

The Role of the Vascular Testing Unit

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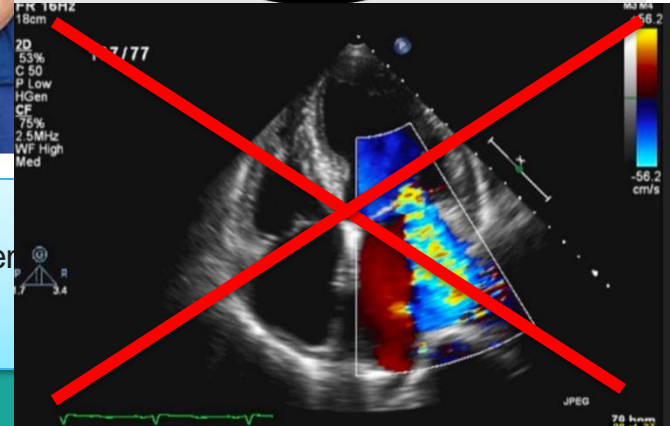


- Who we are
- What we do (fly-by of ultrasound)
- Wound referral – how can we help?
- Focus on tests related to wound management
- Treatment pathway focus



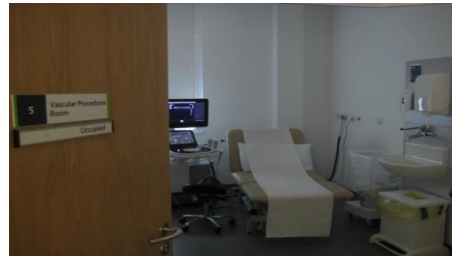
Team: Who are we?

Head of
Department



Vascular Testing Department

- Carotid duplex
- Lower and upper limb arterial duplex
- Graft surveillance
- Ankle & Toe Brachial Pressure Indices
- Lower and upper limb deep vein thrombosis duplex
- Aortic Aneurysm Surveillance
- Venous stent surveillance
- Renal fistula ultrasound



- Renal Access Mapping
- Vein mapping pre surgery
- Lower limb venous insufficiency duplex
- EVAR stent graft surveillance
- Temporal artery duplex for Temporal Arteritis
- PPG assessment
- Toe pressures and TCPO2 (Transcutaneous oxygen measurements)

~ 13,000 investigations annually

Vascular Disease Diagnoses

Atherosclerotic

Aneurysmal

Thrombotic

Venous

Vasculitis

OPEN VALVE

CLOSED VALVE

REFLUX IN
VARICOSE VEIN



How can we help?



Arterial ?

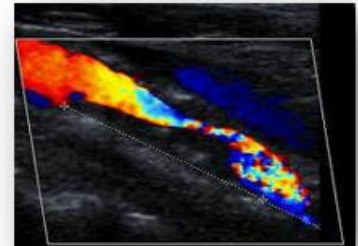
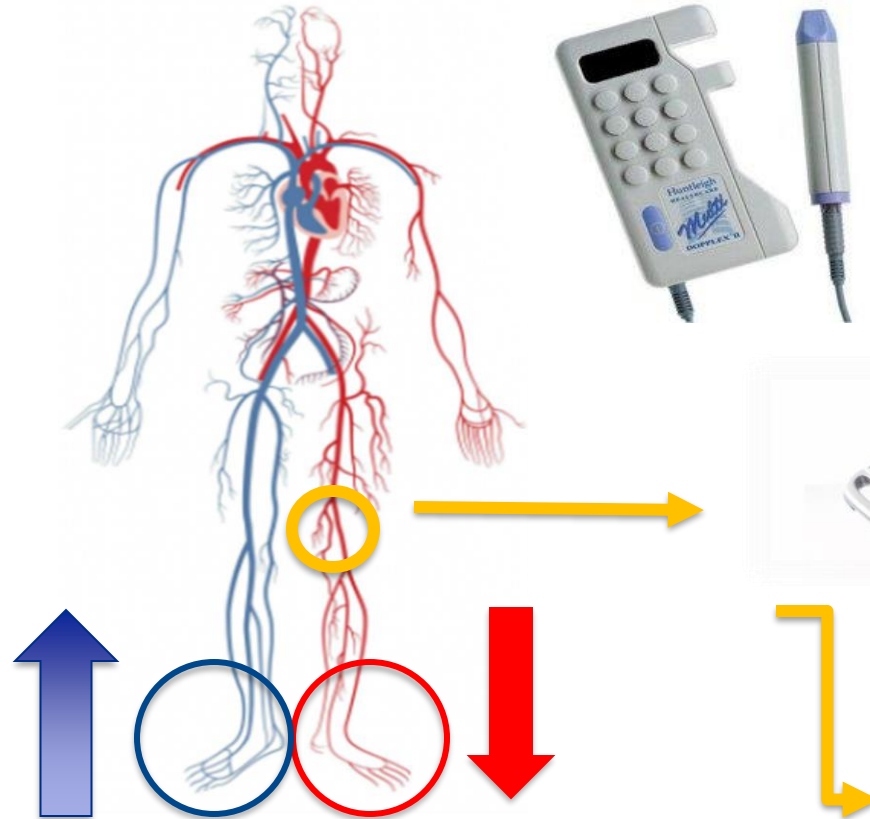


