

Upper Limb

ASPIRE-5

April 2023

ISCP 2021 Vascular Surgical Syllabus

- Acute Ischaemia
- Thoracic Outlet Syndrome
- Subclavian Steal Syndrome
- Hyperhidrosis

- *For your personal reading*
 - *Vasospastic disorders*
 - *Raynaud's phenomenon, VWF*
 - *Arteritis*
 - *GCA, Takayasu, Behcet, HIV, etc*

Acute Ischaemia

- Less common & less morbid than acute leg ischaemia (17% of acute limb cases)
- Often in elderly, co-morbid patients
- Can (often) be managed conservatively
 - Brachial Embolism
- Supra-condylar humeral #

Acute Ischaemia - Aetiopathology

- Trauma 15-45%
 - Supracondylar #, iatrogenic
- Embolic
 - 75% cardiac (AF/ MI/ cardiomyopathy/ valvular)
 - Proximal vessel stenosis
- TOCS
- Severity depends on level of occlusion

Acute Ischaemia - Diagnosis

- Older females
- Clinical diagnosis
- Imaging
- Intervention depends on degree of ischaemia
- Identify source

Acute Ischaemia - Management

- Anti-coagulate
- Brachial Embolectomy
- Thrombolysis/ aspiration
- Fasciotomy

Acute Ischaemia - Outcome

- Mortality/ limb loss is rare
- Successful embolectomy leads to normal function
- Residual impairment up to 50-75% if managed conservatively

