

PLABABLE

GEMS 

VERSION 1.2

VASCULAR SURGERY



Peripheral Arterial Disease (PAD)

Narrowing of the distal arteries most commonly due to atherosclerosis

Presentation

- Intermittent claudication (pain relieved with rest)
- Weak or absent pulses
- Skin and hair changes

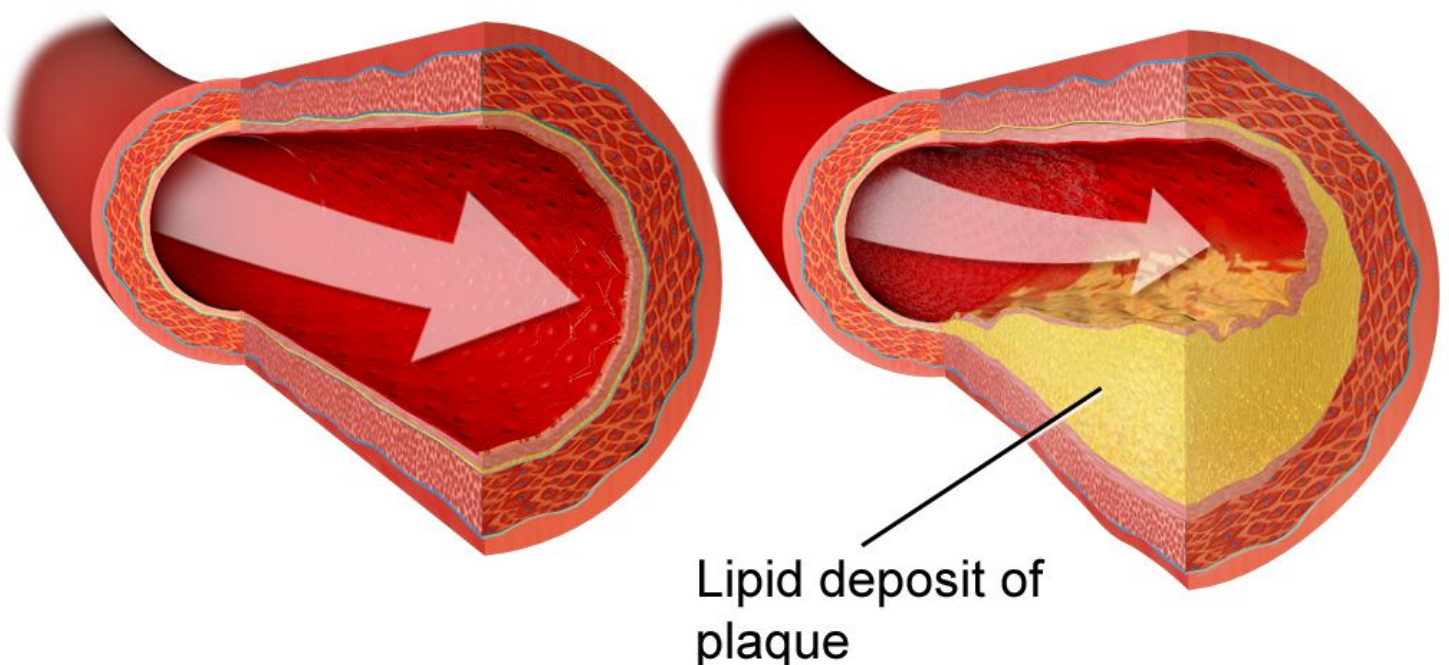
Investigation: Doppler scan

Management

- Naftidrofuryl oxalate (vasodilator)
- Clopidogrel
- Revascularisation surgery in critical limb ischemia

Normal Artery

Narrowing of Artery



Claudication Pain in PAD

Brain trainer:

In peripheral artery disease what symptoms correspond to the level of arterial occlusion?

- **Aorto-iliac artery** → pain in buttocks ± erectile dysfunction
- **Common iliac artery** → pain extending just above the inguinal ligament
- **Femoral artery** → pain is below the inguinal ligament
- **Femoro-popliteal** → pain is below the knee

Acute Limb Ischaemia

Presentation of the affected limb: (6Ps)

- Pale
- Pulseless
- Painful
- Paralysed
- Paraesthetic
- Perishing with cold

Causes

- Embolism - AF, artificial valves, aortic aneurysm, proximal arterial stenosis
- Thrombosis
- Trauma
- Compartment syndrome

Management

- Embolic cause - embolectomy or thrombolysis
- Otherwise - open surgery or angioplasty

Note

Any patient with previous history of peripheral arterial disease with deterioration of symptoms (6Ps) should point towards acute or critical limb ischemia