Venous ?



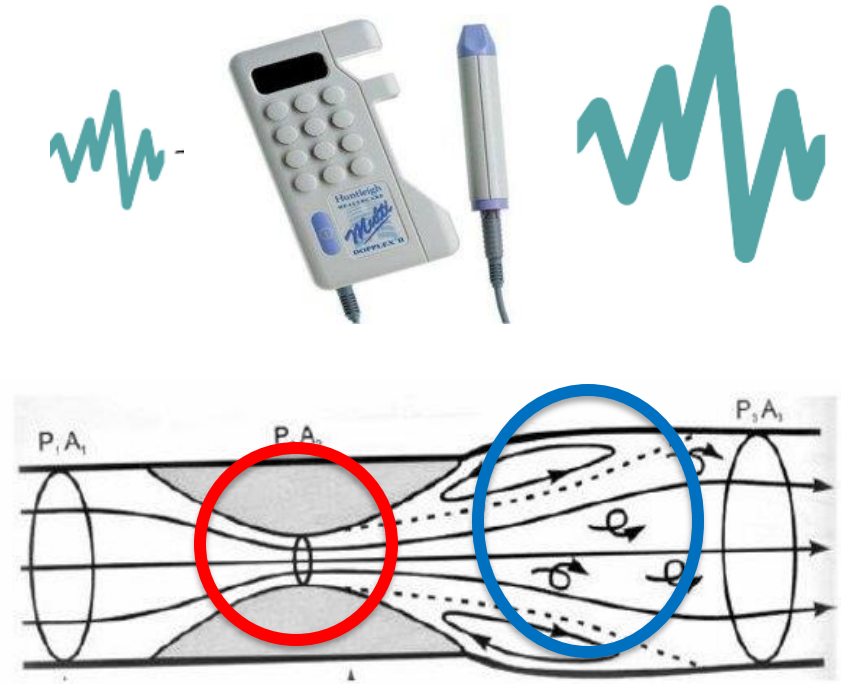
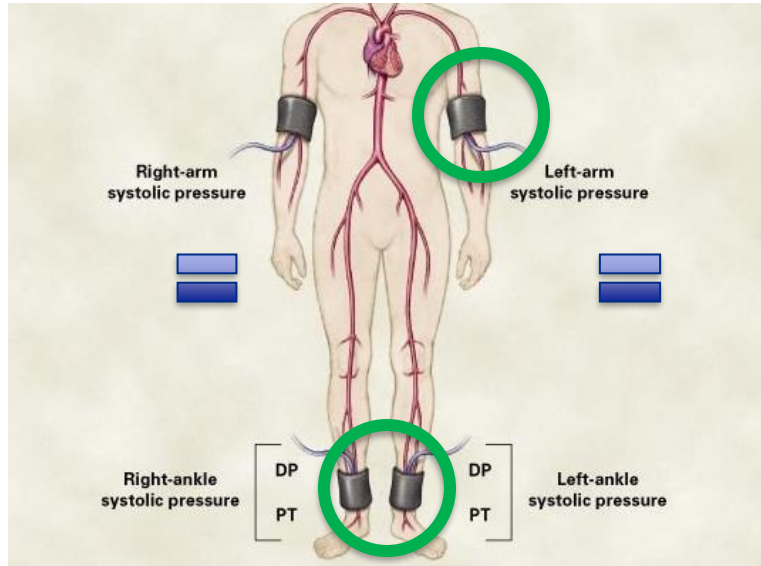
Arterial ?