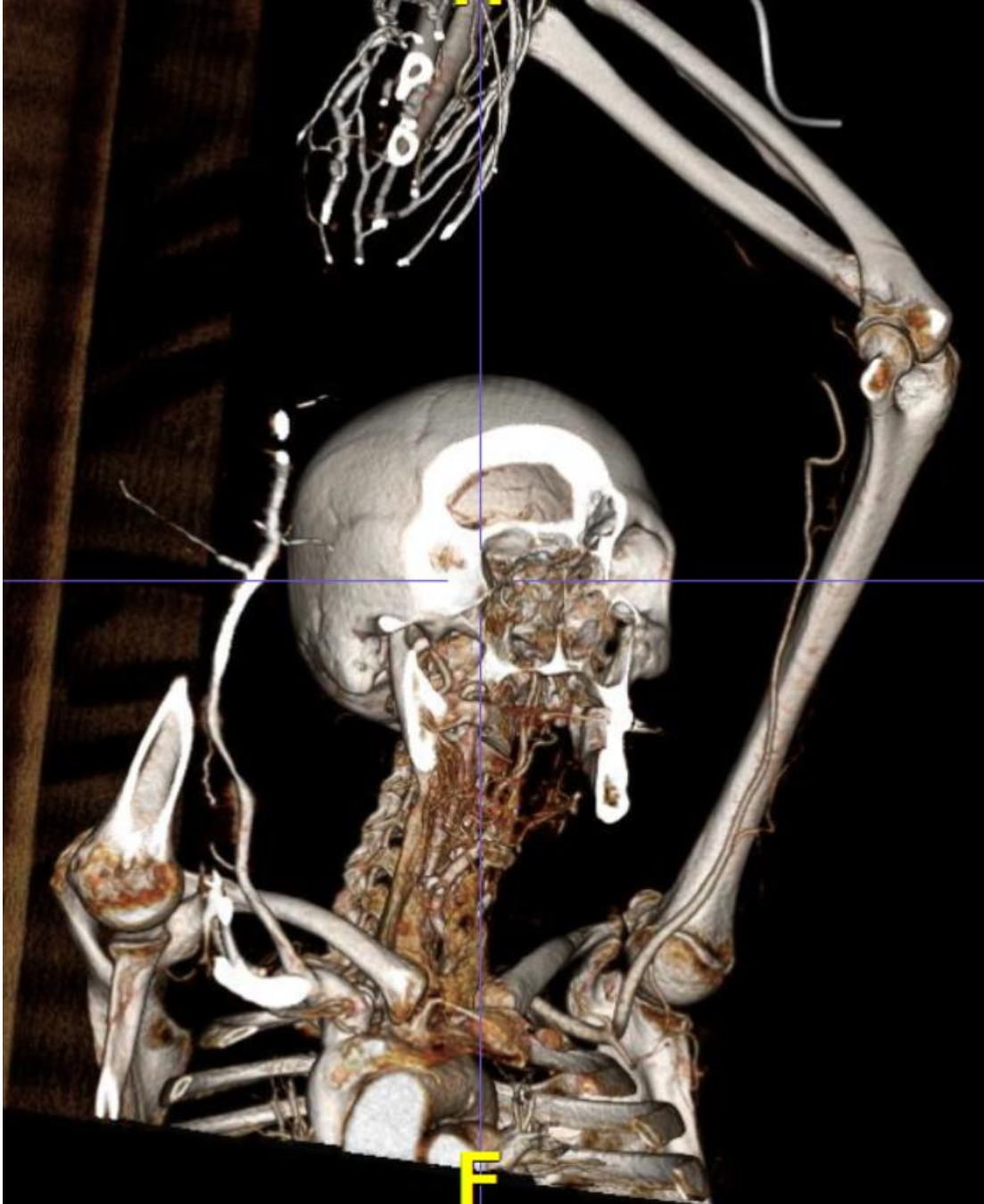
Digital Ischaemia

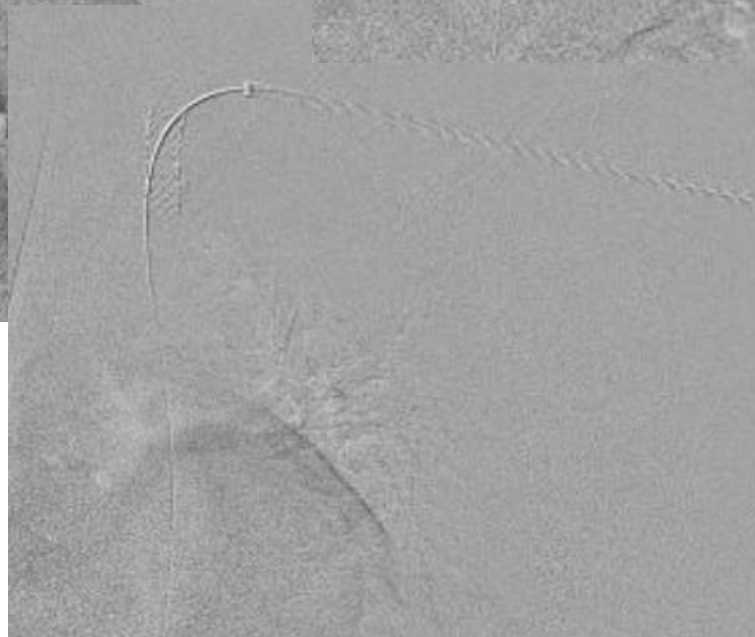
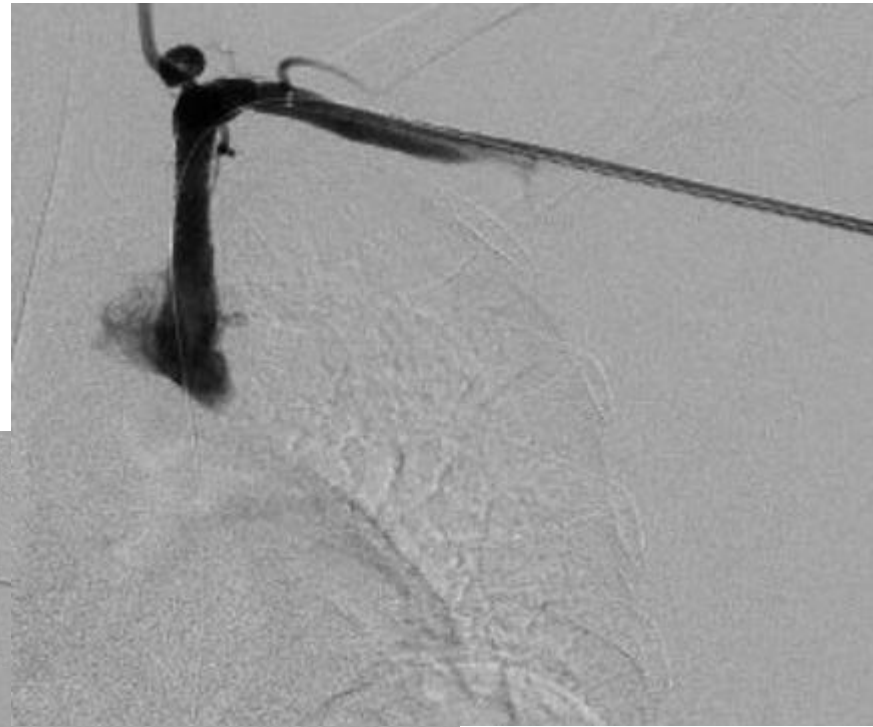
- Single digit
 - Anti-coagulate/ anti-platelet
 - Investigate but often no source found
 - Connective Tissue Disorders?
 - Iloprost
 - Occasionally terminalisation