Varicocele

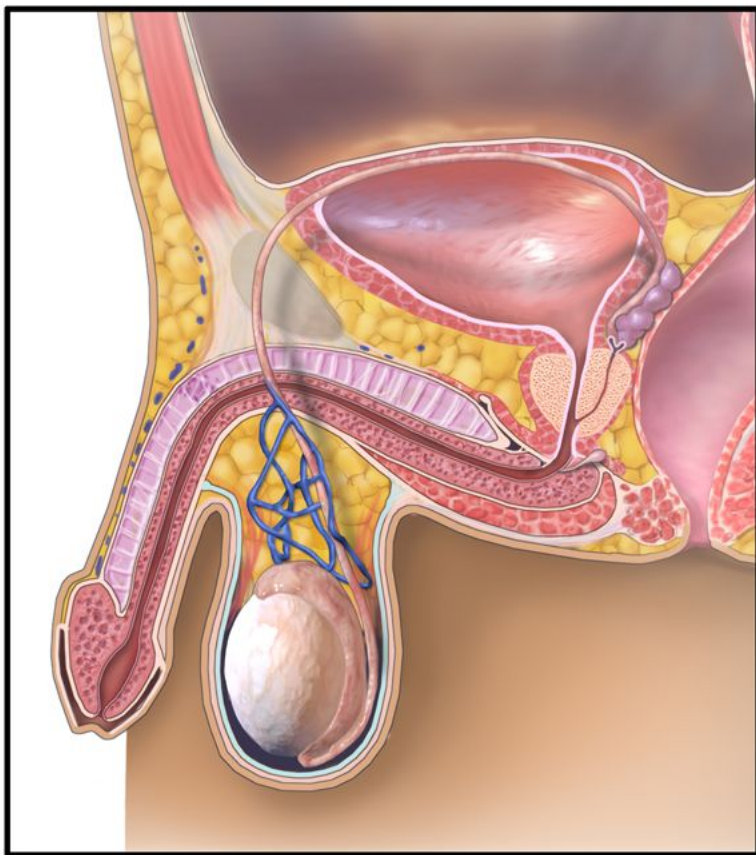
Abnormal dilation of the pampiniform venous plexus

Presentation

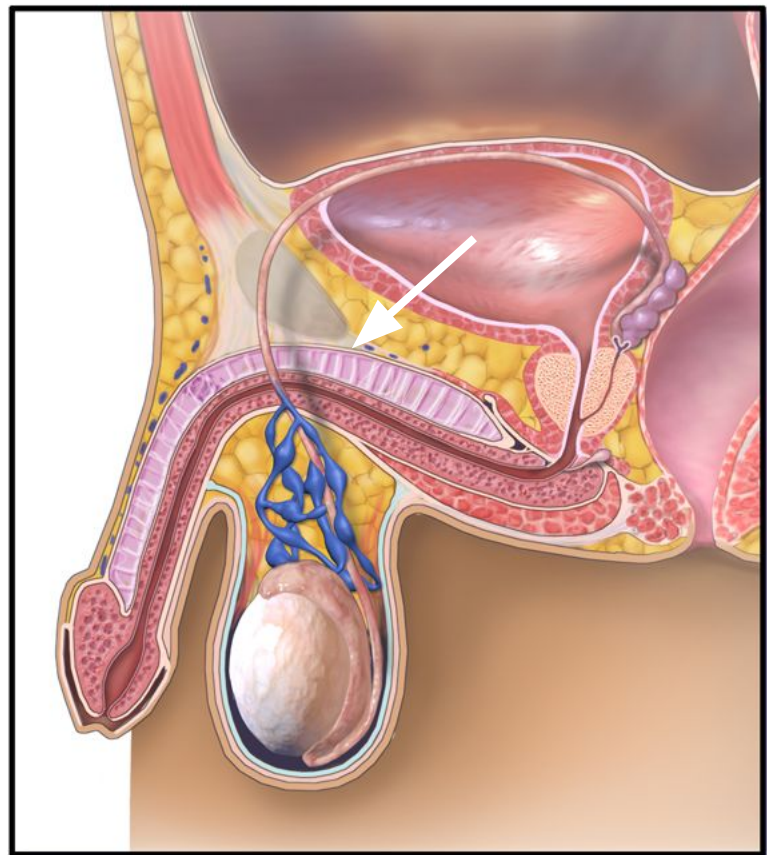
- **Bag of worm** appearance of the scrotum
- Scrotal heaviness
- Infertility
- Most common in the left side
- ↑ on standing and ↓ on lying down
- Investigation: doppler

Treatment

- Surgical ligation of the veins



Normal



Varicocele

Thromboangiitis Obliterans (Buerger's Disease)

Thrombosis of small and medium sized arteries

Presentation

- **Claudication pain** in the legs or hand
- Discoloration of the affected limb
- Numbness and tingling in the affected limb
- Skin ulceration and digital gangrene
- Associated with **smoking**

Management

- Iloprost (a prostacyclin analogue)
- Smoking cessation



Note

- **Berger's disease** is IgA Nephropathy
- URTI followed by episodic Haematuria within 2 days