Where do we start?



Ankle brachial pressure Index (ABPI)

- Baseline test for detecting/grading Lower limb arterial disease



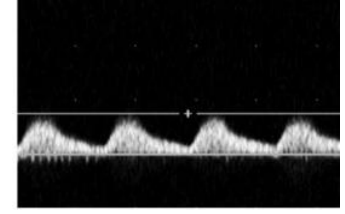
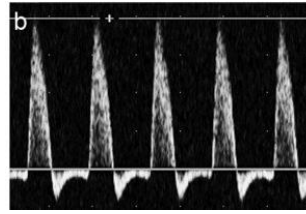
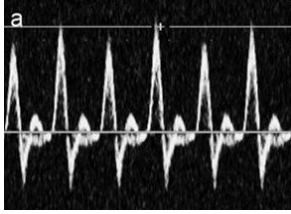
Ratio

Ankle artery systolic pressure (mmHg)

Brachial systolic pressure (mmHg)

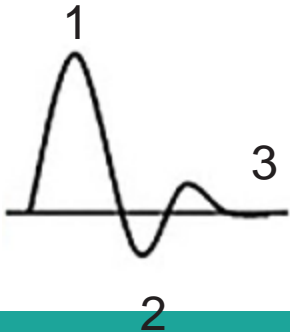
Reference Values

Interpretation of ABPI	
ABPI value	Disease severity
>1.3	Arterial calcification may be present
>1.0–1.3	Probably no peripheral arterial disease
0.81–1.0	No significant or mild peripheral occlusive disease
<0.51–0.8	Moderate peripheral arterial occlusive disease
<0.5	Severe peripheral arterial disease



Triphasic..... Biphasic..... Monophasic.....

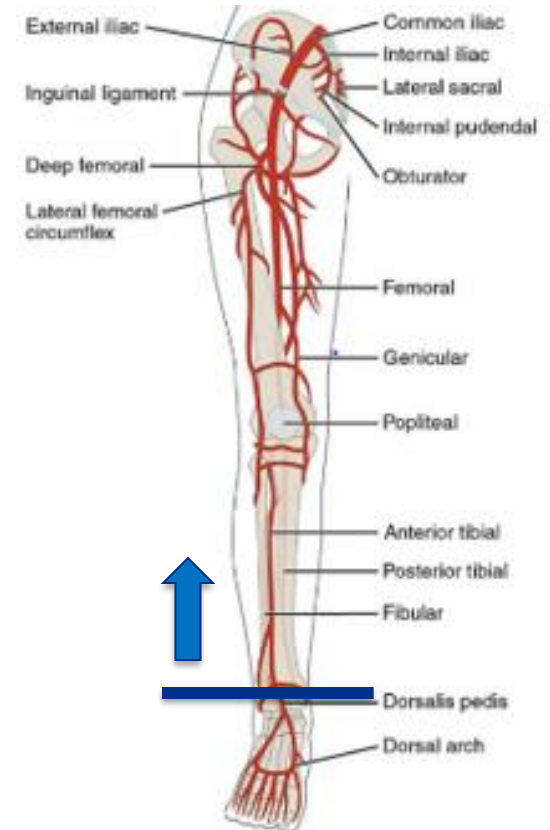
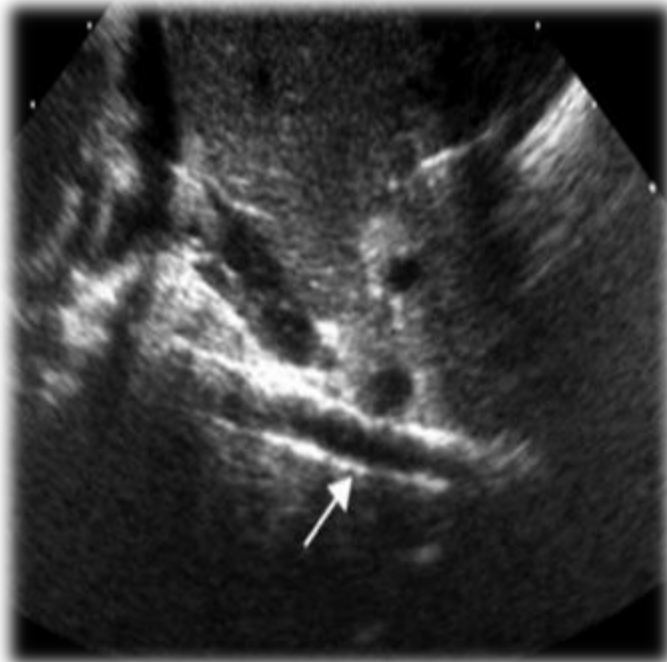
- Blood pressure changes during each cycle of cardiac activity – due to heart contraction and relaxation
- Systolic – maximum pressure, diastolic – minimum pressure