Supracondylar

- Reduce and stabilise #
- Explore
- Interposition vein graft

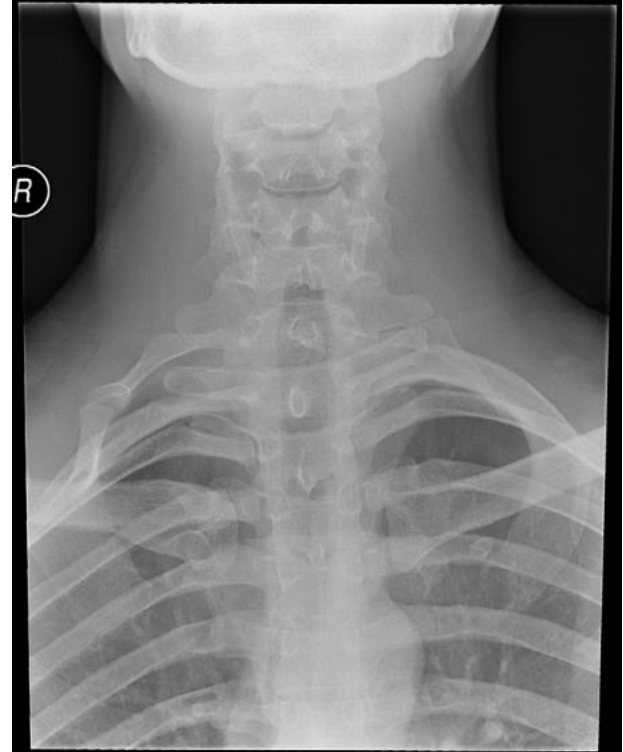
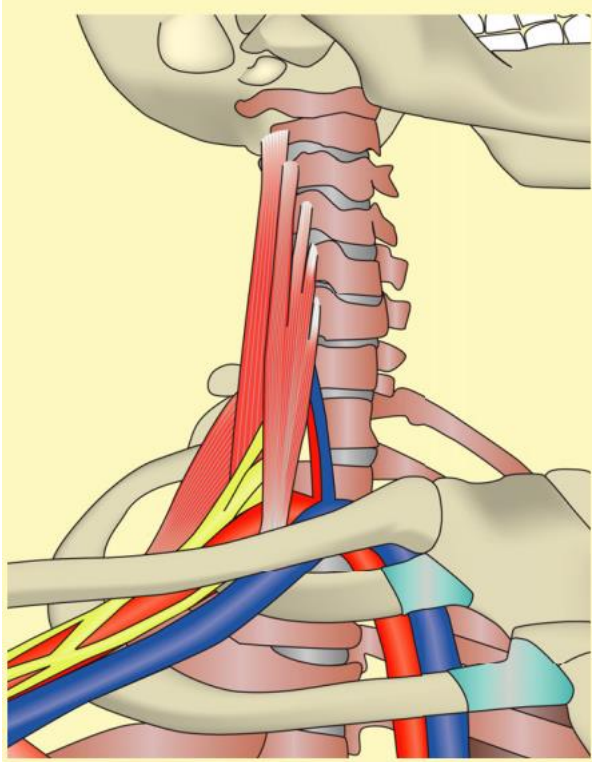


