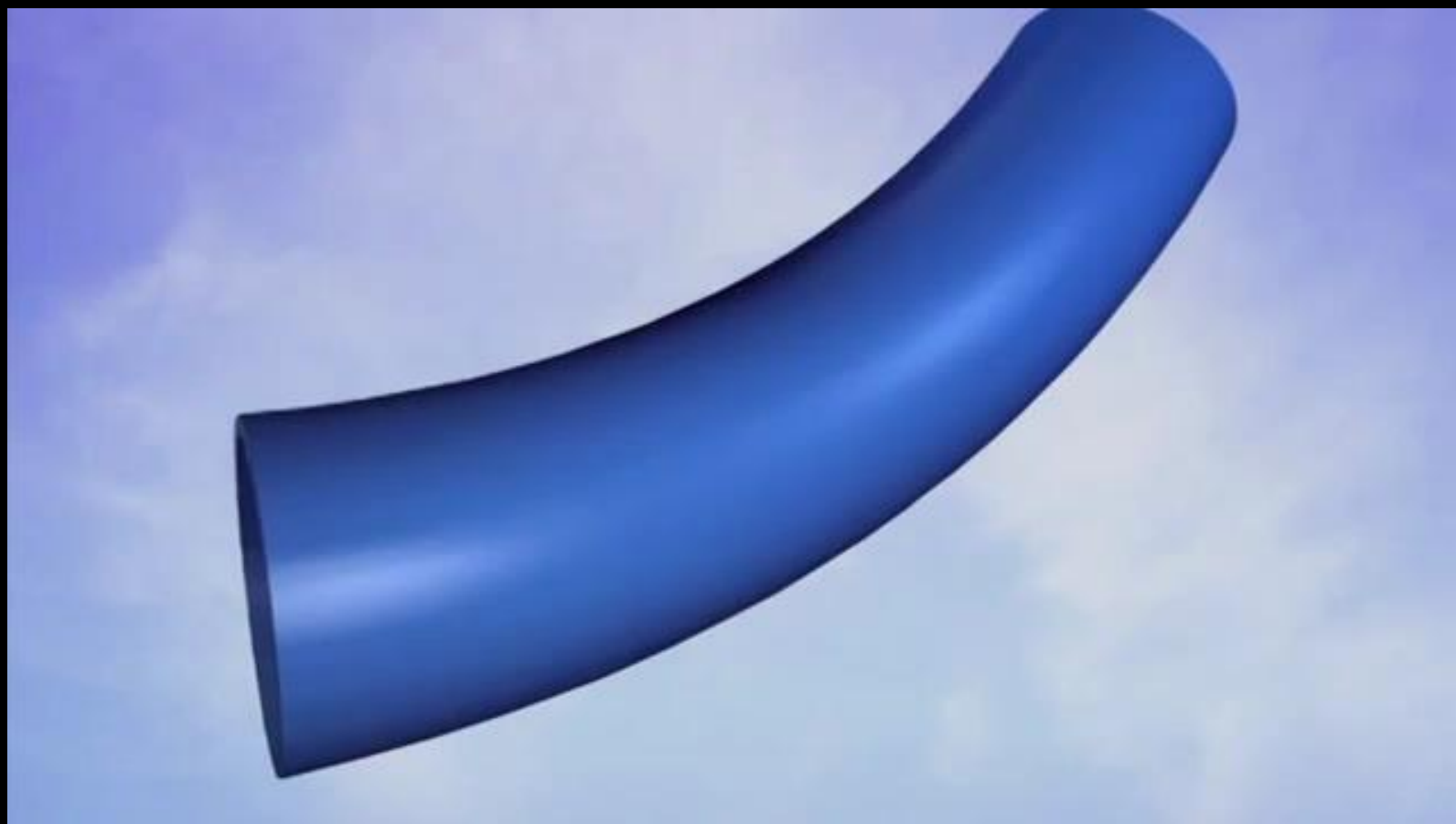
Normal flow  
to heart



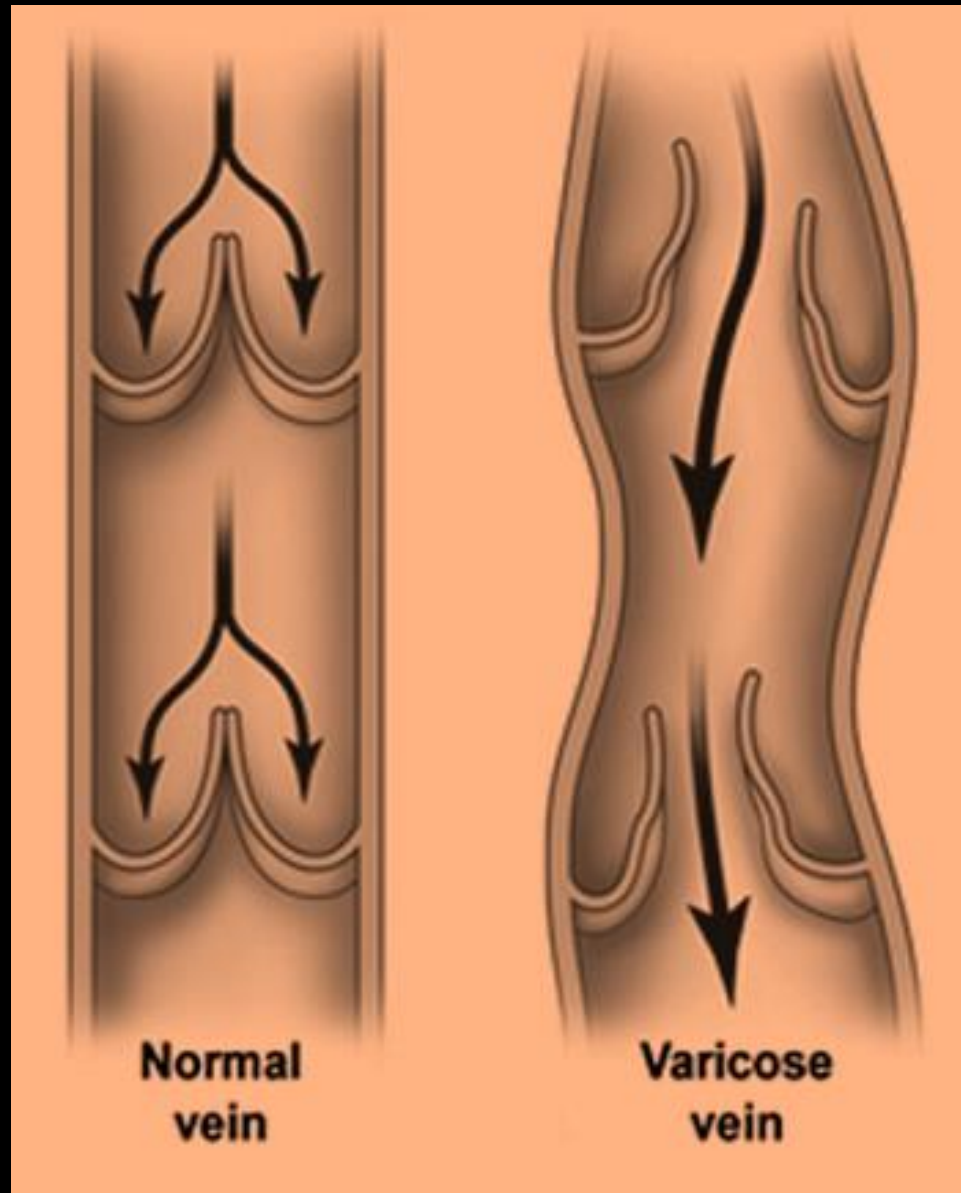
Normal  
valve function



Abnormal  
valve function



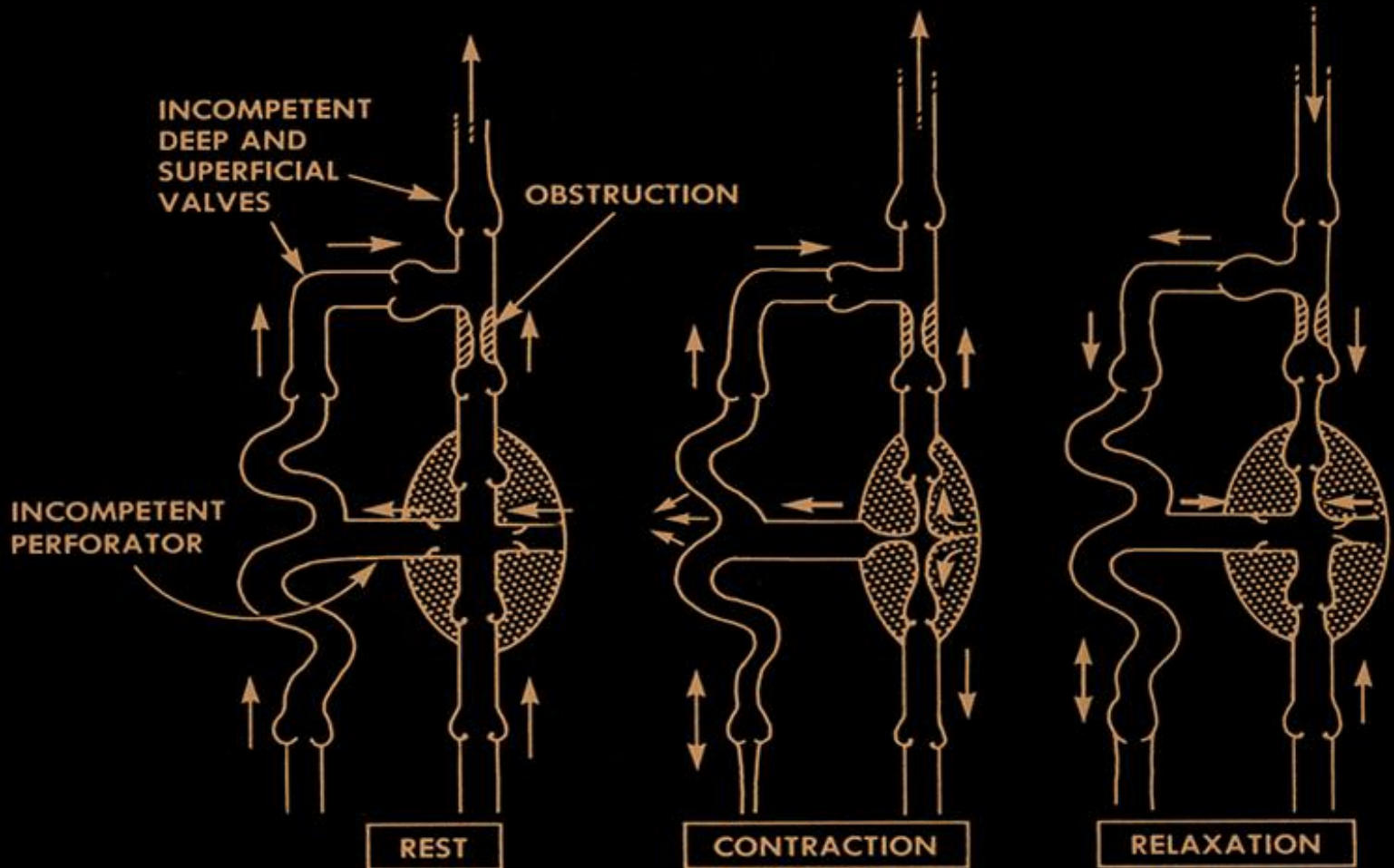




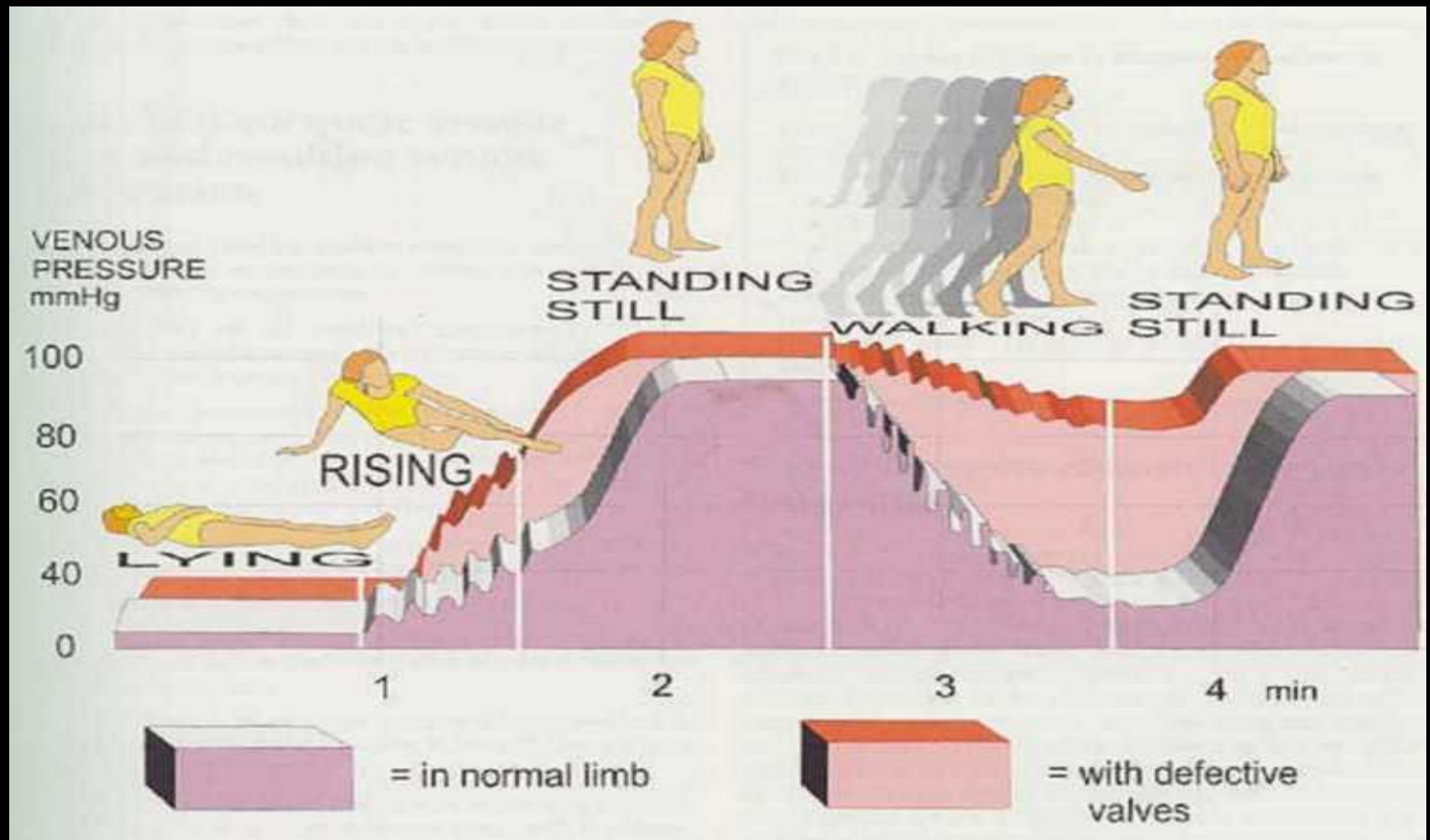
# Primary Valvular Incompetence

“ floppy valve ”