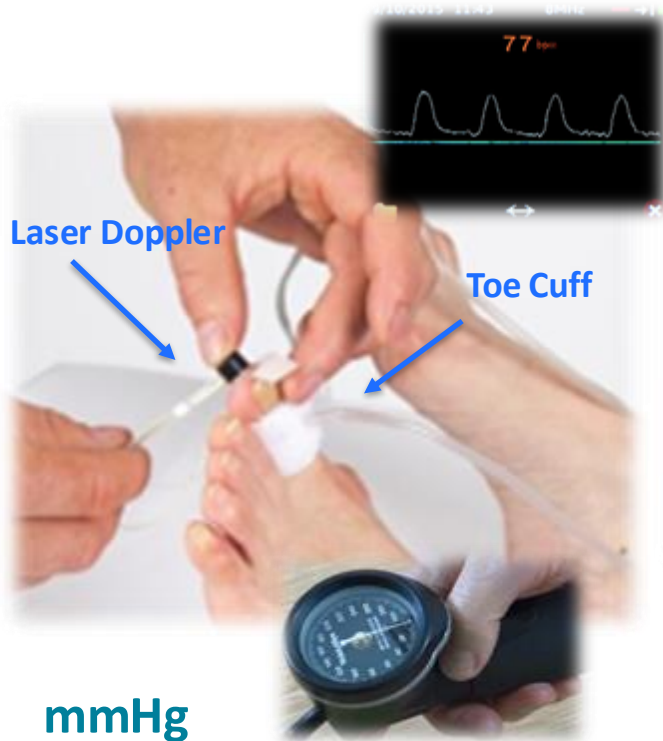
1. Forward flow to peak systolic pressure
2. Transient reversal flow in early diastole
3. Forward flow in late diastole



When does an ABPI not work?



Toe pressures/TBI



TBI - > 0.7



- 50-70 mmHg Normal
- <40 mmHg Impaired Wound Healing
- <30 mmHg Critical Limb Ischemia



W WOUND

- 0: No ulcer and no gangrene
- 1: Small ulcer and no gangrene
- 2: Deep ulcer or gangrene limited to toes
- 3: Extensive ulcer or extensive gangrene

I ISCHEMIA

- Toe Pressure/TcPO₂
- 0: ≥60 mmHg
 - 1: 40–59 mmHg
 - 2: 30–39 mmHg
 - 3: <30 mmHg