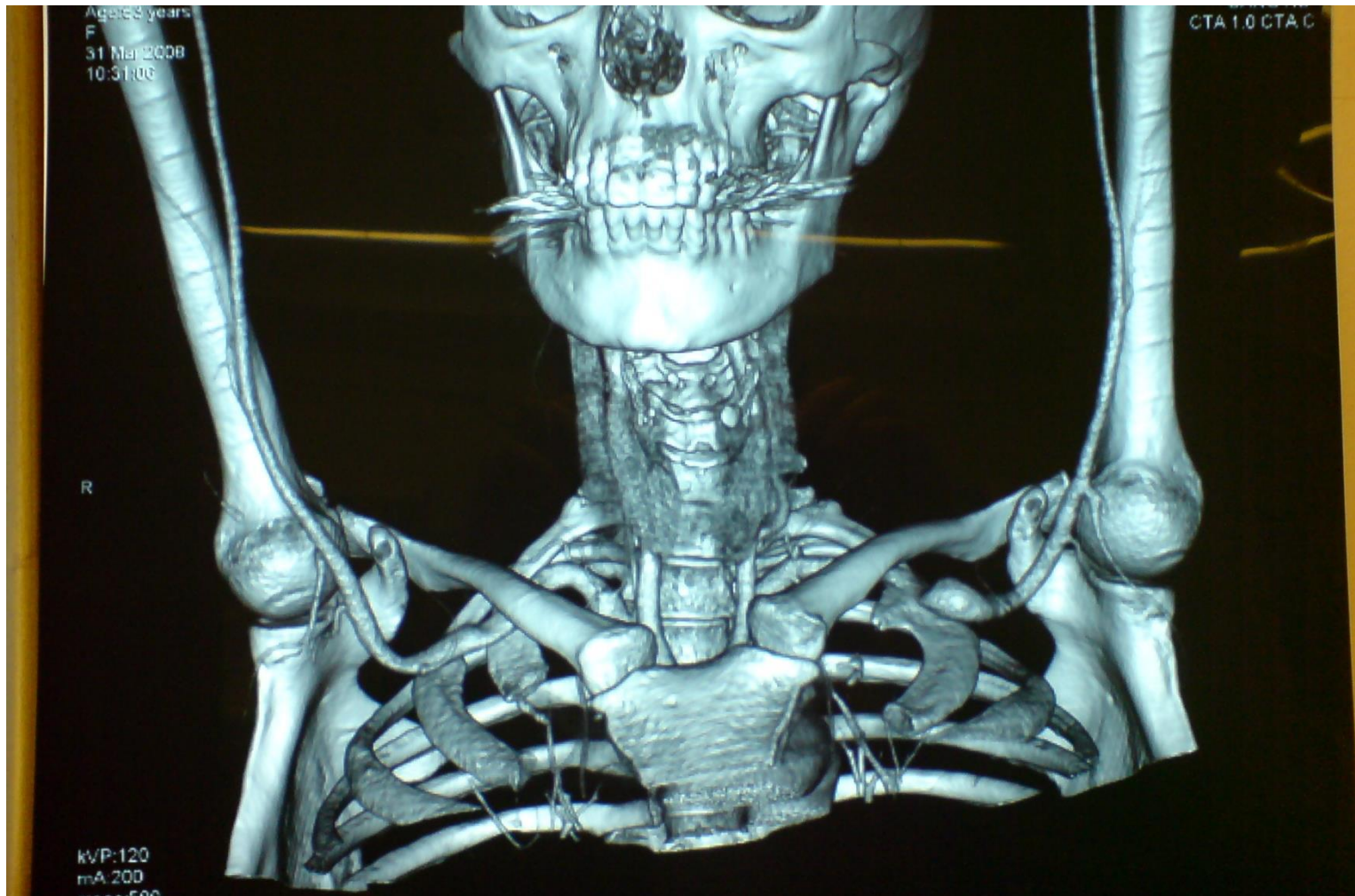




Thoracic Outlet Syndrome

- 3 separate entities
 - Venous
 - Arterial
 - Neurogenic





V-TOS

Paget-Schroetter Syndrome

- Subclavian Vein
- Costo-clavicular angle
 - Subclavius muscle
 - Costo-chondral junction
 - Subclavian/ innominate valve

