

Peripheral Vascular Disease

Peripheral Arterial Disease
Venous Thrombosis



Peripheral Arterial Disease **(PAD)**

- * It is defined as a clinical disorder in which there is a stenosis or occlusion in the aorta or arteries of the limbs.**
- * Atherosclerosis is the leading cause.**
- * Other causes include thrombosis, embolism, vasculitis**
- * Increased risk in smokers, diabetics, hypertensive, hyperlipedemics**

PAD - Clinical Features

- Affects legs 8 times more than arms
- Presentation :1. intermittent claudication (IC)
2. Critical limb Ischemia (CLI)



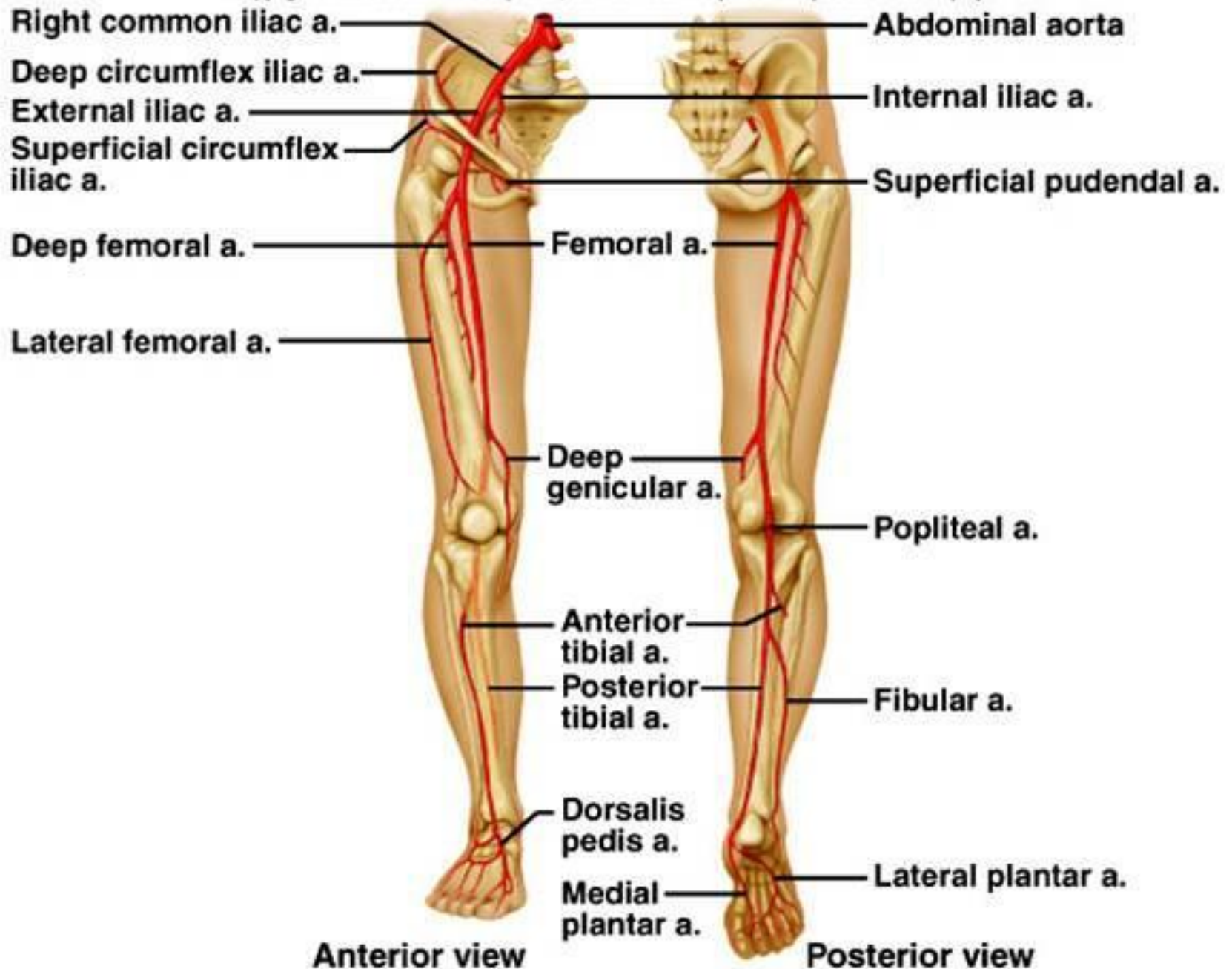
(b) Anterior view



(c) Posterior view

Arteries in the lower leg

- ▶ Common Femoral Artery
 - Medial circumflex femoral artery
 - Lateral circumflex femoral artery (+ ascending and descending branches)
- ▶ Profunda Femoris
 - Perforating brs of PF
 - Descending genicular artery
- ▶ Popliteal Artery
 - Ascending branch
 - Genicular arteries (4)
- ▶ Anterior Tibial Artery
 - Anterior tibial recurrent artery
 - Medial malleolar arteries
- ▶ Dorsalis Pedis Artery and Arcuate Artery
 - Deep plantar branch of DP
 - Dorsal metatarsal and digital arteries
 - Medial and lateral tarsal arteries
- ▶ Peroneal Artery
 - Perforating branch of peroneal artery
 - Lateral malleolar artery
- ▶ Posterior Tibial Artery
 - Medial plantar artery
 - Lateral plantar artery
 - Plantar arch, plantar metatarsal and digital arteries



•FEATURES OF CHRONIC LOWER LIMB ISCHAEMIA

- Pulses-diminished or absent
- Bruits-denote turbulent flow but bear no relationship to the severity of the underlying disease
- Reduced skin temperature
- Pallor on elevation and rubor on dependency (Buerger's sign)
- Superficial veins that fill sluggishly and empty ('gutter') upon minimal elevation
- Muscle-wasting
- Skin and nails-dry, thin and brittle
- Loss of hair

PAD - *physical findings*

- Decreased or absent pulses distal to the obstruction, the presence of bruits over the narrowed artery, and muscle atrophy. With more severe disease, hair loss, thickened nails, smooth and shiny skin, reduced skin temperature, and pallor or cyanosis .
- In patients with critical limb ischemia, ulcers or gangrene may occur.

DIABETIC VASCULAR DISEASE: THE ‘ DIABETIC FOOT

Feature

Arterial calcification

Difficulty

Spuriously high ABPI due to incompressible ankle vessels