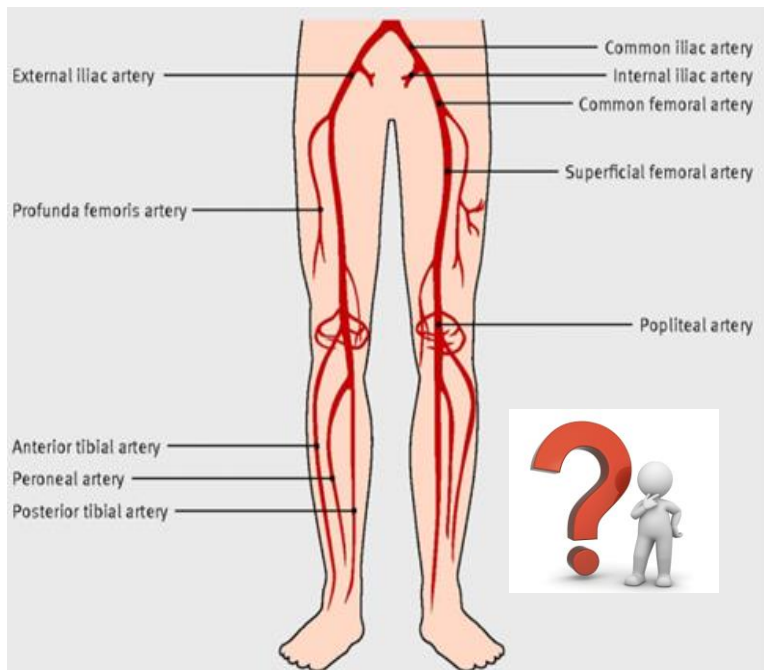
fi FOOT INFECTION

- 0: Uninfected
- 1: Mild (≤2 cm cellulitis)
- 2: Moderate (>2 cm cellulitis/purulence)
- 3: Severe (any necrosis or abscess)

TBI Challengnes



What Next?

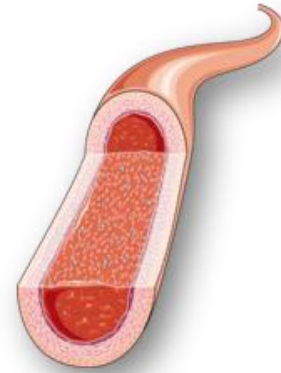


ABPI < 1

TBI < 0.7

- **<40 mmHg Impaired Wound Healing**
- **<30 mmHg Critical Limb Ischemia**

Duplex Ultrasound

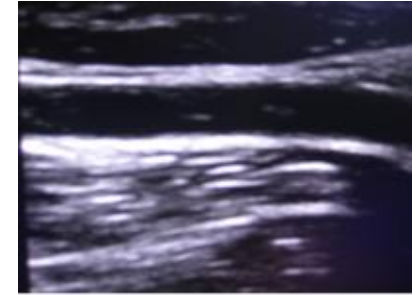


- ❖ Visualise anatomy
- ❖ Identify pathology
 - Location, severity, new/old*
- ❖ Aid clinical decision making

Ultrasound Assessment (Duplex)

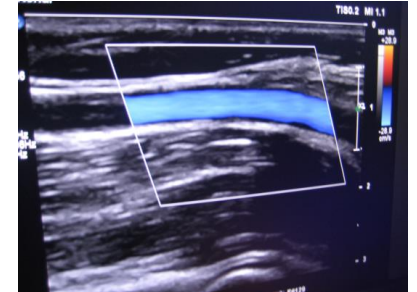
- *B-mode (Brightness)*

- Grey scale image, structures of differing echo intensity
- Identifies structures, course and gross pathology



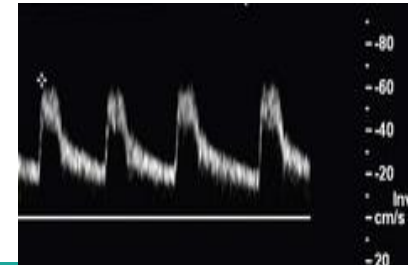
- *Colour Doppler*

- Qualitative assessment of flow dynamics
- Direction
- Signposts blood flow issues/ other pathology

