Peripheral Vascular Disease

Acute & Chronic Limb Ischemia

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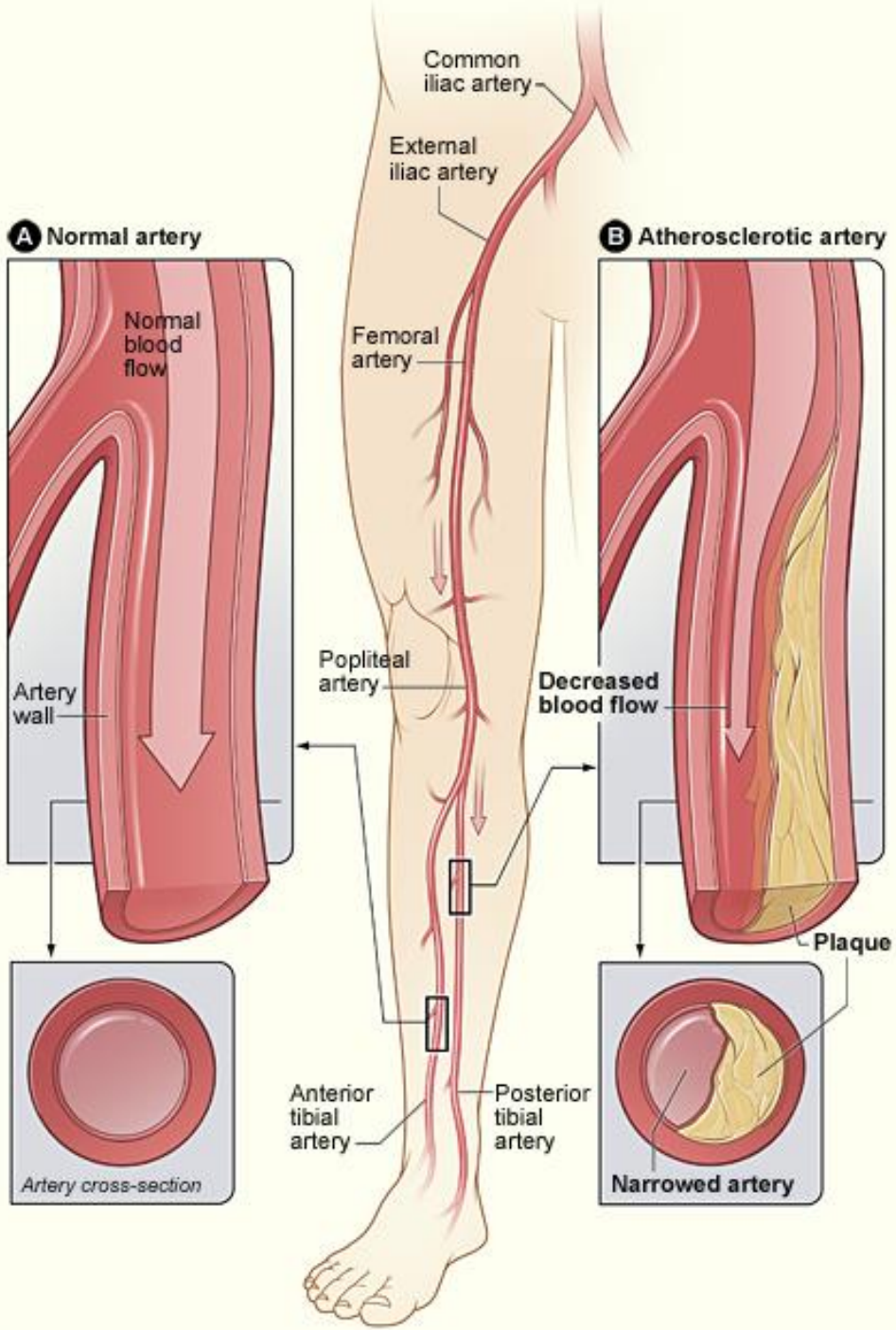
What is PVD?

Definition:

- Also known as PAD or PAOD.
- Occlusive disease of the arteries of the lower extremity.
- Most common cause:
  - Atherothrombosis
  - Others: arteritis, aneurysm + embolism.
- Has both ACUTE and CHRONIC Px

Pathophysiology:

- Arterial narrowing → Decreased blood flow = Pain
- Pain results from an imbalance between supply and demand of blood flow that fails to satisfy ongoing metabolic requirements.