Inability to clamp arteries for the purposes of bypass surgery
Resistant to angioplasty

Immunocompromise

Prone to rapidly spreading **cellulitis**, **gangrene** and **osteomyelitis**

Multisystem arterial disease

Coronary and cerebral arterial disease increases the risks of intervention

Distal disease

Diabetic vascular disease has a predilection for the calf vessels. Although vessels in the foot are often spared, performing a satisfactory **bypass or angioplasty** to these small vessels is a **technical challenge**

Sensory neuropathy

Even severe ischaemia and/or tissue loss may be completely **painless**. Diabetic patients often present late with **extensive destruction of the foot**. Loss of proprioception leads to abnormal pressure loads and **exacerbates joint destruction** (**Charcot's joints**)

Motor neuropathy

Weakness of the long and short **flexors and extensors** leads to **abnormal foot architecture**, abnormal pressure loads, callus formation and ulceration

Autonomic neuropathy

This leads to a dry foot **deficient in sweat** that normally lubricates the skin and contains antibacterial substances. Scaling and fissuring create a portal of entry for bacteria. Abnormal blood flow in the bones of the ankle and foot may also contribute to osteopenia and bony collapse

PAD - Investigation

- **Ankle brachial pressure index (ABPI)** Normal 1 or more
IC 0.5-0.9 CLI less than 0.5
- **Doppler**
- * **Magnetic resonance angiography (MRA)**
(pre-revascularization)

PAD - Treatment

- **Stop Smoking**
- **Treat hypertension & high cholesterol**
- **Clopidogrel is superior than Aspirin. Both can be give in combination.**
- **Cilostazol a phosphodiesterase inhibitor with vasodilator and antiplatelet properties, increases claudication distance.**

PDA – Interventional Treatment

- **Percutaneous transluminal angiography (PTA), stent placement, and atherectomy**
- **Bypass graft**
- **Lumbar sympathectomy**

Thromboangiitis obliterans (Buerger's disease)

- an inflammatory occlusive vascular disorder involving small and medium-sized arteries and veins in the distal upper and lower extremities.
- Seen in men (20-30) who are smokers. More common in Asians.
- * Triad of claudication, Raynaud's phenomenon, and migratory superficial thrombophlebitis
- * There is no specific treatment except abstention from tobacco.