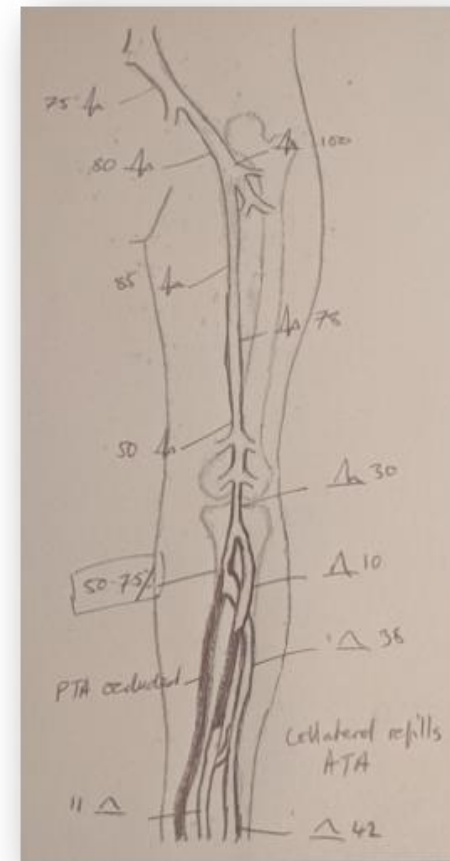
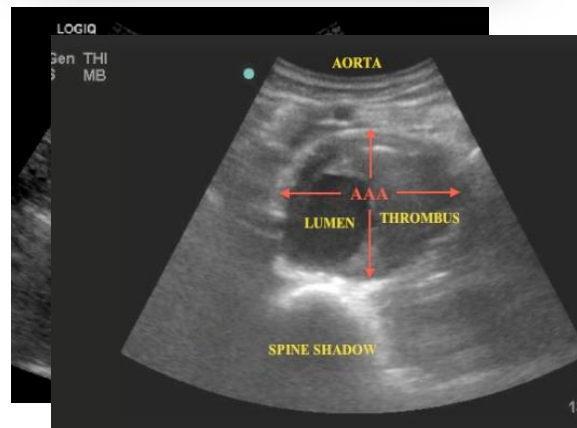
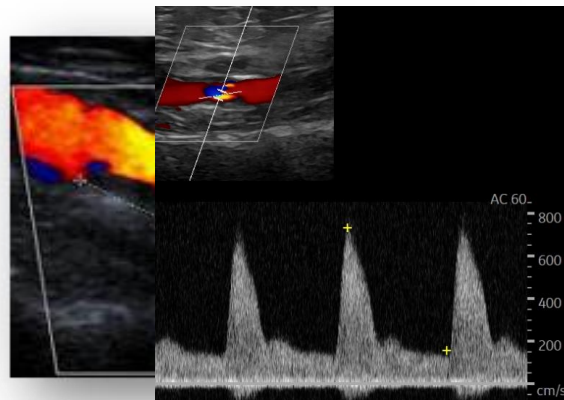
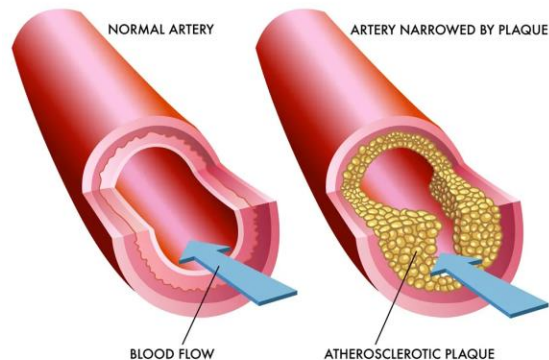


- *Spectral analysis (PW- Doppler)*

- Focused quantitative assessment blood flow
- Measure blood velocity/grade disease severity



Arterial insufficiency diagnosis



Conclusion:

Widely patent aorto-iliac segment on the left.

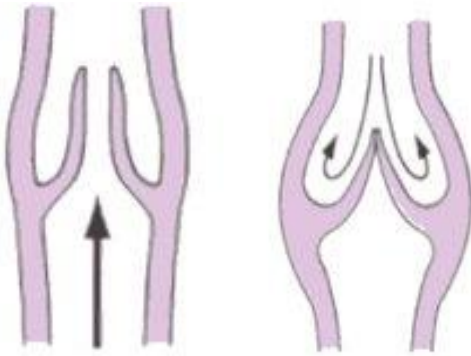
Common femoral artery, profunda femoris artery origin, superficial femoral and popliteal artery widely patent with multiphasic signals.

50-75% stenosis of the tibioperoneal trunk.