# Secondary Valvular Incompetence



# SO, Waht happens to the Venous Pressure?



# Evaluation

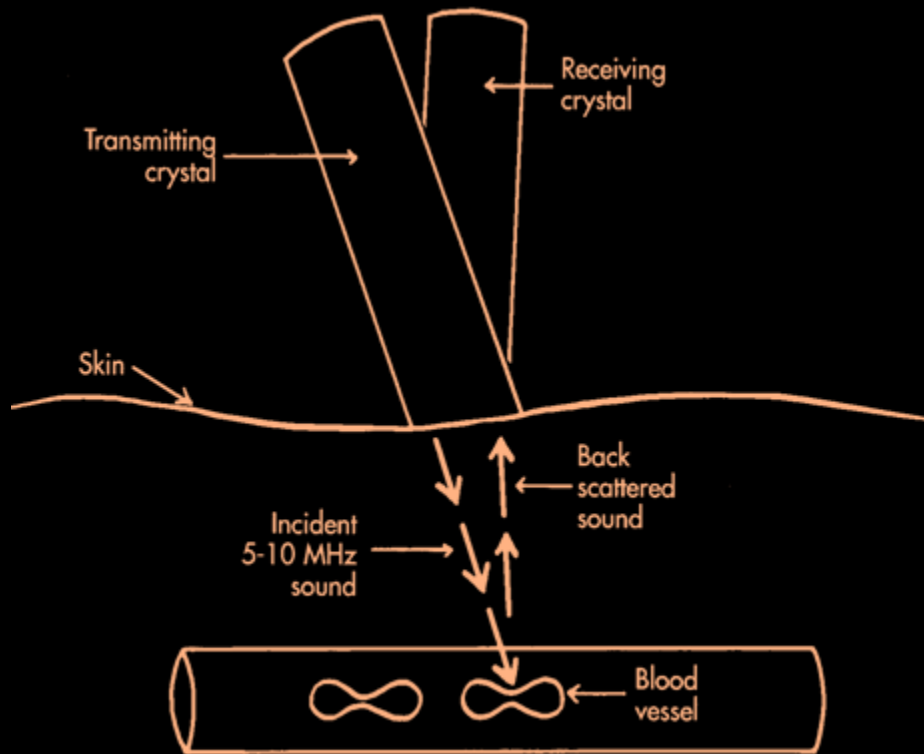
- History
- Physical Examination
- Investigations:
  - Non-invasive (Doppler/Duplex)
  - Invasive (AVP/ Venography)