Acute Arterial Occlusion

- **Causes :-**

- 1. Thrombus in Situ**

- 2. Embolism**

- A. Atrial Fibrillation**

- B. Myocardial Infarction**

- C. Cardiomyopathy**

- D. Ventricular Aneurysm**

- E. Endocarditis**

- F. Prosthetic Heart Valves**

- G. paradoxically from a venous thrombus**

Acute Arterial Occlusion

- **Clinical Features :-** Depend upon duration, location & severity of occlusion .
 - * pain, paresthesia, pallor, and pulsless .
- cyanosis, mottling, decreased skin temperature, muscle stiffening ,absent deep tendon reflex .

Foot with acute arterial occlusion

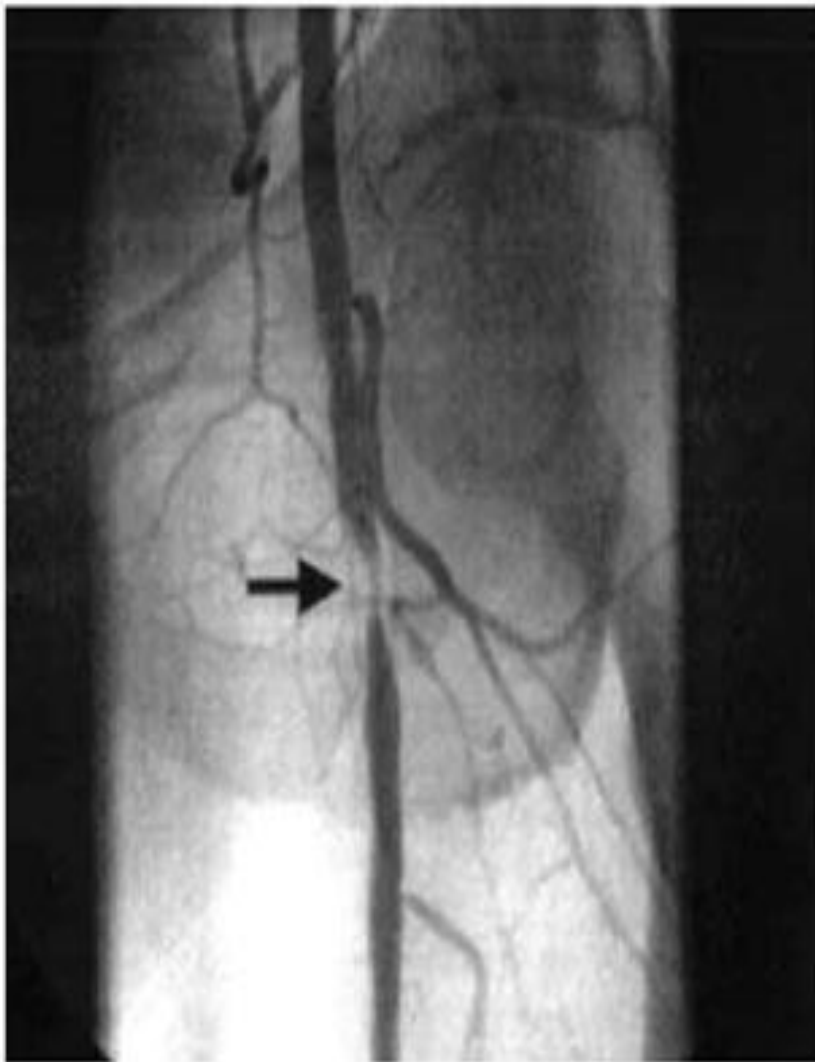


Acute Arterial Occlusion

- **Diagnosis :- Clinically + Arteriography is useful for confirming the diagnosis**
- **Treatment :- IV anticoagulant - surgical thromboembolectomy or arterial bypass procedures**
- **Intraarterial thrombolytic therapy with recombinant tissue plasminogen activator or urokinase is often effective when acute arterial occlusion is caused by a thrombus**

PTA

a



b



SYMPTOMS AND SIGNS OF ACUTE LIMB ISCHAEMIA

Symptoms/signs

Pain

Pallor

Pulselessness

Perishing cold

Paraesthesia

Paralysis

Comment

May be absent in complete acute ischaemia, and can be present in chronic ischaemia