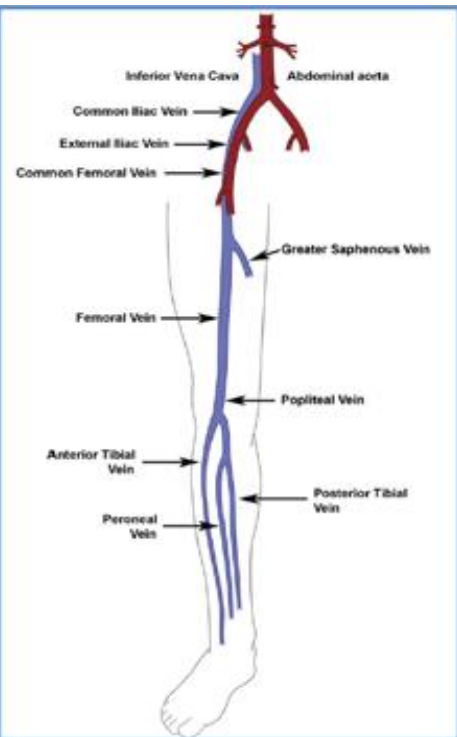
Run-off disease:

Occluded posterior tibial artery. Segmental occlusion of the anterior tibial artery mid calf. Peroneal artery patent throughout calf