Raynaud's Phenomenon

Paroxysmal vasospastic and subsequent vasodilation affecting peripheral arterioles, usually in the hands

Presentation

- Pallor → Numbness or pain → Cyanosis of the distal portion of the digits
- **Primary:** <30 years of age and less severe
- **Secondary:** >30 years of age with severe pain, ulceration and gangrene

Management

- Avoidance of cold (trigger)
- Smoking cessation
- CCB - nifedipine



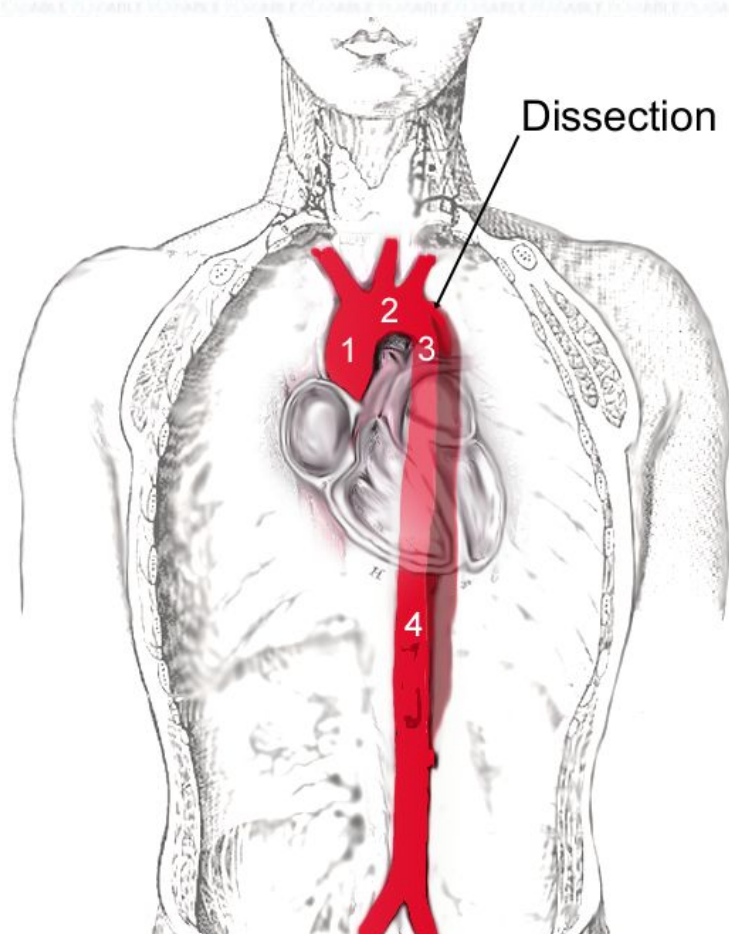
Aortic Dissection

Presentation

- Severe chest pain radiating to the back
- Loss of pulse
- **Rupture:**
 - Hypotension
 - Pericardial cavity - cardiac tamponade
 - Pleural cavity - haemothorax
 - Mediastinum

Risk factors

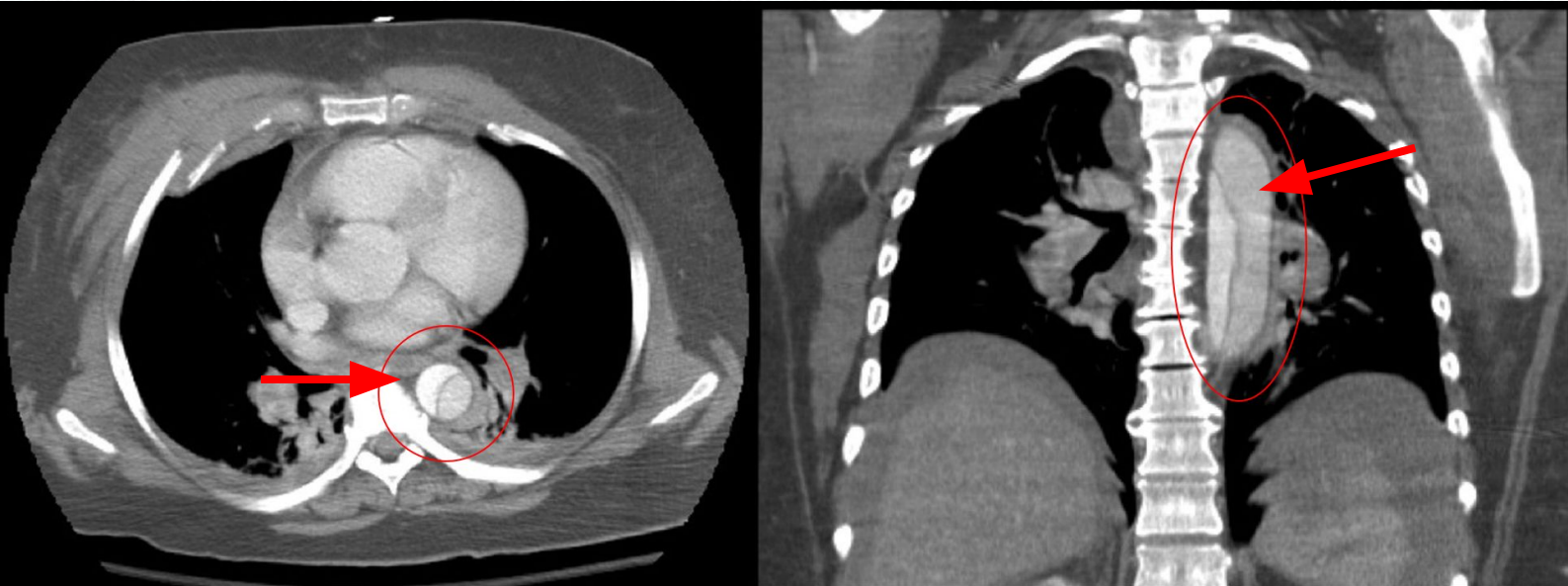
- Hypertension
- Smoking
- Marfan's syndrome
- Ehlers-Danlos syndrome