# Clinical Presentation

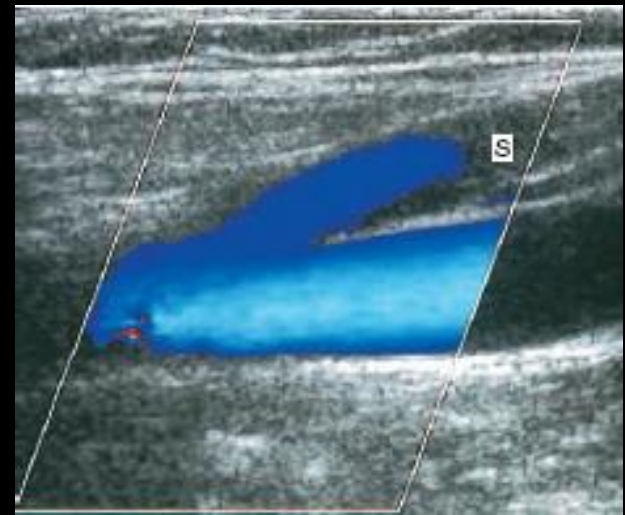
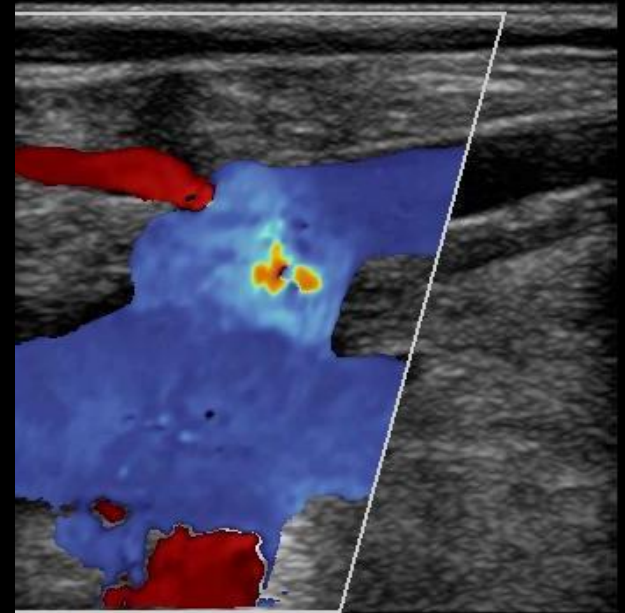