PSS

- Male
- Sportsman, musician, manual worker
- Dominant limb
- Smoker, OCP if female
- “Herald thrombosis” self limiting and resolving
- 10% describe pleuritic chest pain (PE)
- Symptoms worse if arm elevated, relieved in dependency

PSS - Investigation

- CXR usually normal
- US poor views
- CT/ MRI
- Contrast Venogram
 - Basilic puncture
 - Augment axillary- subclavian flow

PSS - treatment

- Anti-coagulation
- Thrombolysis
- Stenting
- Catheter directed Lysis, first rib excision, venoplasty
 - Young/ active/ dominant arm
 - Ultimately drug free and normal activity
 - 80% DASH score <20 (minimal disability @ 10yr)

A-TOS

- Intermittent ischaemia costo-clavicular compression with normal anatomy
- Complicated A-TOS bony abnormality
- Arm claudication
- Arterial embolism/ Subclavian aneurysm
- C8,T1 symptoms

A-TOS

- CXR
- Duplex
- CTA (aneurysm)

- Uncomplicated.....Physio, weight loss, posture
- Complicated.....Supraclavicular Cx Rib excision
 - 80% report complete relief of symptoms @5yr

N-TOS

- Postural, painful paraesthesia in supraclavicular fossa/ deltoid/ medial forearm then ulnar 1 ½ fingers
- Poor grip strength, ulnar claw hand

N-TOS

- CXR, Duplex, MRI
- Imaging may be normal
- EMG/ NCS vital to exclude other pathologies (double crush syndrome)
- Anterior scalene BOTOX

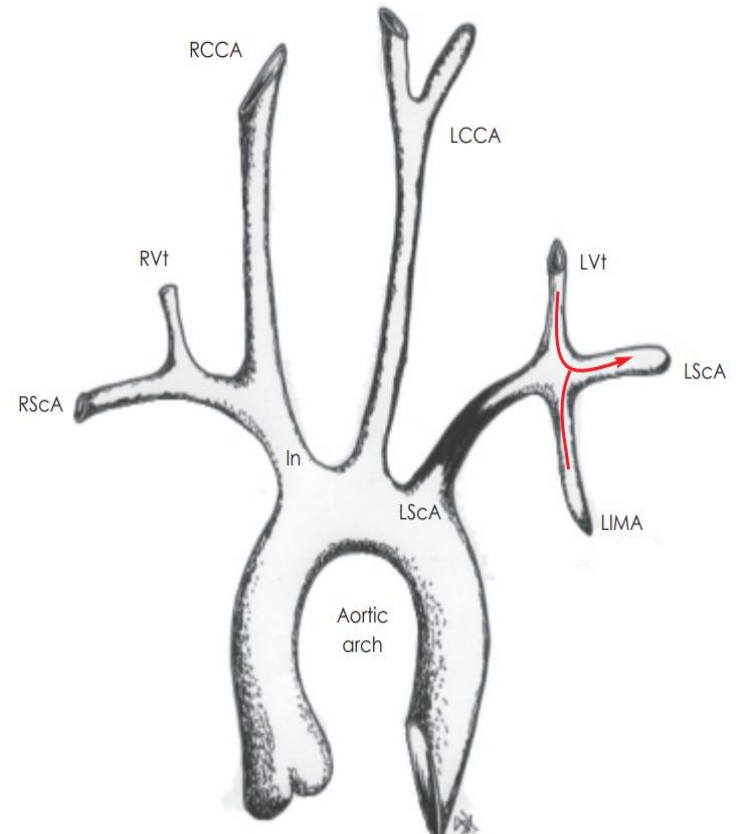
N-TOS

- Scalenectomy
- 80% good outcome
- Recurrence due to scarring usually within 6 months