Aortic Dissection

Investigations

- Transoesophageal USG (if unstable)
- CT angiography (if stable - most appropriate)
- MRI (if stable - most accurate)



Descending Aortic dissection

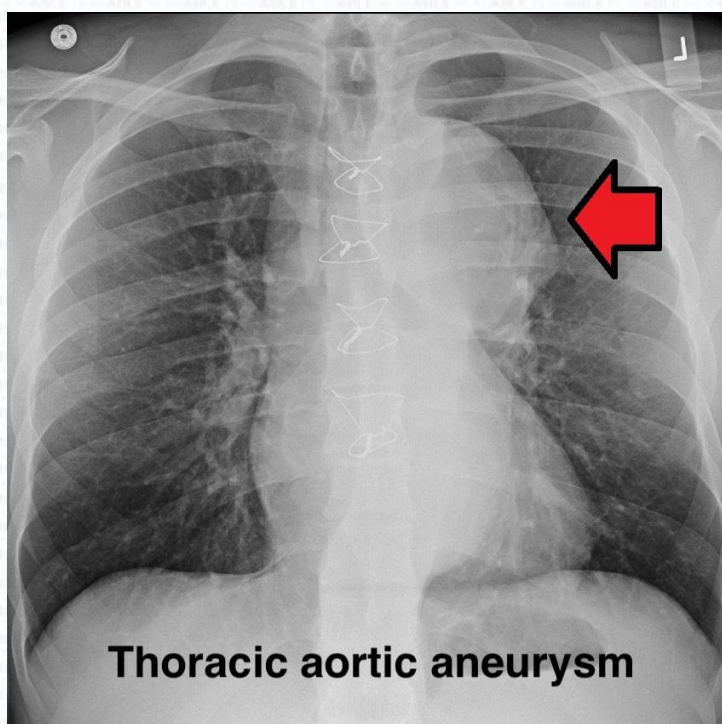
Management

- Control hypertension with beta blockers
- Surgery - grafting or stenting

Aortic Aneurysm

Causes

- **Degenerative:**
 - Smoking
 - Atherosclerosis
 - Hypertension
 - Aging
- **Genetic:**
 - Marfan's syndrome
 - Ehlers-Danlos syndrome
 - Turner's syndrome
- **Trauma**
- **Syphilitic aortitis**
- **Vasculitis:**
 - Takayasu's arteritis
 - Giant cell arteritis



Thoracic aortic aneurysm

Aortic Aneurysm

Abdominal aortic aneurysm

- **Asymptomatic aneurysm:**
 <5.5 cm - **Ultrasound surveillance**
- **Asymptomatic aneurysm:**
 >5.5 cm or >4.5 cm with more than 0.5 cm growth in 6 months - **endovascular repair**

Symptomatic AAA

- Patient presents with:
 - Sudden severe lower abdominal pain and back pain
 - Tender pulsatile abdominal mass
- Most common is infrarenal