The Facts:

1. The prevalence: >55 years is 10%–25%

2. 70%–80% of affected individuals are asymptomatic

3. Pt's with PVD alone have the same relative risk of death from cardiovascular causes as those CAD or CVD

4. The ankle–brachial pressure index (ABPI) is a simple, non-invasive bedside tool for diagnosing PAD — an ABPI <0.9 = diagnostic for PAD

5. Patients with PAD require medical management to prevent future coronary and cerebral vascular events.

Risk Factors:

Typical Patient:

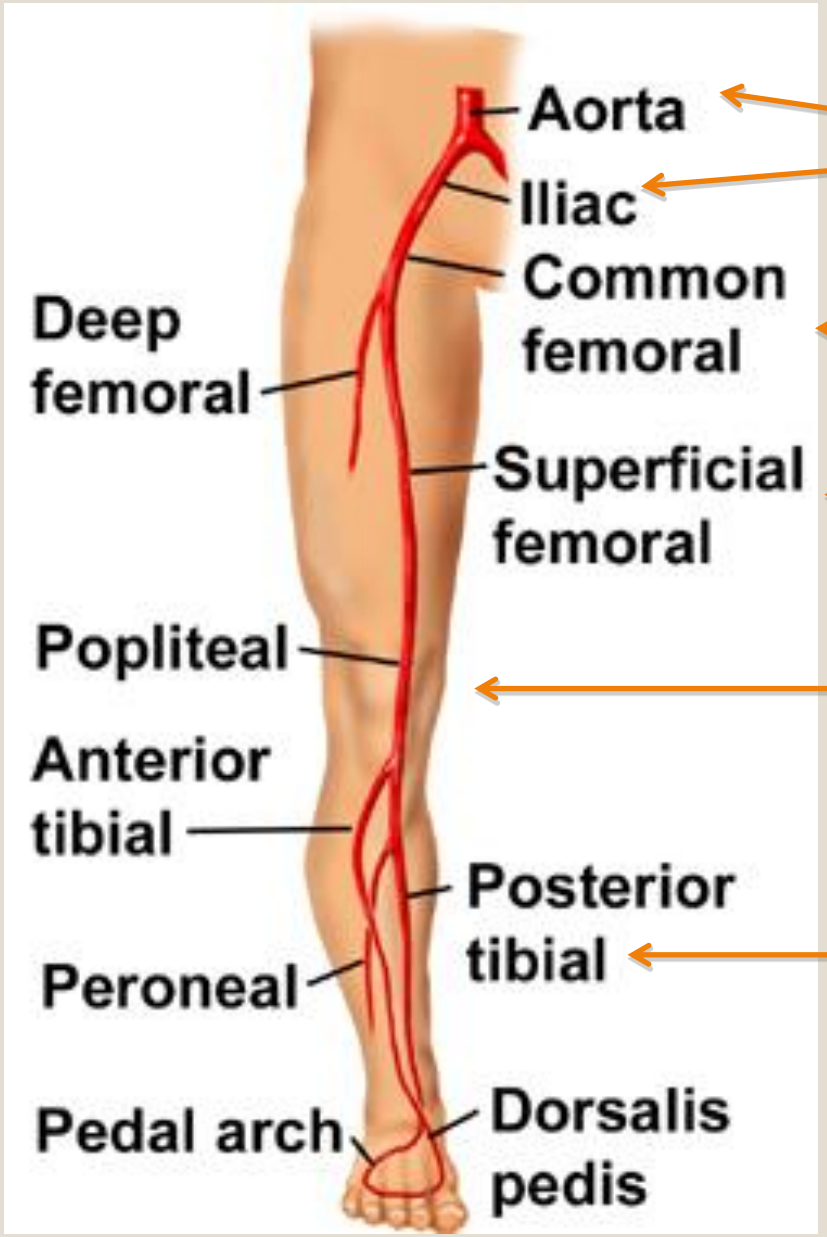
- Smoker (2.5-3x)
- Diabetic (3-4x)
- Hypertension
- Hx of Hypercholesterolemia/AF/IHD/CVA

Chronic PVD History:

1. **INTERMITTENT CLAUDICATION**
   - Derived from the Latin word ‘to limp’
   - “Reproducible pain on exercise which is relieved by rest”
   - Pain can also be reproduced by elevating the leg
   - “my legs get sore at night and feel better when I hang them over the edge of the bed”