# Doppler

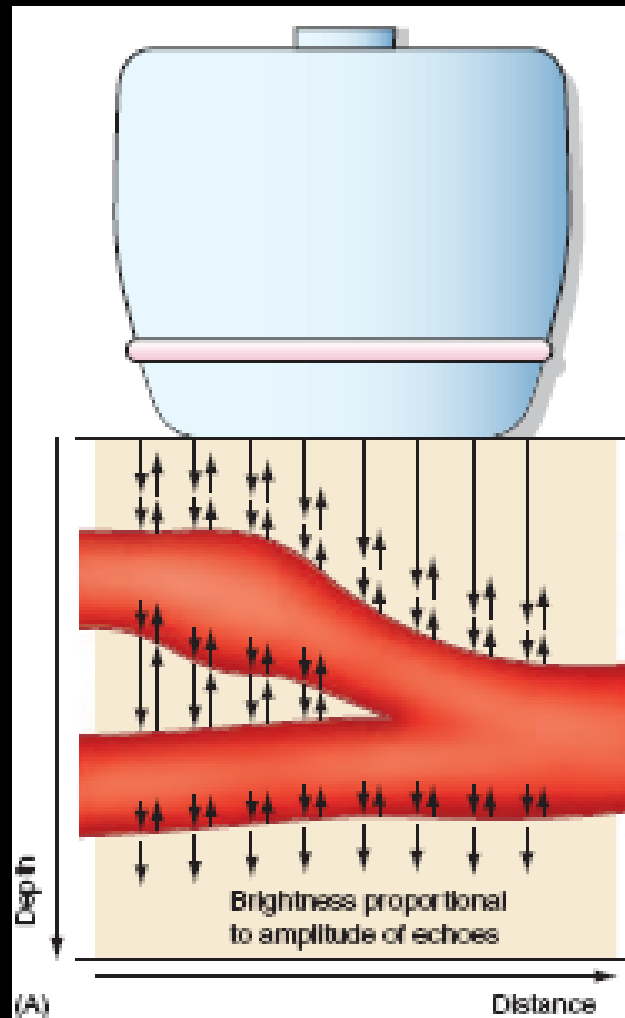




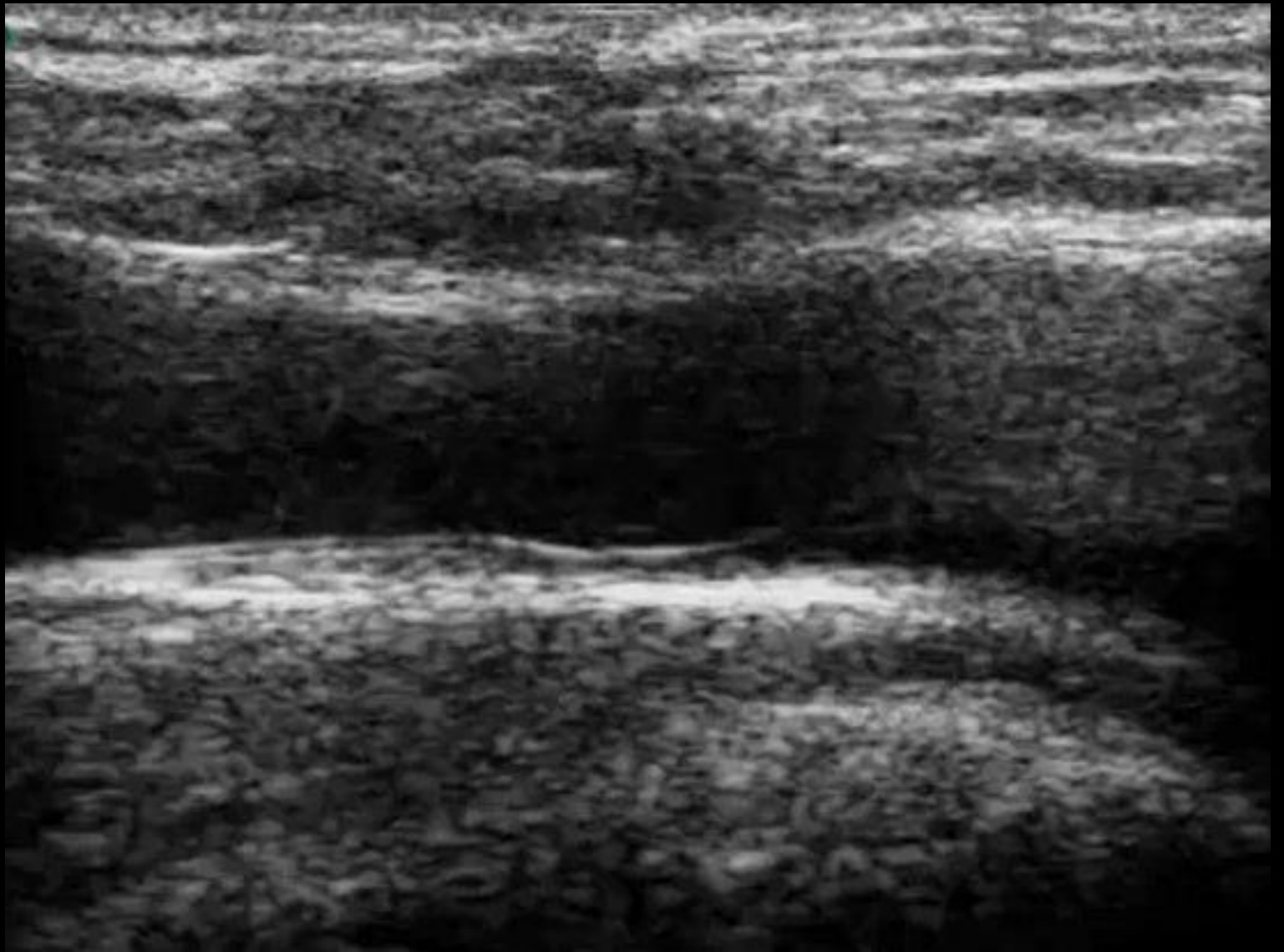
# Duplex-Scanning

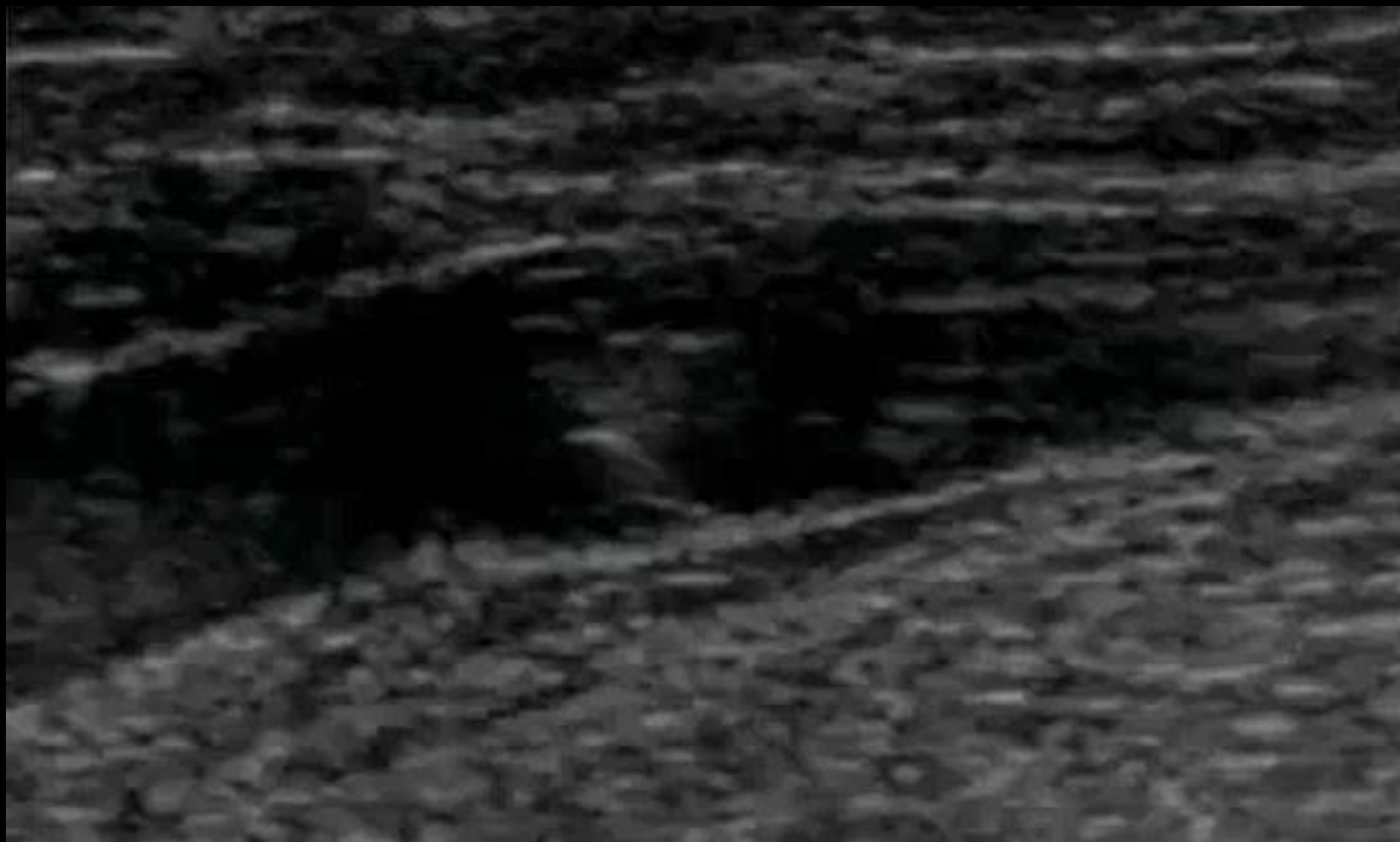


# Duplex-Scanning

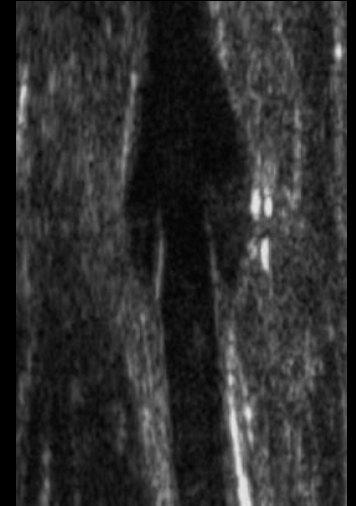
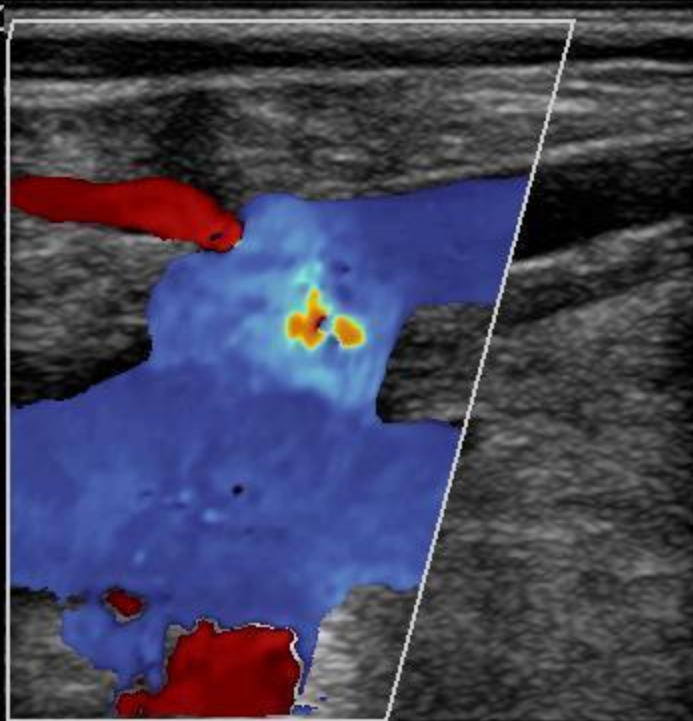




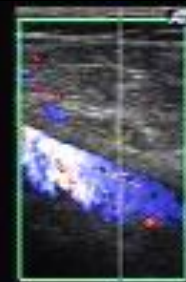




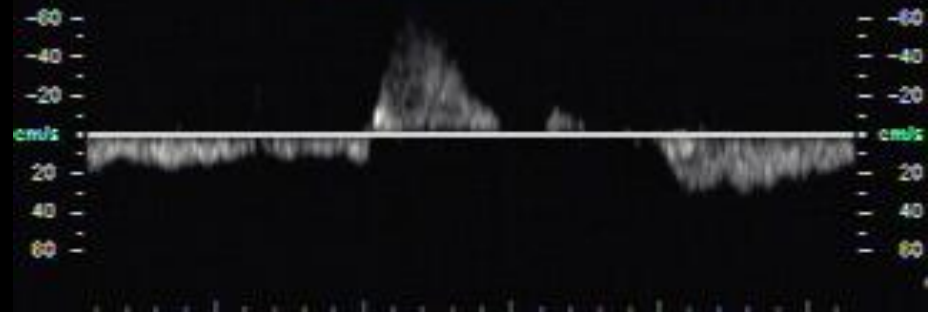