Unreliable, as the ischaemic limb takes on the ambient temperature

Important features of impending irreversible ischaemia

ACUTE LIMB ISCHAEMIA: DISTINGUISHING FEATURES OF EMBOLISM AND THROMBOSIS IN SITU

Clinical features	Embolism	Thrombosis in situ
Severity	Complete (no collaterals)	Incomplete (collaterals)
Onset	Seconds or minutes	Hours or days
Limb	Leg 3:1 arm	Leg 10:1 arm
Multiple sites	Up to 15%	Rare
Embolic source	Present (usually AF)	Absent
Previous claudication	Absent	Present
Palpation of artery	Soft, tender	Hard, calcified
Bruits	Absent	Present
Contralateral leg pulses	Present	Absent
Diagnosis	Clinical	Angiography
Treatment	Embolectomy, warfarin	Medical, bypass, thrombolysis
Prognosis	Loss of life > loss of limb	Loss of limb > loss of life

Raynaud's Phenomenon

- a disease characterized by spasm of the arteries in the extremities, especially the fingers (*Raynaud's phenomenon*).
- It is typically brought on by constant cold or vibration, and leads to pallor, pain, numbness, and in severe cases, gangrene.

Raynaud's Phenomenon

- **Causes :-**

1. Raynaud's Disease
2. Scleroderma
3. Systemic lupus erythematosus
4. Dermatomyositis or polymyositis
5. Rheumatoid arthritis
6. Hematological diseases with hyperviscosity

Raynaud's Phenomenon

- Treatment :-
- Protect against cold
- Tobacco use is contraindicated.
- Dihydropyridine calcium channel antagonists, such as (nifedipine) **OR**
- **a-adrenergic antagonist (prazosin)**
- Digital sympathectomy is helpful in some patients who are unresponsive to medical therapy

Aortic Aneurysm

- Causes :

1. Non specific : most common site is **abdominal** (infra renal arteries) , run in families ...genetic predisposition

2. Marfan's Syndrome

3. Aortitis (Syphilis, Takayasu's , Reiter giant cell aortitis , ankylosing spondylitis

Thoracic Aortic Aneurysm

- Clinical Features

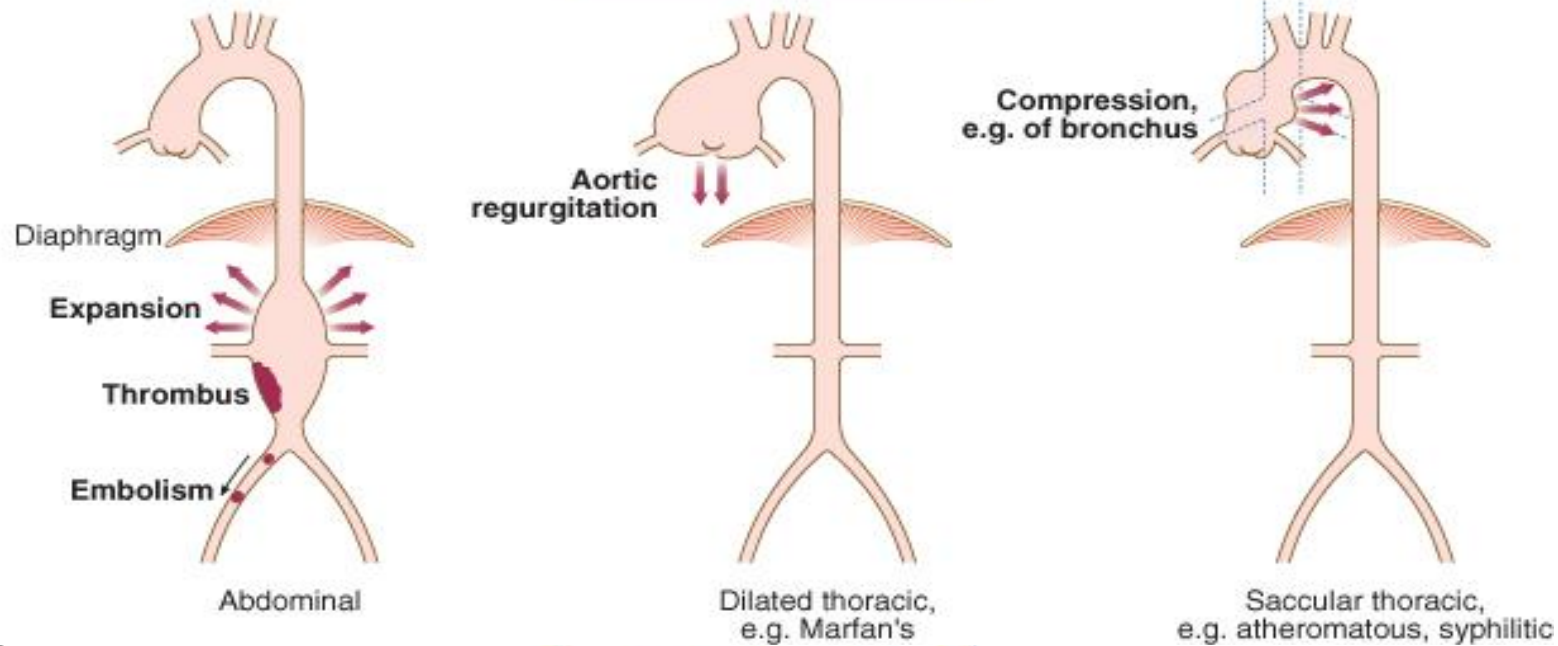
- * **Chest pain**
- * **Dysphagia**
- * **Hoarsness of voice**
- * **Stridor**
- * **Features of superior vena cava obstruction**