2. **Other Symptom/Signs:**
   - A burning or aching pain in the feet (especially at night)
   - Cold skin/feet
   - Increased occurrence of infection
   - Non-healing Ulcers
   - Asymptomatic

3. Critical Stenosis = >60%, impending acute ischemic limb:
   - rest pain
   - ischemic ulceration
   - gangrene



30% Buttock & Hip Claudication

±Impotence – Leriche's Syndrome

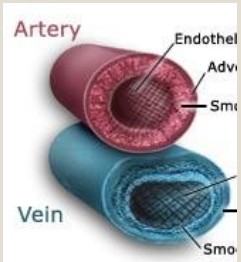
Thigh Claudication

60% Upper 2/3 Calf Claudication

Lower 1/3 Calf Claudication

Foot Claudication

DDx of Leg Pain



1. Vascular
    a) DVT (as for risk factors)
    b) PVD (claudication)

2. Neurospinal
    a) Disc Disease
    b) Spinal Stenosis (Pseudoclaudication)

3. Neuropathic
    a) Diabetes
    b) Chronic EtOH abuse

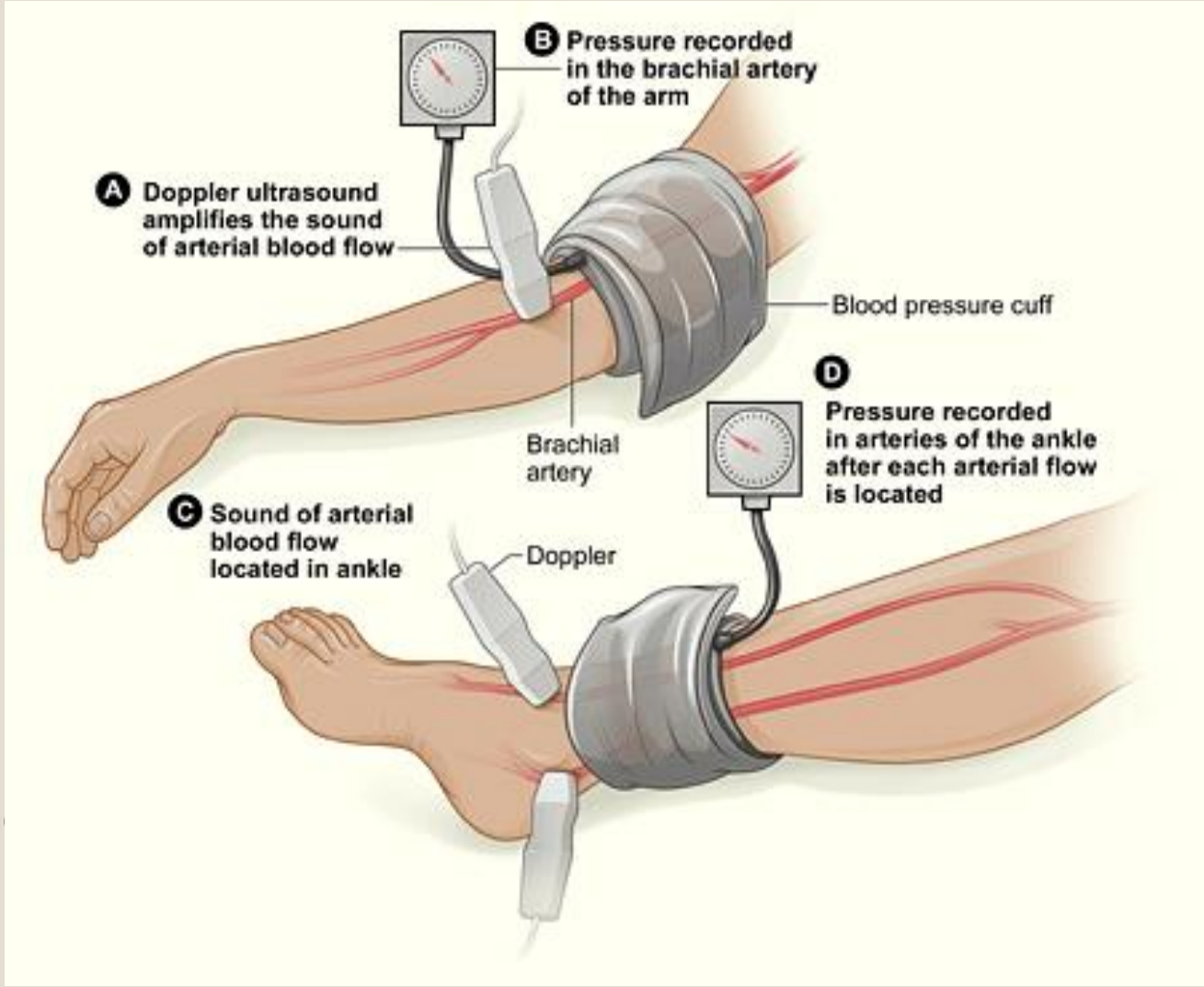
4. Musculoskeletal
    a) OA (variation with weather + time of day)
    b) Chronic compartment syndrome