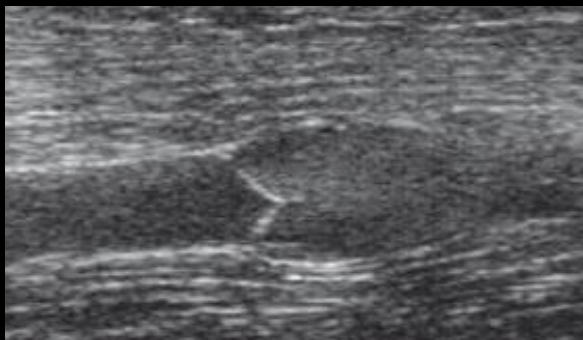
# Duplex-Scanning



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

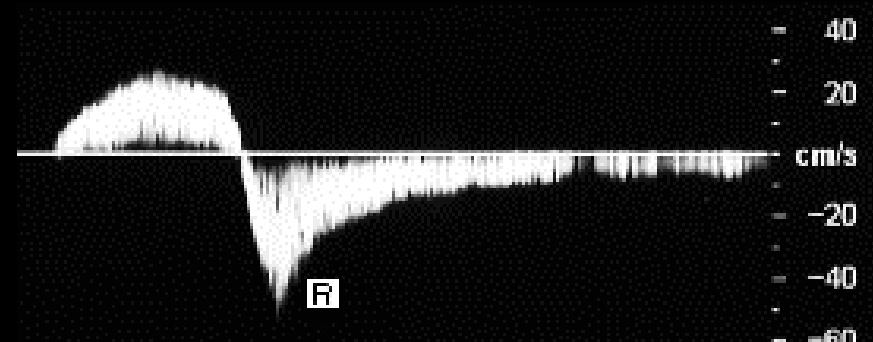
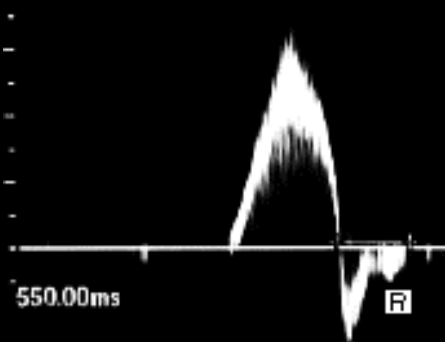
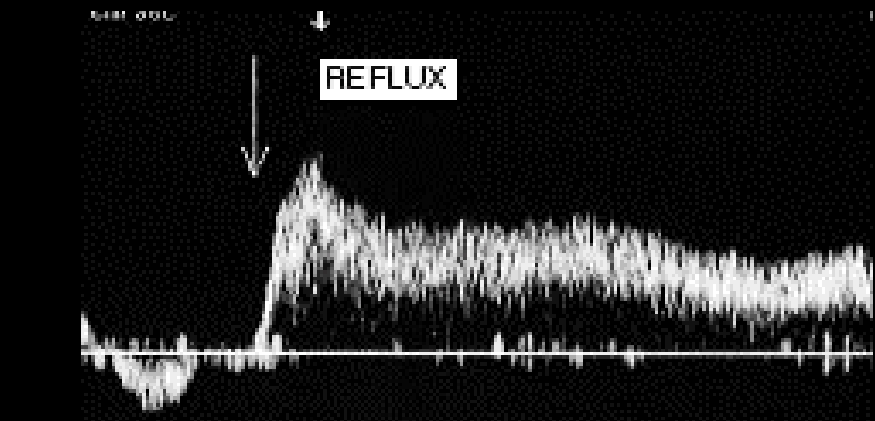
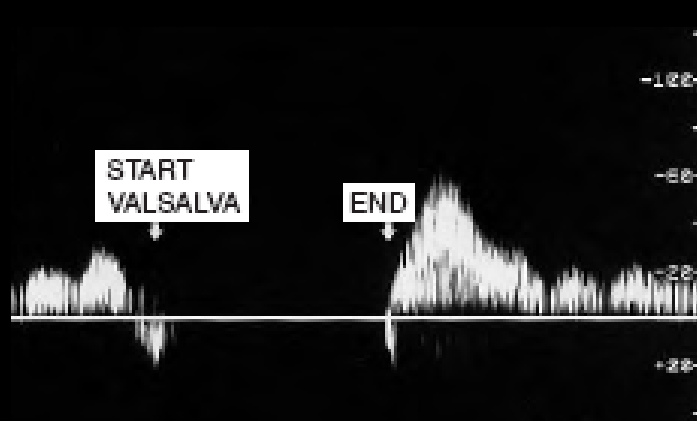
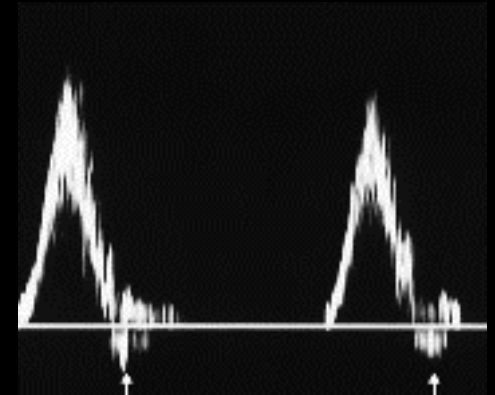
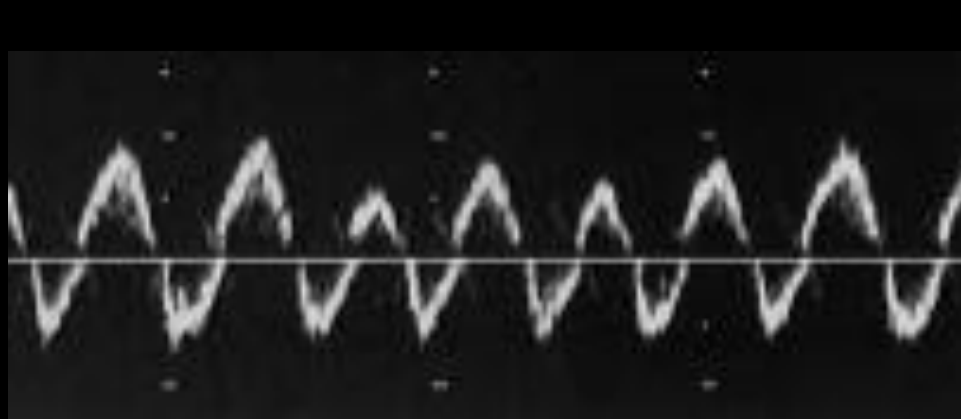