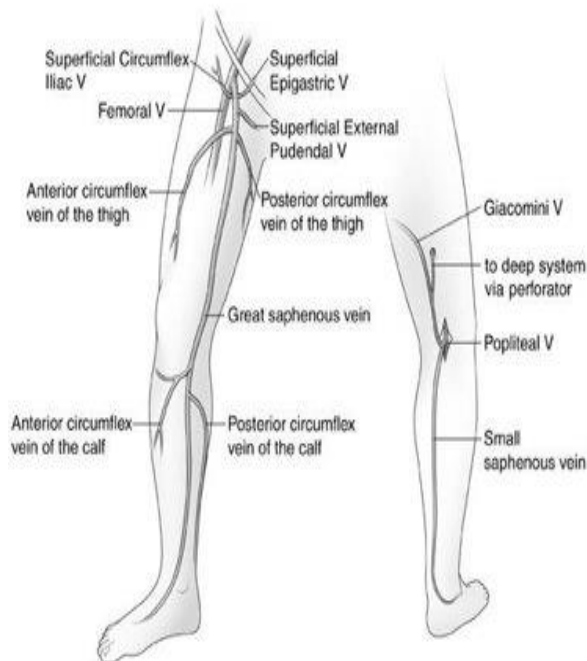
Venous insufficiency diagnosis



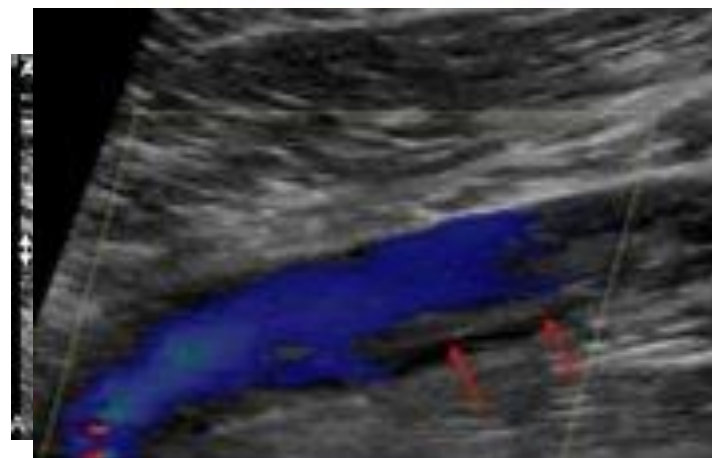
Venous Insufficiency diagnosis



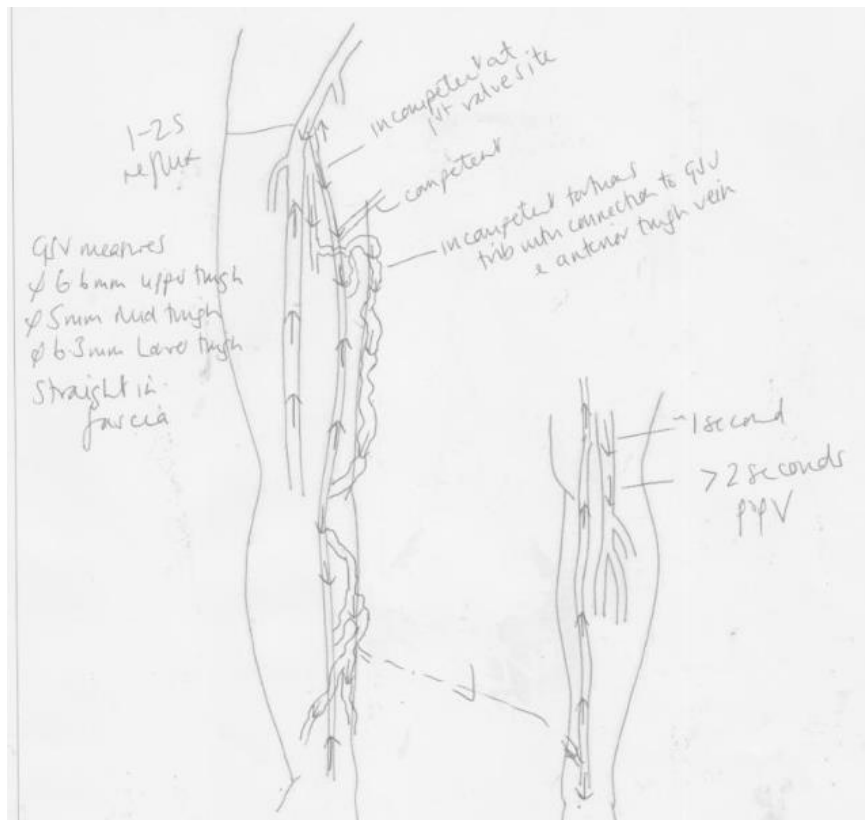
Deep Veins



Superficial veins



Guide Treatment



Laser fiber is inserted in vein

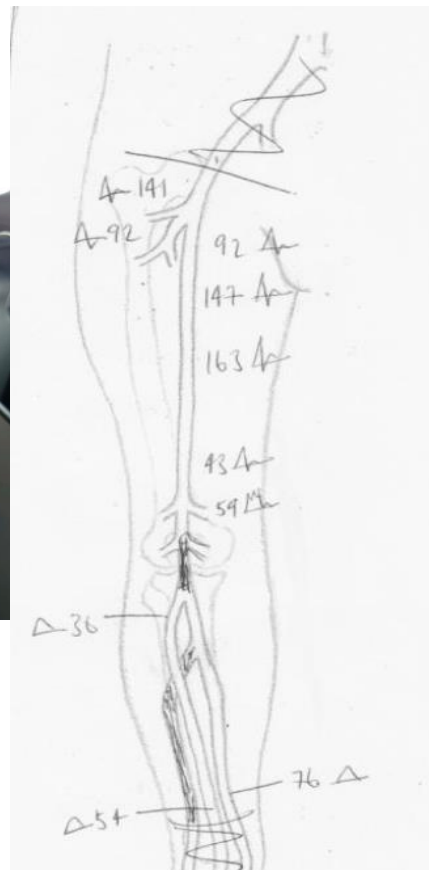


Laser fiber is slowly removed

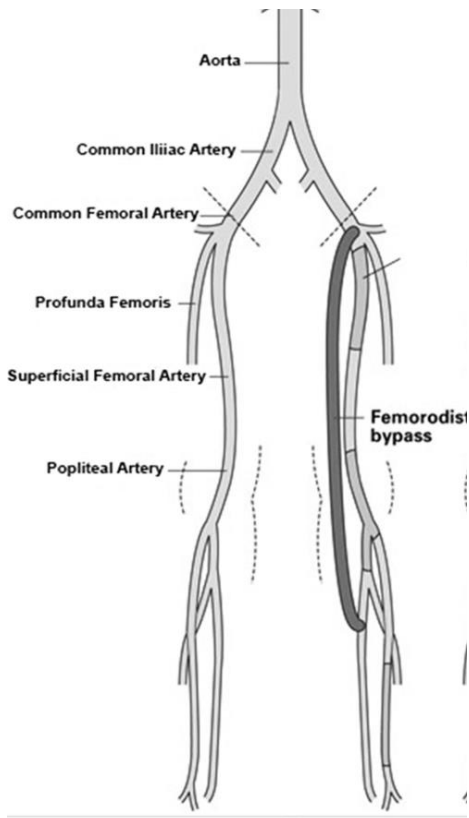


Closed vein following treatment

Patient treatment Focus



What next? Revascularisation



Summary

- Who we are
- Role in secondary care wound management
- Fit into patient treatment pathway

Pre-treatment

Post - treatment

Thank you for listening

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