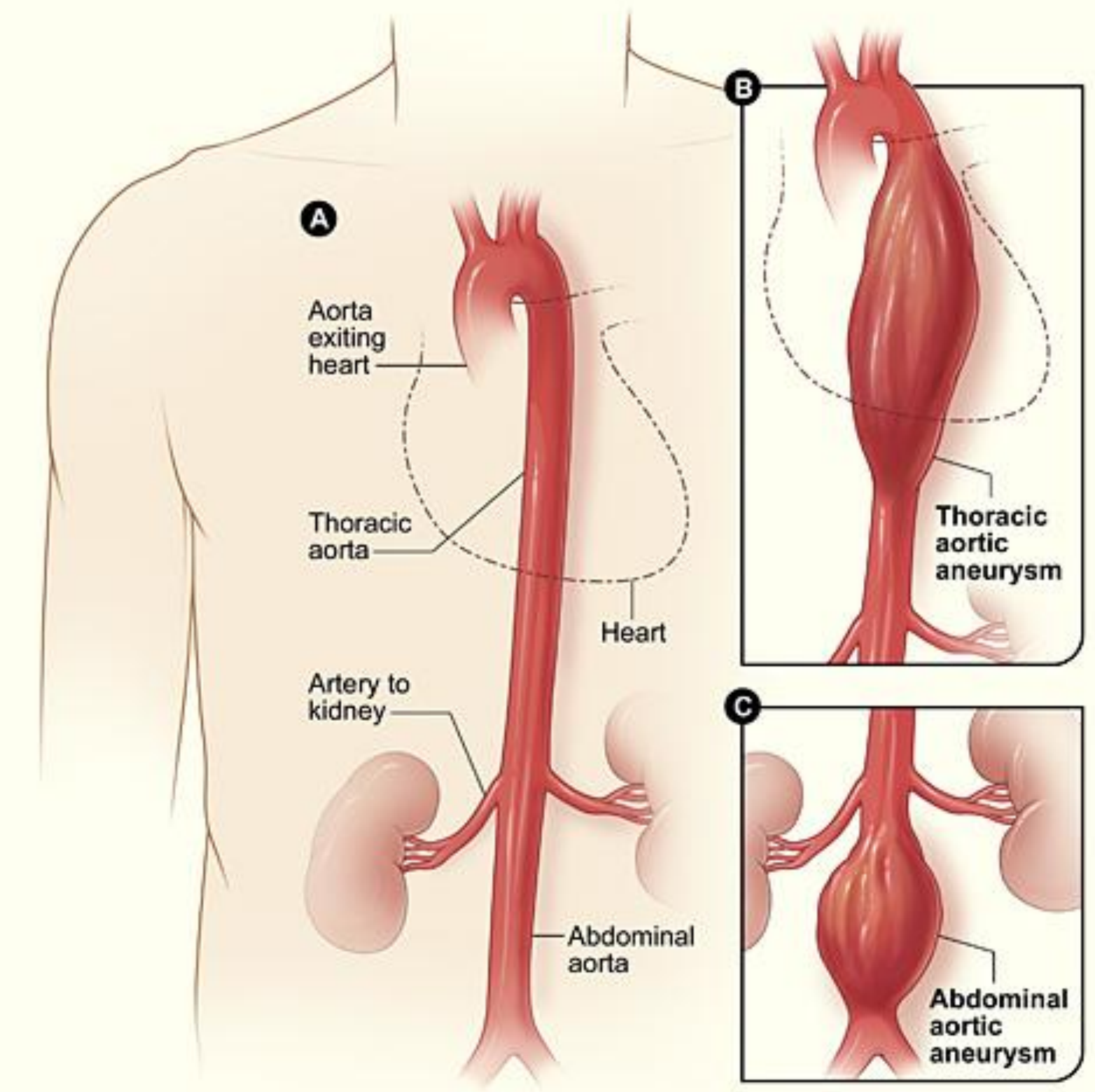
Diagnosis: Immediate ultrasound or CT

Treatment: Urgent surgical repair

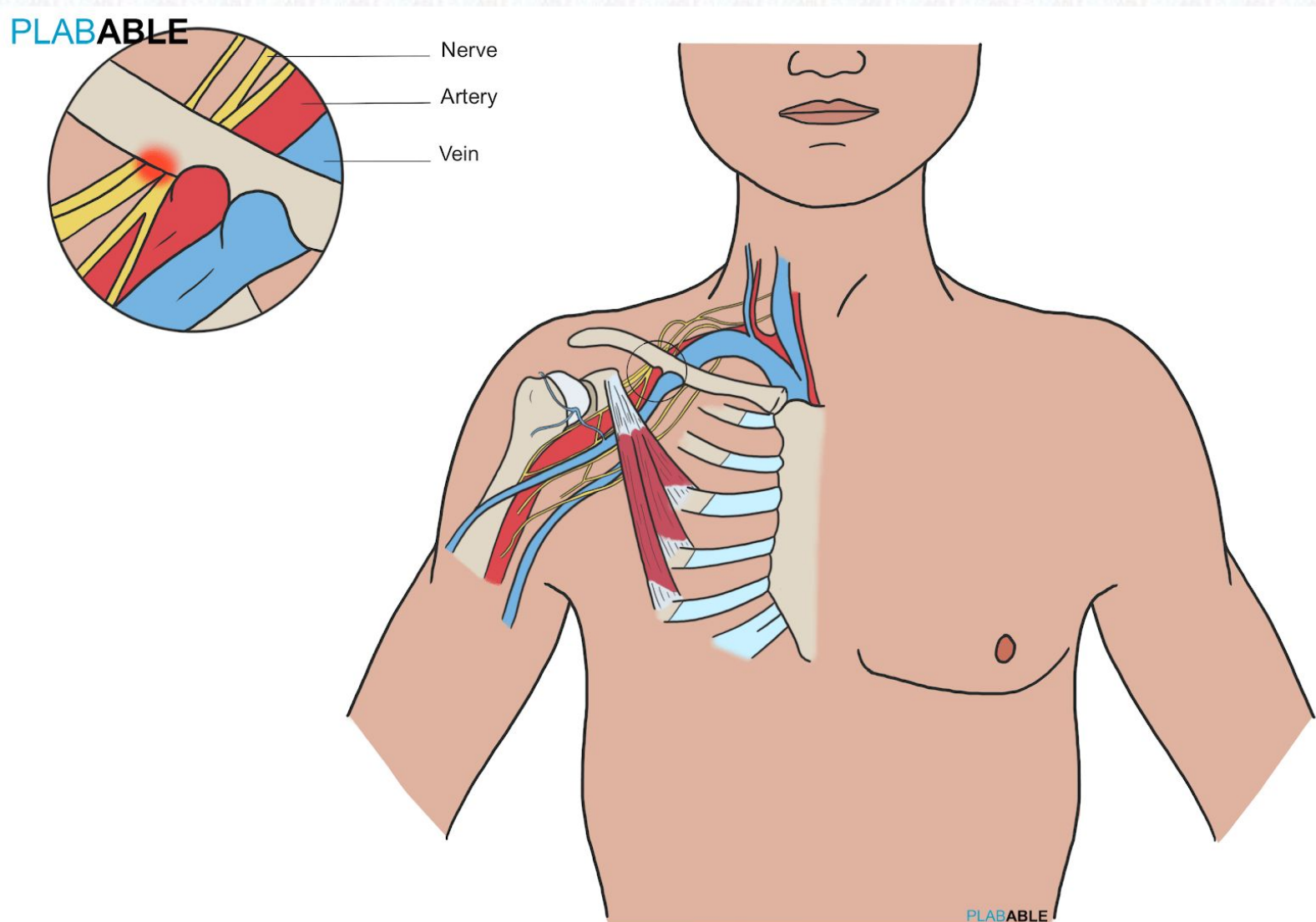
Femoral artery aneurysm

- Painless pulsatile swelling in the groin
- Femoral hernia is non-pulsatile

Aortic Aneurysm



Thoracic Outlet Syndrome



Is the compression of the trunk of the brachial plexus, or the subclavian artery or vein at the superior aperture of the chest.

Presentation

- Unilaterally
- Pain or numbness in the hand or forearm often on the ulnar side.
- Weak radial pulse, forearm cyanosis, or thenar muscles weakness

Varicose Veins

Presentation

- Dilated and tortuous veins in the lower limb
- Discomfort or itching or ulceration (medial)
- Heaviness of the leg