SV Angle 70°  
Dep 3.7 cm  
Size 2.0 mm  
Freq 4.0 MHz  
WF Low  
Dop 64% Map  
PRF 2500 Hz



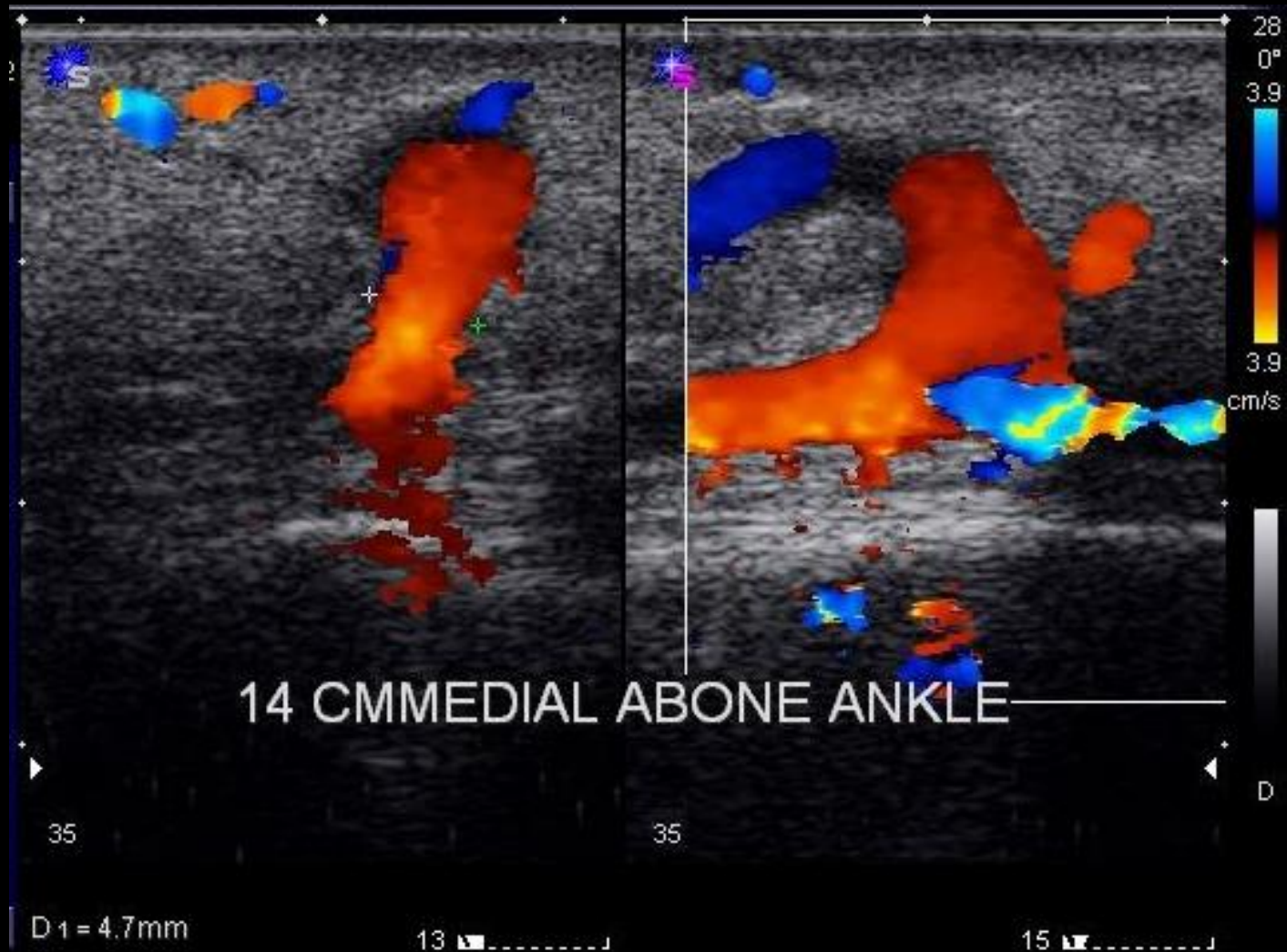


# Duplex-Scanning

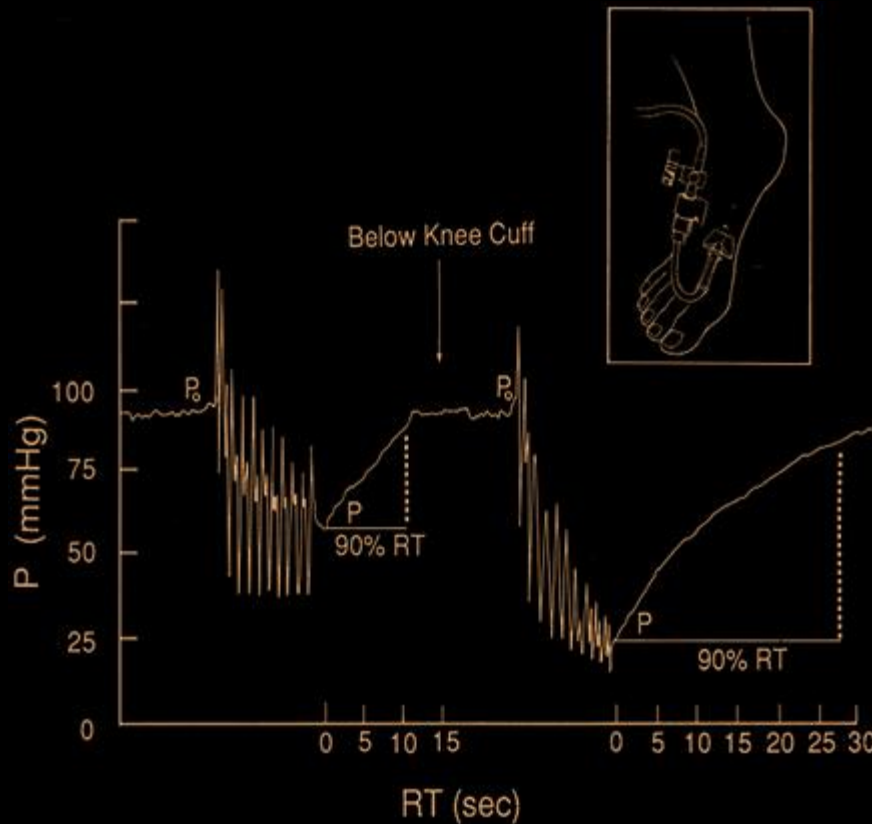




# Incompetent Perforator Vein



# Ambulatory Venous Pressure

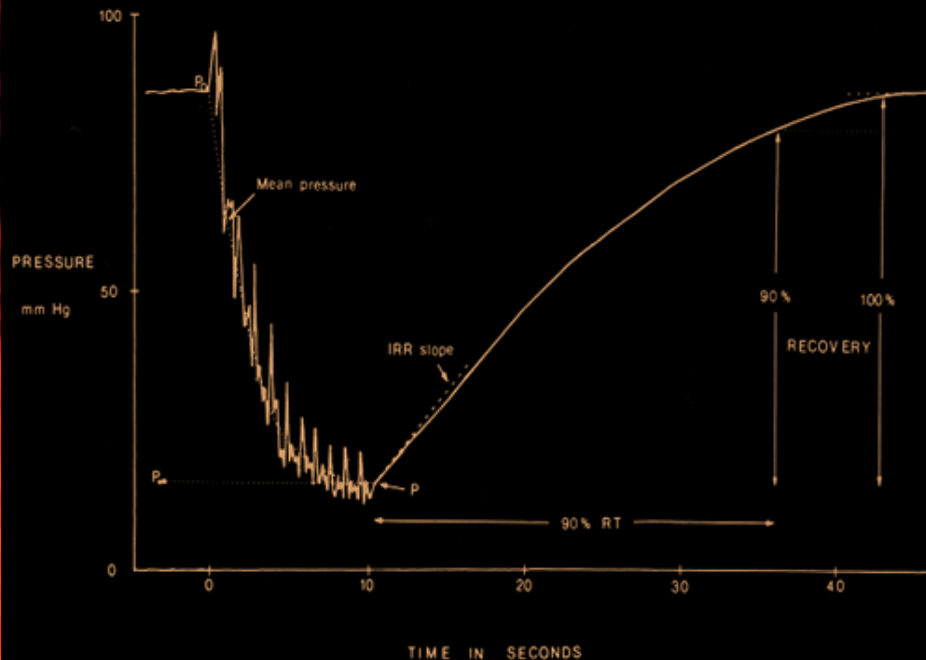


## Reflux

### 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

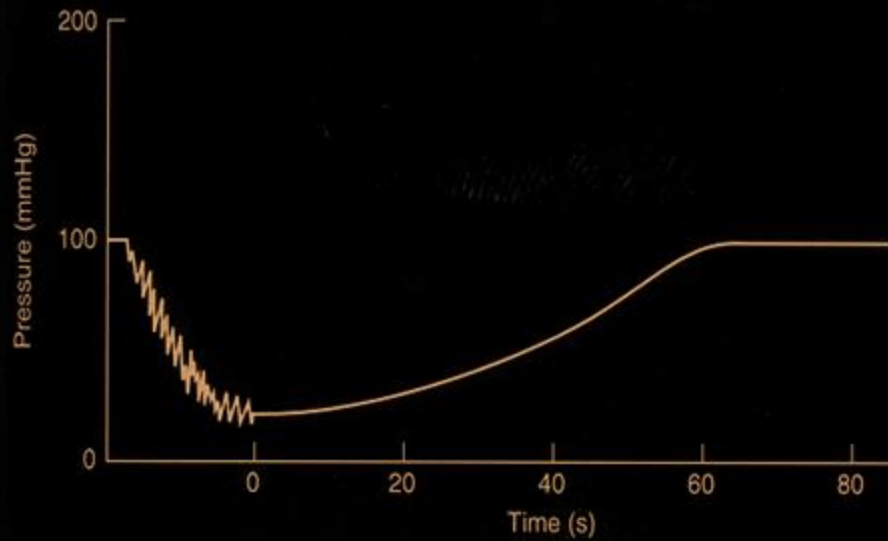
Short Venous Refill Time

**VRT < 20 sec**

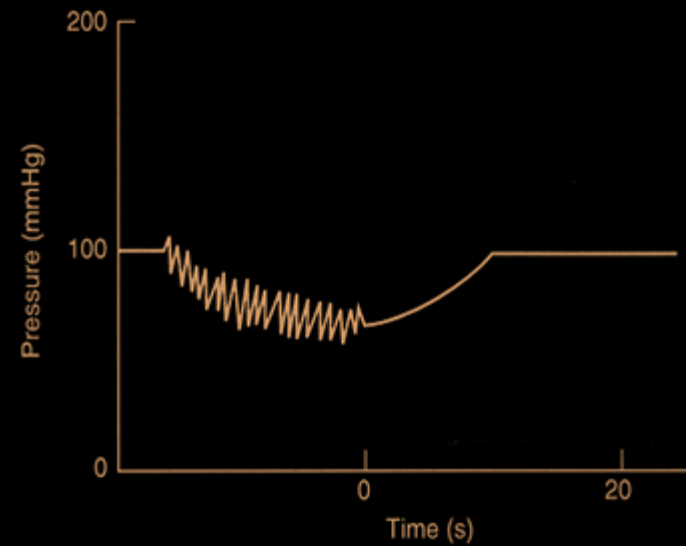