- **CONSENT, CONSENT, CONSENT**

Subclavian Steal Syndrome

- Deprivation of posterior fossa circulation due to occlusion of subclavian/ innominate artery to favour arm
- Syncope, arm ischaemia, angina
- RARE
 - 1-3% of radiological investigations
 - 5% symptomatic
 - 80% have concomitant contralateral vertebral/ carotid disease

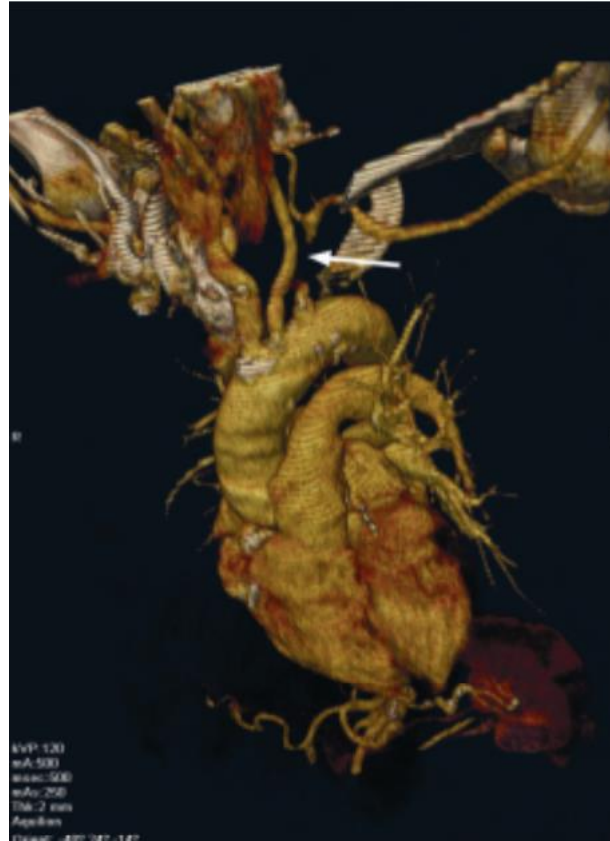


SSS

- Isolated disease rarely symptomatic
 - Reduced pulses
 - Asymmetric blood pressure
 - Bruit
- Coronary artery disease
 - Subclavian stenosis 0.5 to 1.1%
 - 3.4% get coronary steal 2-31 years post CABG