Risk factor

- Job involving prolonged standing
- Pregnancy
- Obesity
- Old age >65 years

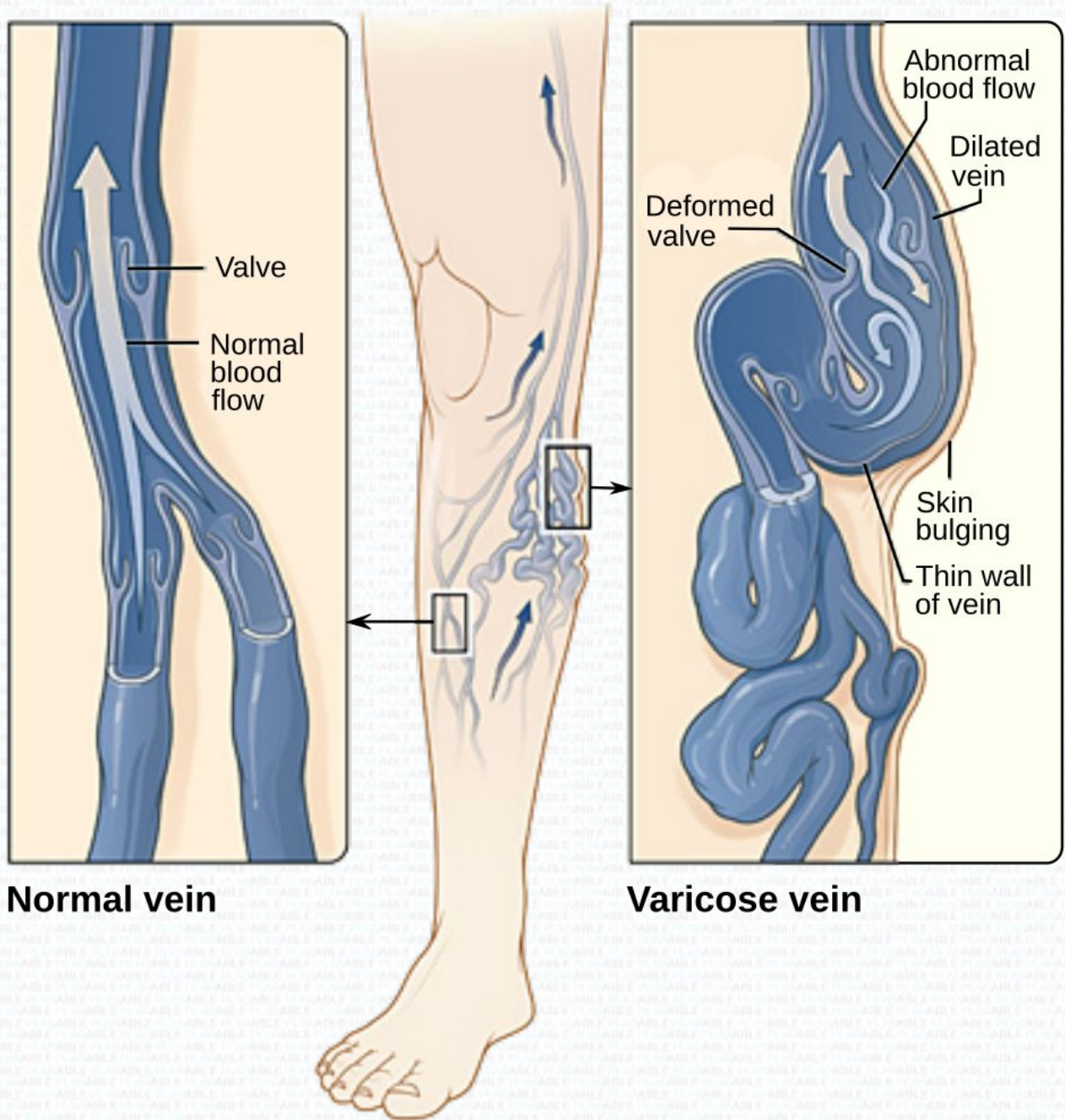
Investigation

- Duplex ultrasound

Treatment

- Minimal invasive procedures: (preferred)
 - Radiofrequency ablation
 - Endovenous laser therapy
 - Sclerotherapy
- Surgical removal of the vein

Varicose Veins



Bilateral Renal Artery Stenosis

Presentation

- High BP resistant to treatment
- Worsening renal function after starting ACEi/ARB
- Causes:
 - Fibromuscular dysplasia
 - Atherosclerosis

Investigation

- **USG:** Equally reduced size of kidneys with smooth borders
- Renal angiography (gold standard)

Management

- Angioplasty + stenting

Carotid Artery Stenosis

Presentation

- Loss of consciousness (Hypoperfusion of the brain)
- Transient Ischemic Attack
- **Stroke**
 - Typical symptoms are contralateral weakness or sensory disturbance
 - Ipsilateral loss of vision
 - Dysphasia or aphasia (dominant hemisphere)