Physical Examination:

Examination:	What do to:
Inspection Expose the skin and look for:	• Thick Shiny Skin • Hair Loss • Brittle Nails • Colour Changes (pallor) • Ulcers • Muscle Wasting
Palpation	• Temperature (cool, bilateral/unilateral) • Pulses: ?Regular, ?AAA • Capillary Refill • Sensation/Movement
Auscultation	• Femoral Bruits
Ankle Brachial Index (ABI)	= Systolic BP in ankle / Systolic BP in brachial artery
Buerger's Test	• Elevate the leg to 45° - and look for pallor • Place the leg in a dependent position 90° & look for a red flushed foot before returning to normal • Pallor at <20° = severe PAD.

Pictures:

What does the ABI mean?



Th ABI.

Investigations:

BLOOD TESTS:

1. FBE/EUC/Homocysteine Levels
2. Coagulation Studies
3. Fasting Lipids and Fasting Glucose
4. HBA1C

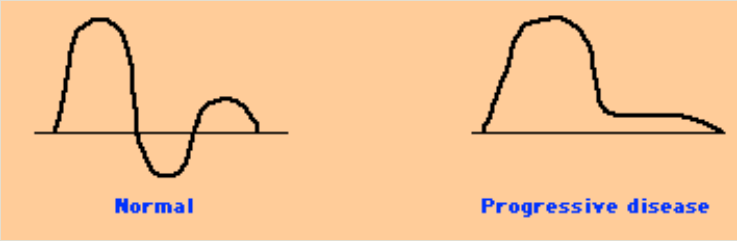
WHEN TO IMAGE:

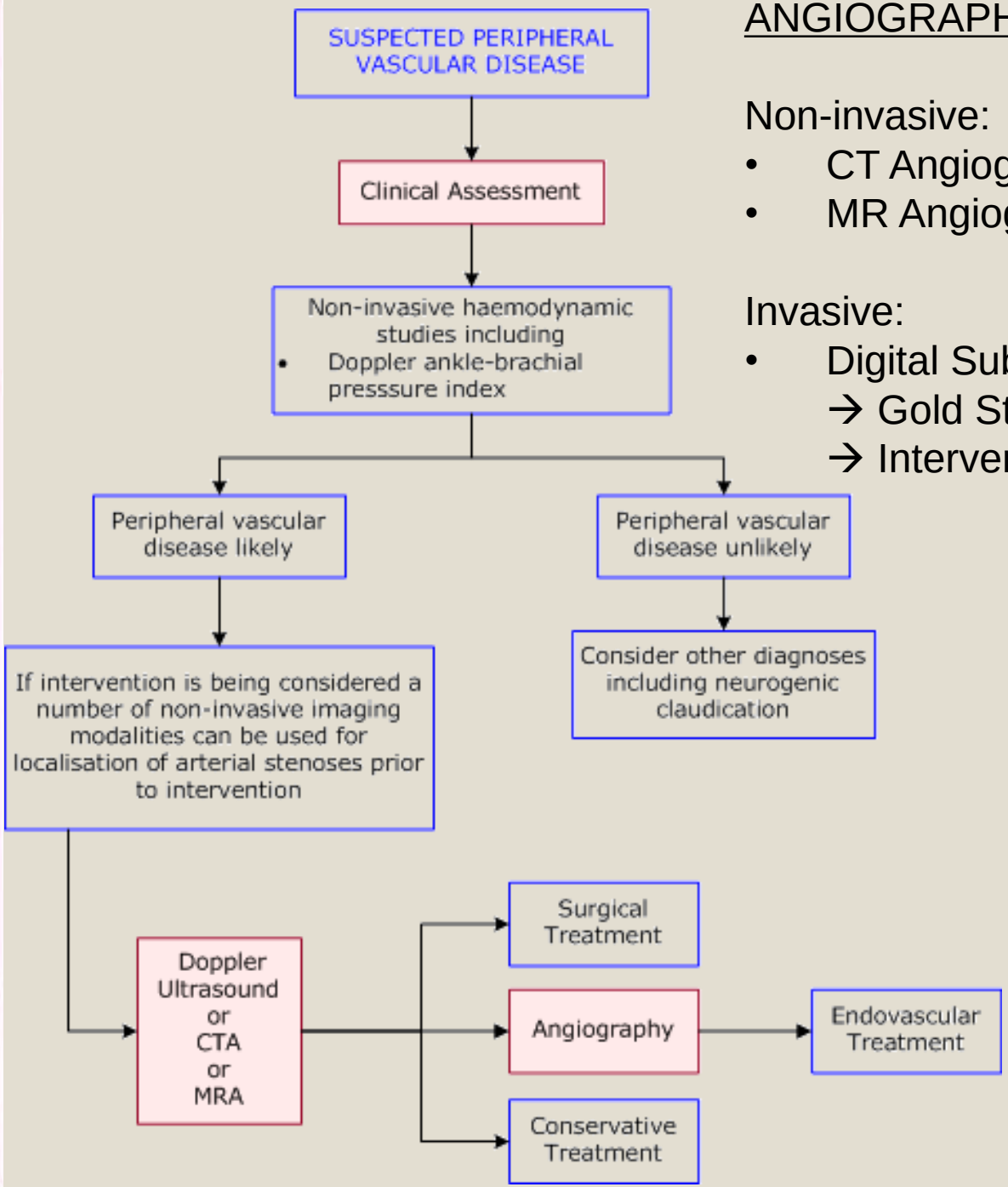
1. To image = to intervene
2. Pt's with disabling symptoms where revascularisation is considered
3. To accurately depict anatomy of stenosis and plan for PCI or Surgery
4. Sometimes in pt's with discrepancy in hx and clinical findings

NON INVASIVE:

Duplex Ultrasound

→ normal is triphasic → biphasic → monophasic → absent





ANGIOGRAPHY:

Non-invasive:

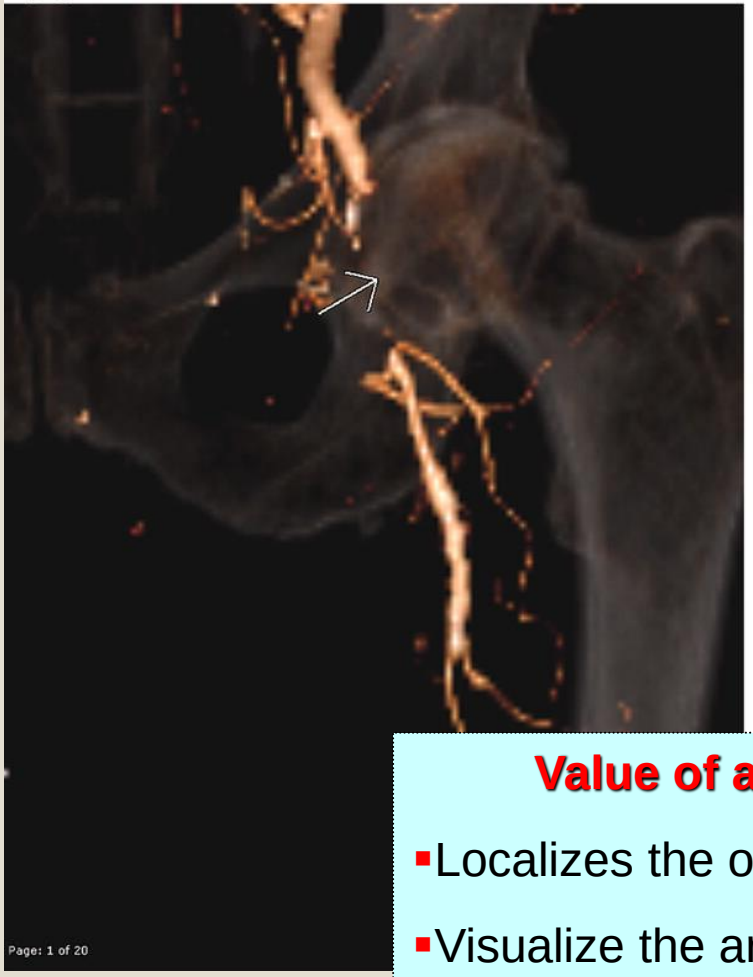
- CT Angiogram
- MR Angiogram

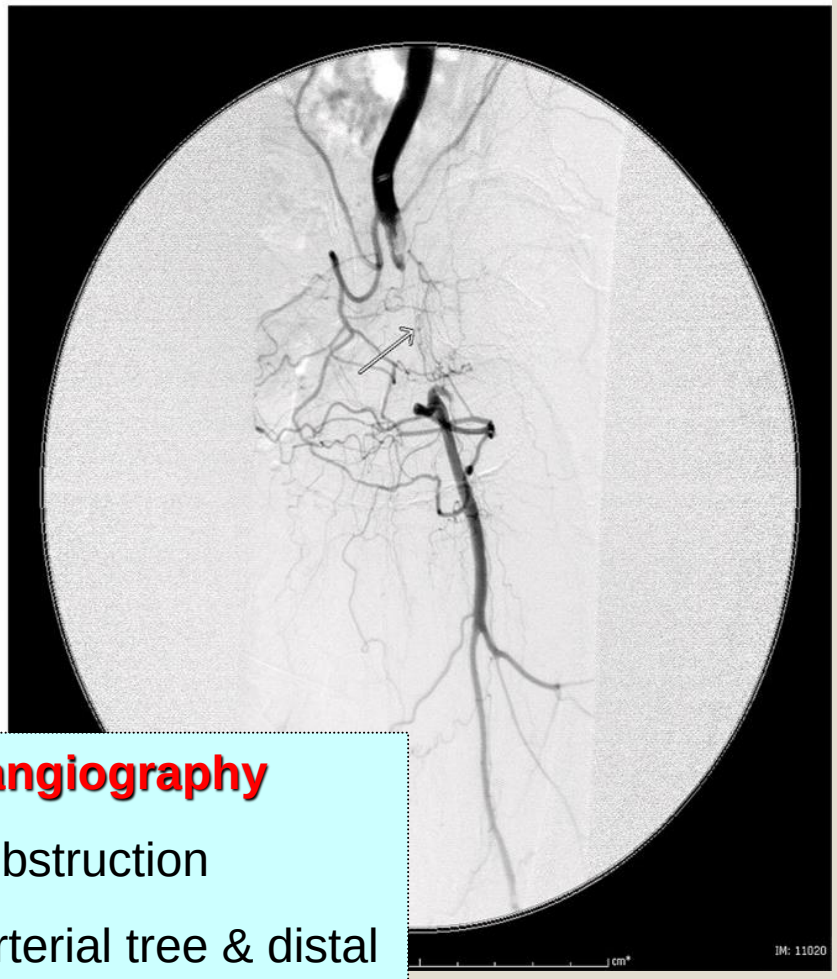
Invasive:

- Digital Subtraction Angiography
  → Gold Standard
  → Intervention at the same time

CT Angiography

Digital Subtraction Angiography





Value of angiography

- Localizes the obstruction
- Visualize the arterial tree & distal run-off
- Can diagnose an embolus:

Sharp cutoff, reversed meniscus or clot silhouette

Treatment:

1. RISK FACTOR MODIFICATION:

a) Smoking Cessation
b) Rigorous BSL control
c) BP reduction
d) Lipid Lowering Therapy

2. EXEXERCISE:

a) Claudication exercise rehabilitation program
b) 45-60mins 3x weekly for 12 weeks
c) 6 months later +6.5mins walking time (before pain)

3. MEDICAL MANAGEMENT:

a) Antiplatelet therapy e.g. Aspirin/Clopidogrel
b) Phosphodiesterase Inhibitor e.g. Cilostazol
c) Foot Care

PCI/Surgery:

Indications/Considerations:

•Poor response to exercise rehabilitation + pharmacologic therapy.
•Significantly disabled by claudication, poor QOL
•The patient is able to benefit from an improvement in claudication
•The individual's anticipated natural hx and prognosis
•Morphology of the lesion (low risk + high probabilty of operation success)

PCI:

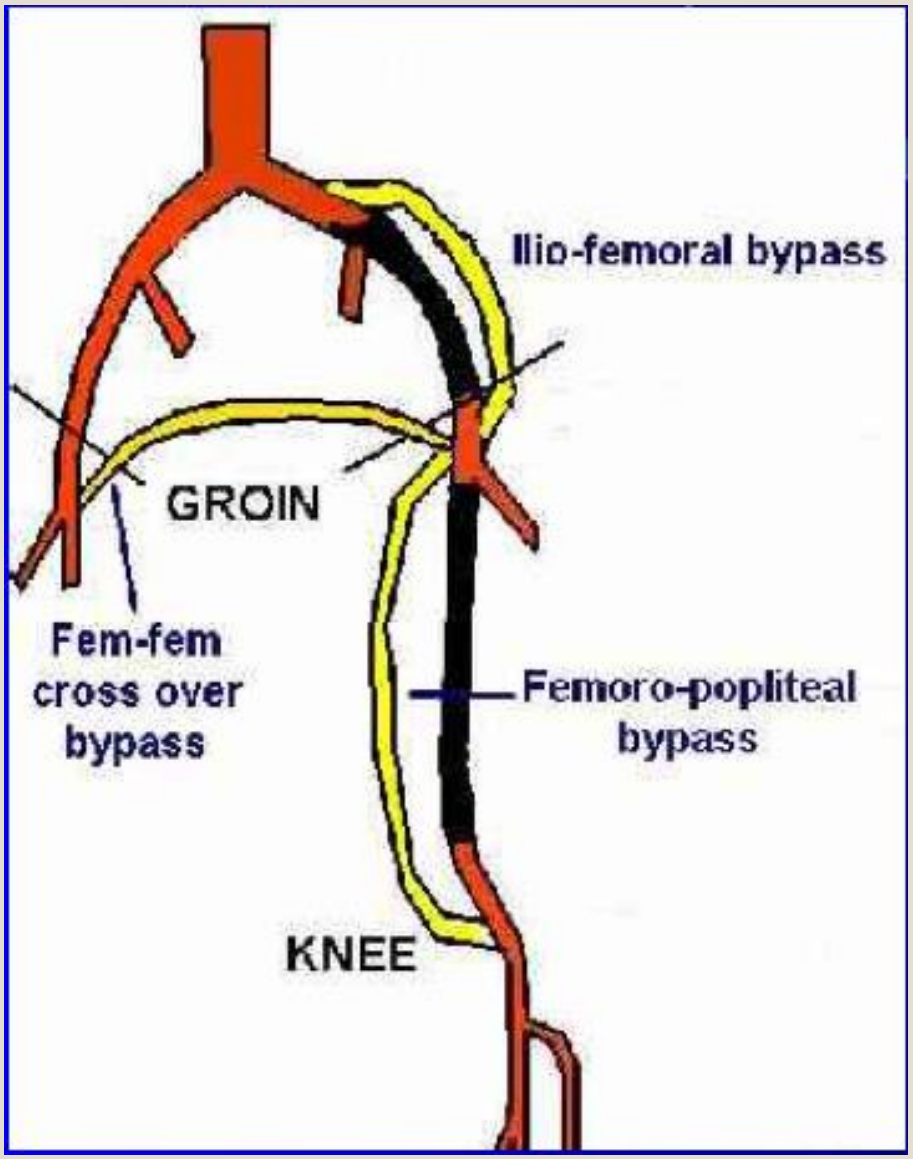
•Angioplasty and Stenting
•Should be offered first to patients with significant comorbidities who are not expected to live more than 1-2 years

Bypass Surgery:

•Reverse the saphenous vein for femoro-popliteal bypass
•Synthetic prosthesis for aorto-iliac or ilio-femoral bypass
•Others = iliac endarterectomy & thrombolysis
•*Current Cochrane review = not enough evidence for Bypass>PCI*

Amputation: Last Resort

Some Bypass Options:



Learning Outcomes

1. Risk factors for PVD
2. Recognise signs and symptoms of chronic ischemia of the lower limbs
3. Differential diagnosis for leg pain
4. Examine a chronic ischemic limb
5. Understand medical/surgical of management of PVD
6. Recognise an acute ischemic limb
7. Know it is important to call the vascular registrar ASAP
8. Know what investigations to order in the ED
9. Be aware of the manifestations of reperfusion injury