# AVP

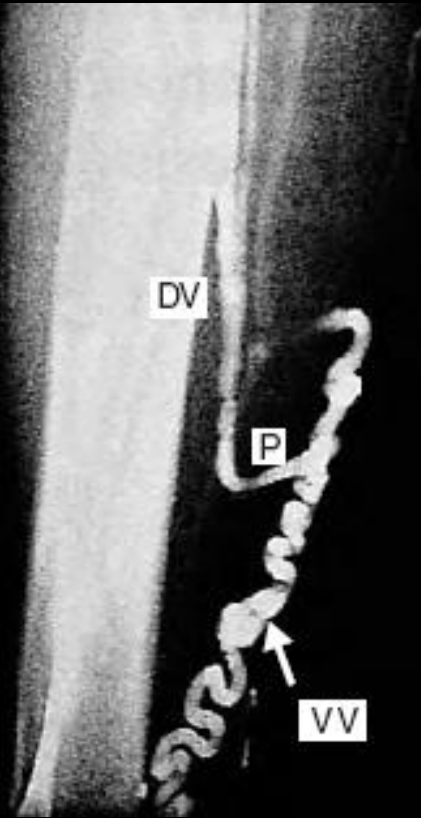
Normal



Deep venous  
incompetence



# Phlebography

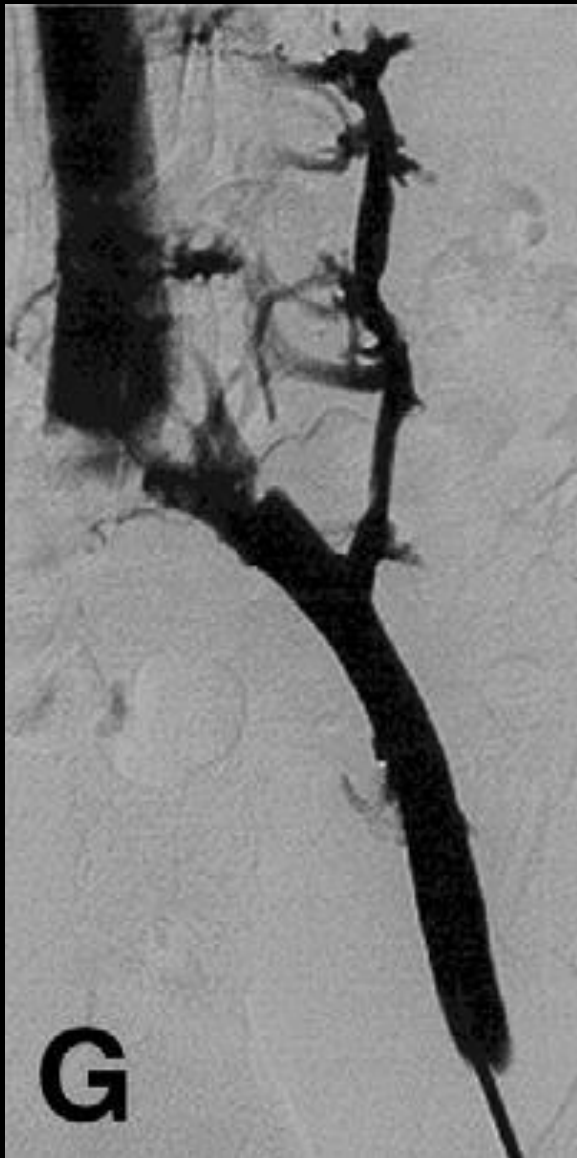


# Phlebography





# 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



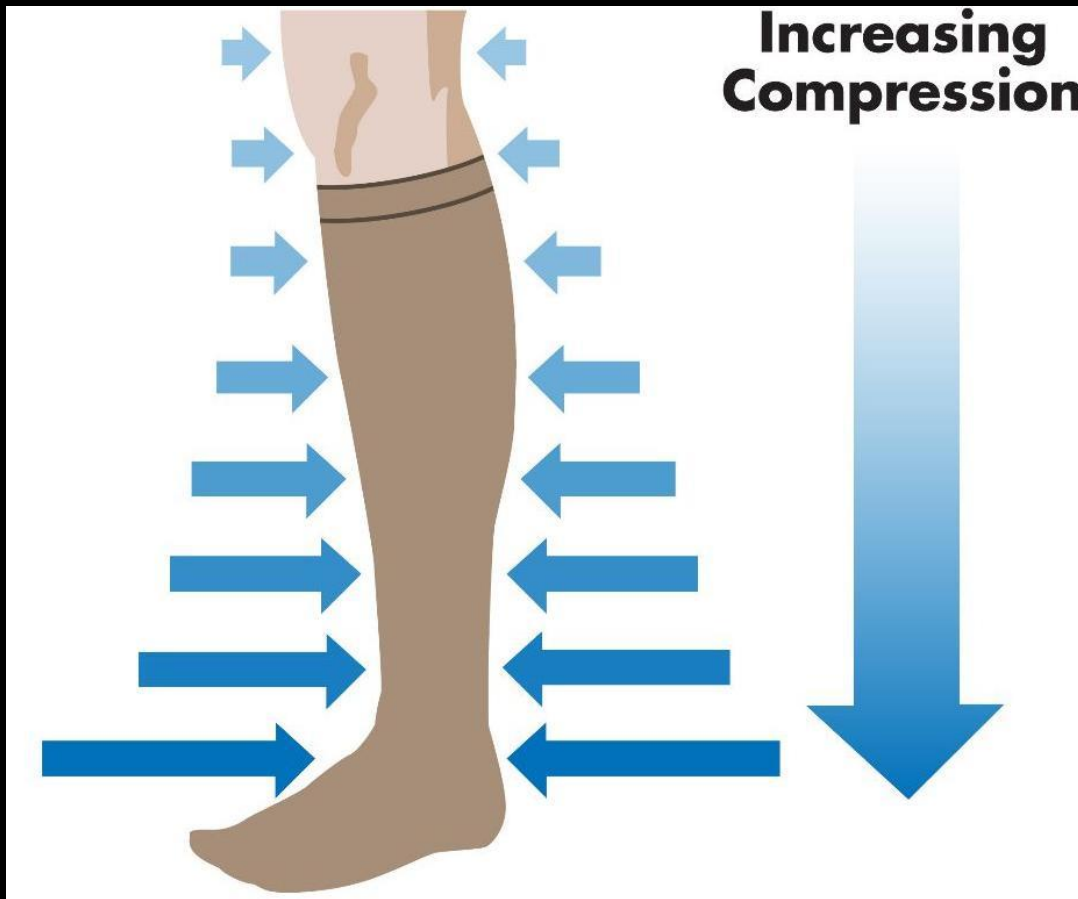
Stocking

USG-Sclero

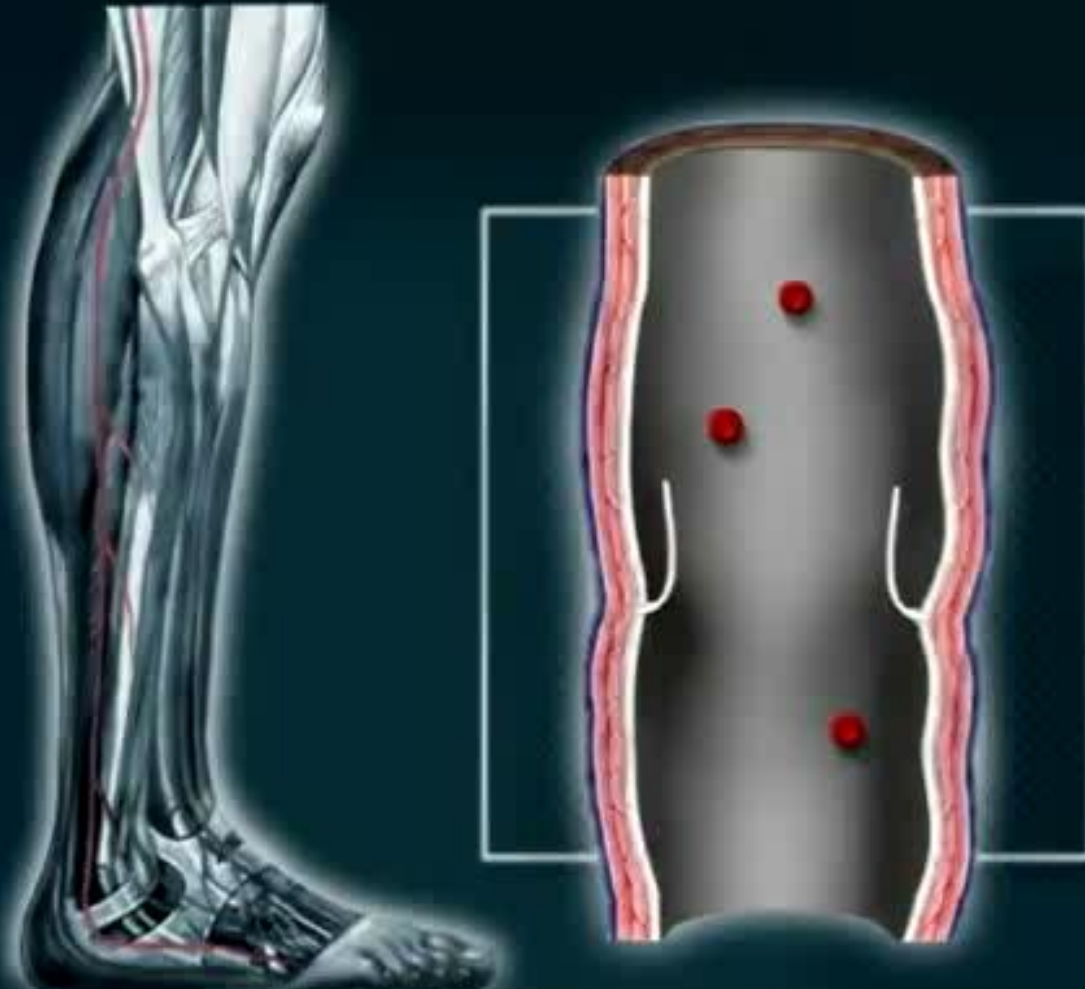
ELVT/Surgery



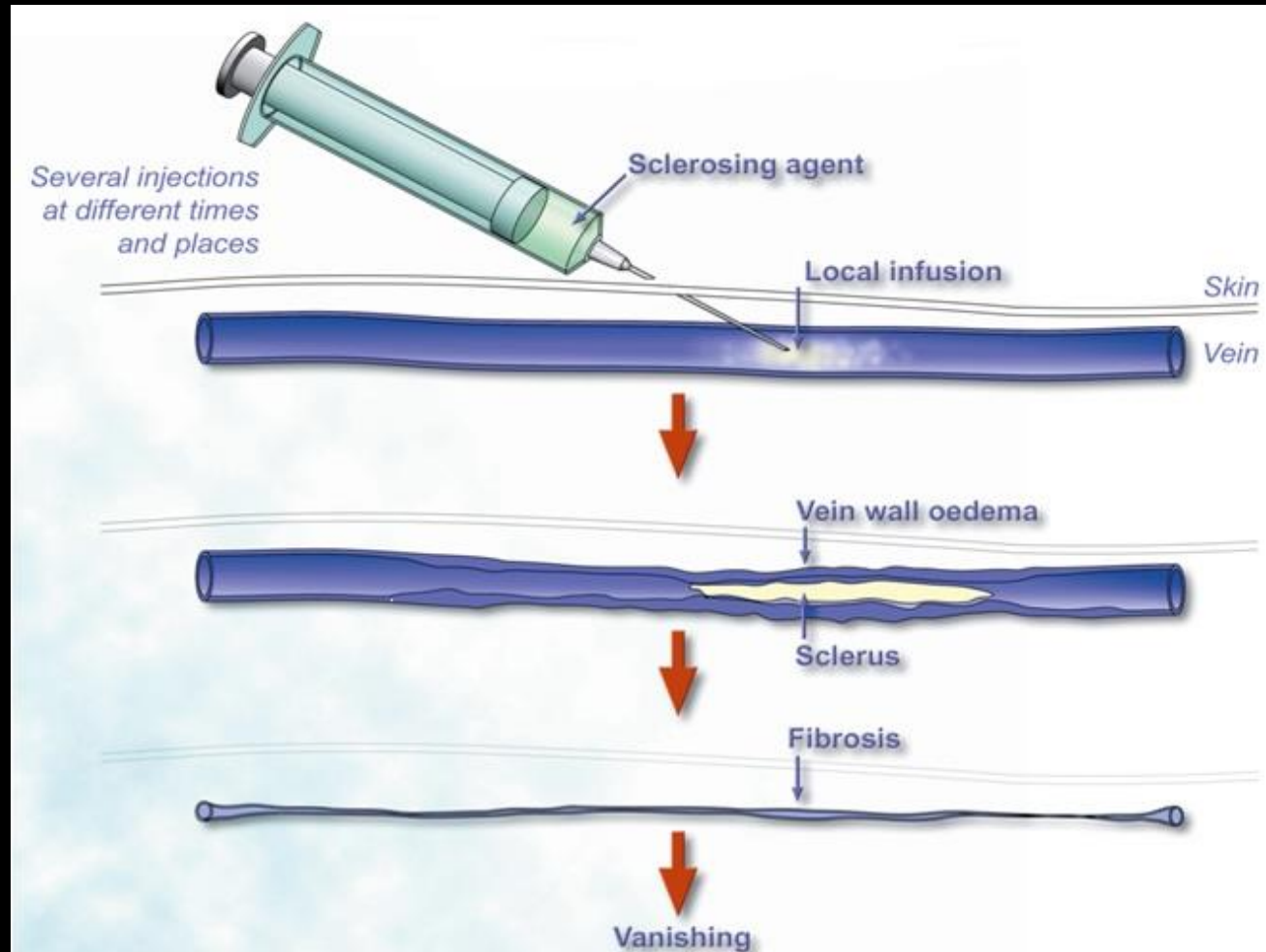
# Compression Stockings



# Compression Stockings

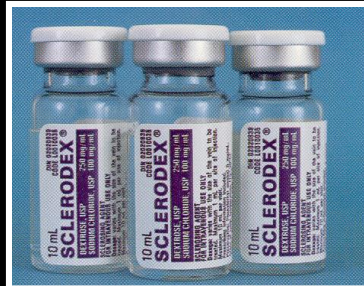