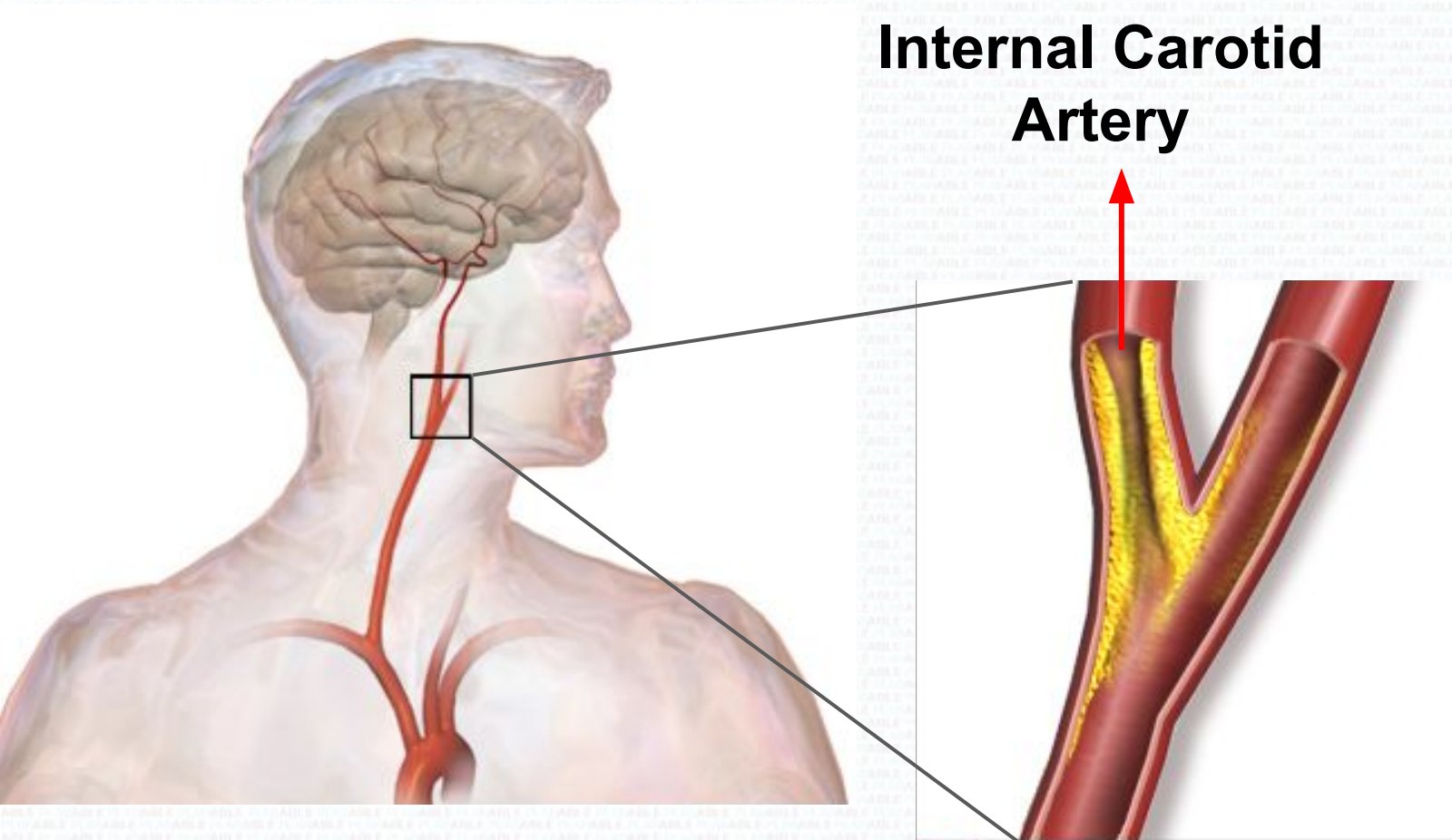
Investigation

- Duplex ultrasound (initial test)
- CT/MR angiography (gold standard)

Management

- Carotid endarterectomy

Carotid Artery Stenosis



**Internal Carotid
Artery**

Superior Vena Cava Syndrome

Obstruction of blood flow through the SVC

Presentation

- Dilated superficial veins of neck, arms and anterior chest wall
- Oedema of the face, neck and upper limb
- Difficulty breathing
- Coughing
- Common cause: cancer (watch for weight loss)

Causes

- Most common due to underlying lung cancer
- Other malignancies affecting lymph nodes in the chest (lymphomas, breast, oesophageal etc)
- Clot formation

Superior Vena Cava Syndrome



Dilated superficial veins in a case of SVC syndrome

Investigations

- **Chest X-ray** - may reveal a tumour
- **Contrast enhanced CT** - investigation of choice

Management

- Stenting / angioplasty
- Treatment of specific cancer
- Anticoagulants if the cause is a clot

Inferior Vena Cava Syndrome

Brain trainer:

A woman with renal carcinoma presents with oedema in the lower extremities and tachycardia. What is the most likely diagnosis?

➔ **Inferior vena cava syndrome**

Image Attributions

<https://www.flickr.com/photos/oregonstateuniversity/26481606576>

Oregon State University CC BY-SA 2.0

<https://commons.wikimedia.org/wiki/File:Varicocele.png>

BruceBlaus CC BY-SA 4.0

https://commons.wikimedia.org/wiki/File:Secondary_Raynaud%27s_in_Sj%C3%B6gren%27s_syndrome_1.JPG

Intermedichbo CC BY-SA 3.0

https://en.wikipedia.org/wiki/File:AoDissekt_scheme_StanfordB_en.png

Fvasconcellos J Heuser CC BY-SA 3.0

[https://commons.wikimedia.org/wiki/File:Descending_\(Type_B_Stanford\)_Aortic_Dissection.PNG](https://commons.wikimedia.org/wiki/File:Descending_(Type_B_Stanford)_Aortic_Dissection.PNG)

JasonRobertYoungMD CC BY-SA 4.0

<https://commons.wikimedia.org/wiki/File:TAn16.png>

James Heilman, MD CC BY-SA 4.0

https://en.wikipedia.org/wiki/File:Varicose_veins-en.svg

Jmarchn CC BY-SA 3.0

https://commons.wikimedia.org/wiki/File:Carotid_artery_stenosis.png

BruceBlaus CC BY-SA 3.0

<https://commons.wikimedia.org/wiki/File:Superior.vena.cava.syndrome.aak.jpg>

EMAHkempny CC BY-SA 4.0

https://commons.wikimedia.org/wiki/File:Aortic_aneurysm.jpg

Public Domain