Abdominal Aortic Aneurysm

- * Seen in 5% of men above 60 years
- 80% are infra-renal artery in position
- Usually asymptomatic
- Intervention if symptomatic or embolization

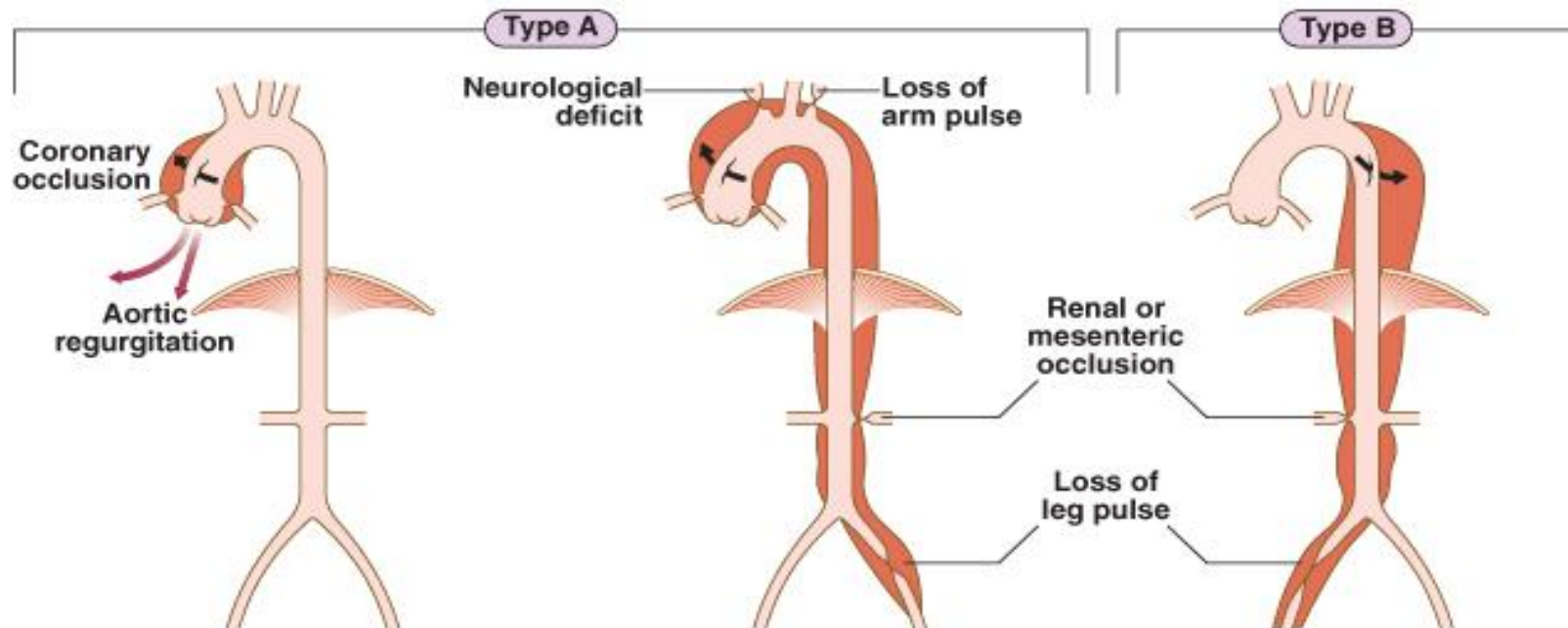
A

Aortic aneurysm



B

Aortic dissection



Dissecting Aneurysm

- Usually catastrophic
- Sudden tearing pain
- Confused as MI
- Seen in Marfan's , Pregnancy , after trauma
- * Treatment : Surgery



FLOWERINGS