# Sclerotherapy



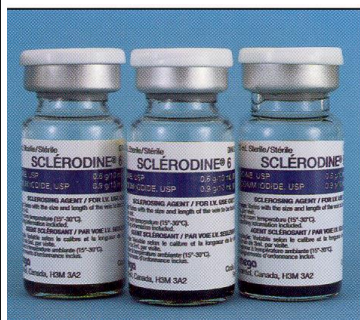


# Sclerotherapy



## 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



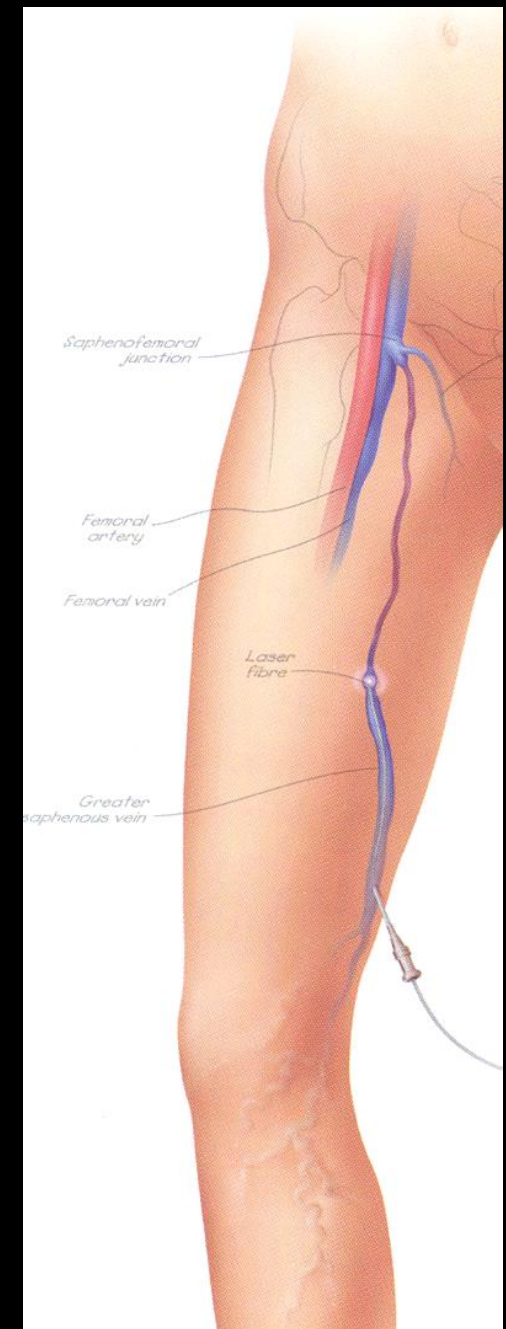
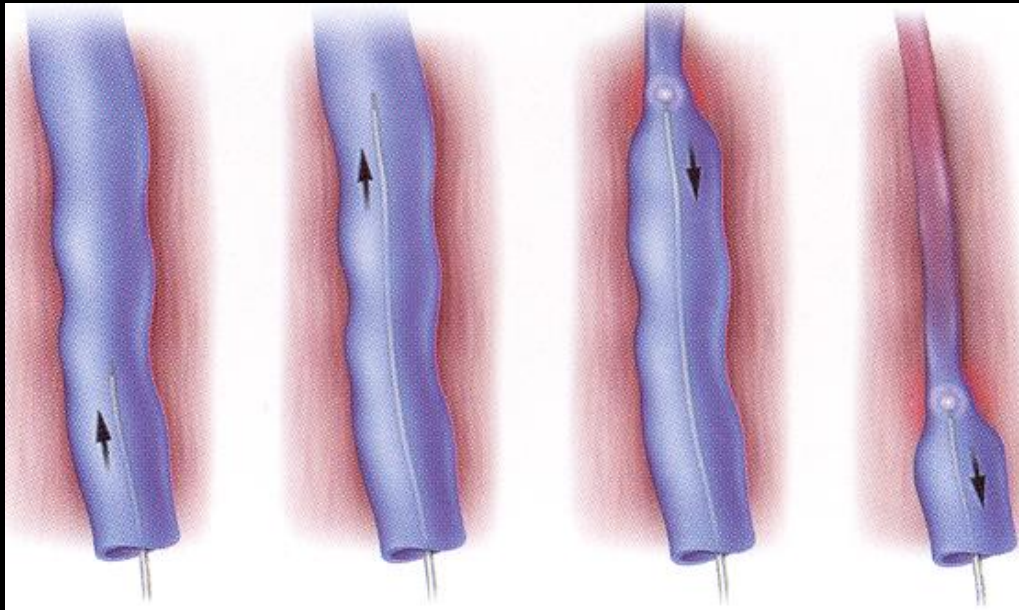
Contraction



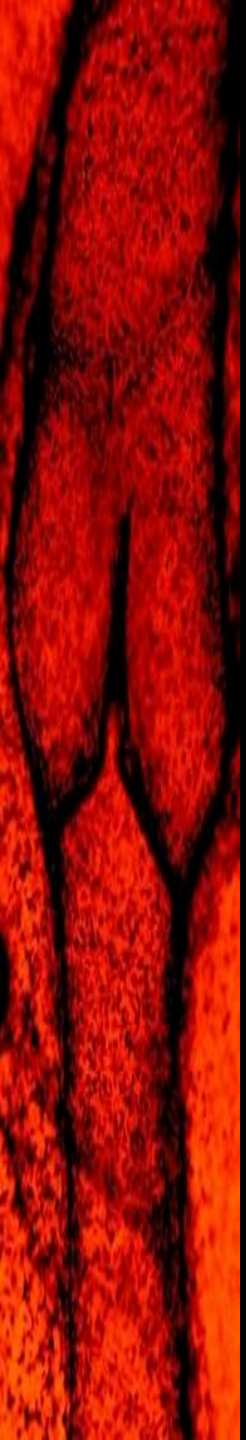
Fibrous obliteration



# EndoVenous Laser Therapy(EVLT)

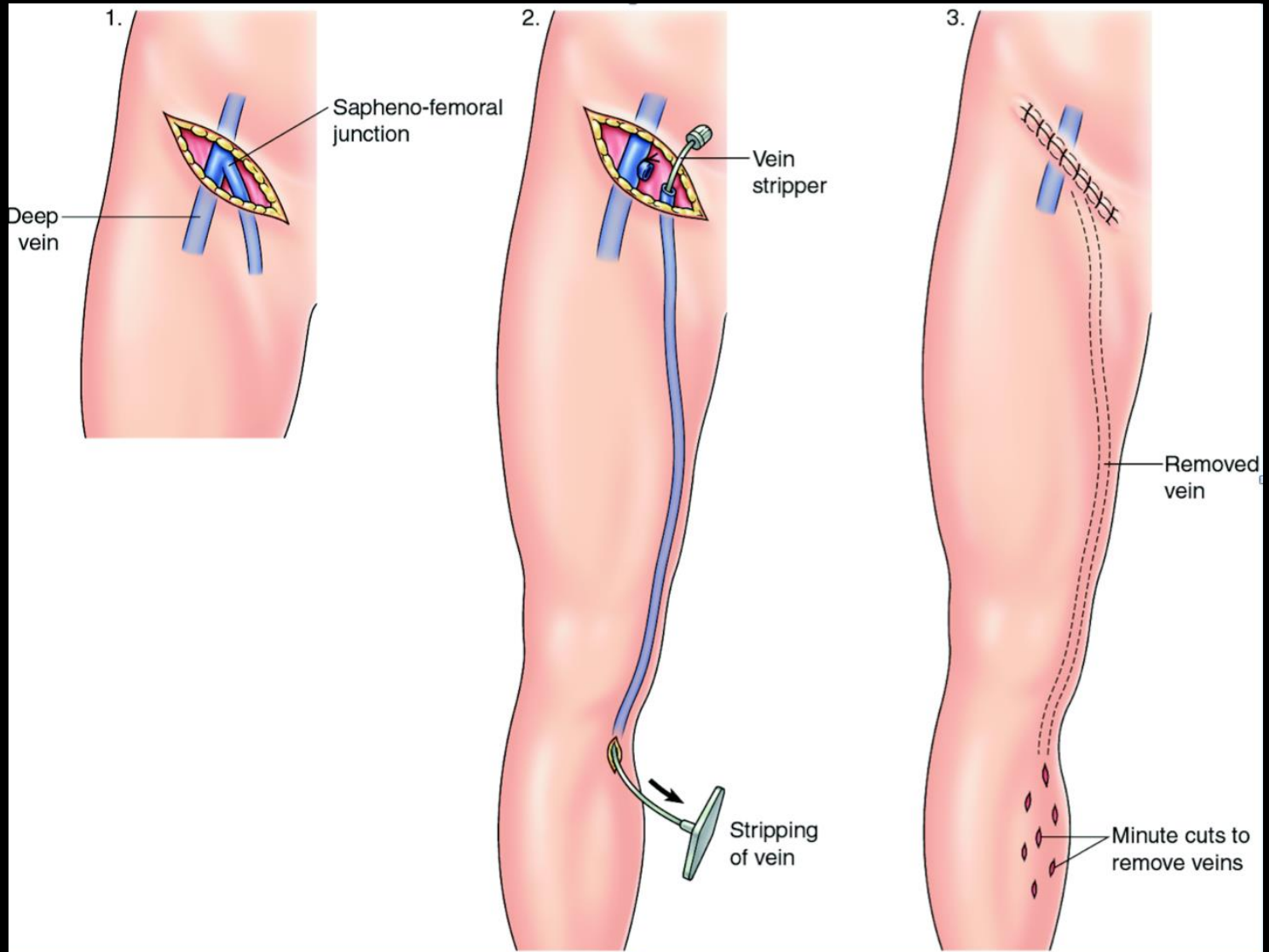


# EndoVenous Laser Therapy(EVLT)





# Surgery





*Thank You*