SSS-Imaging

- Duplex
- TCD
- MRA
- CTA



SSS invasive imaging

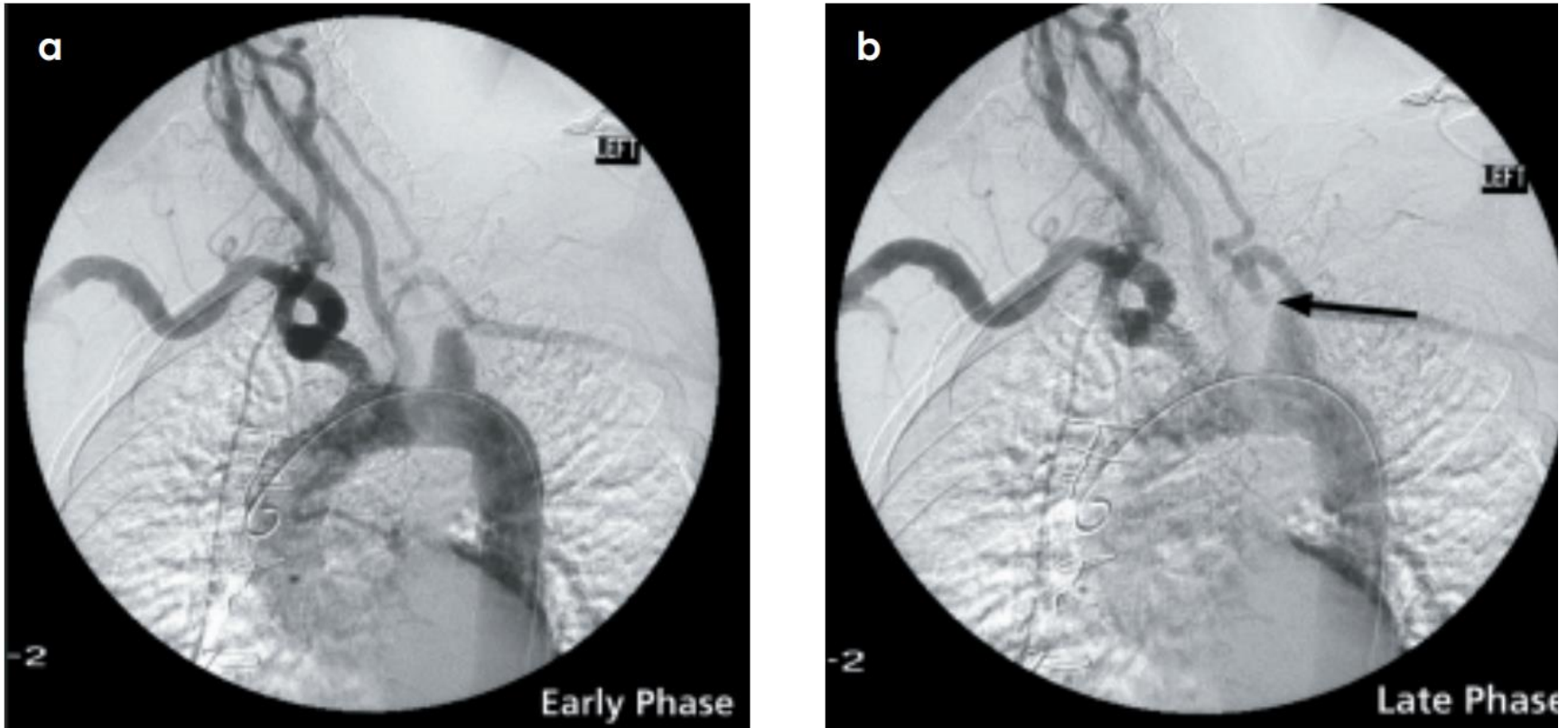
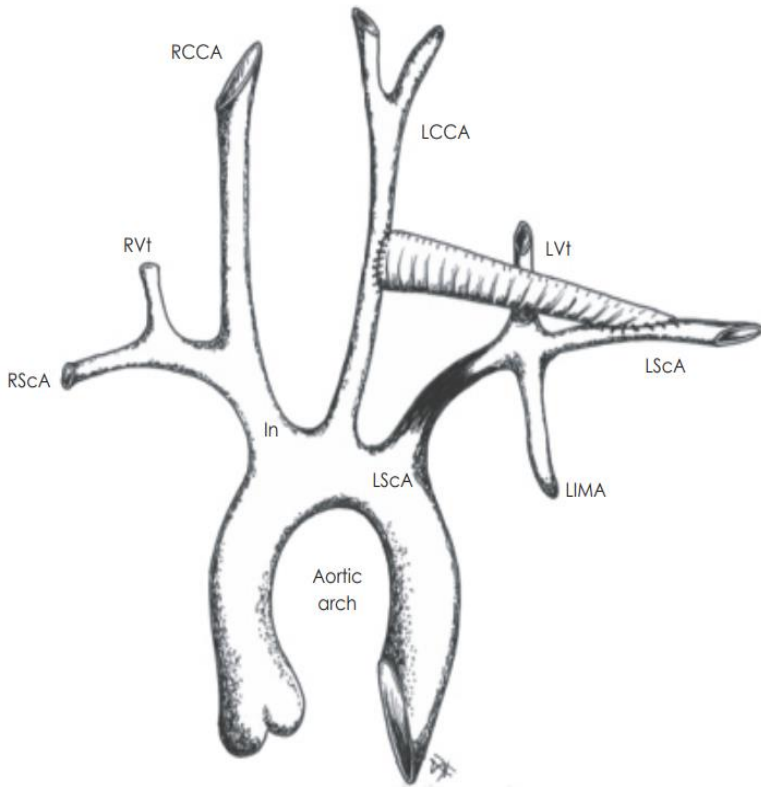


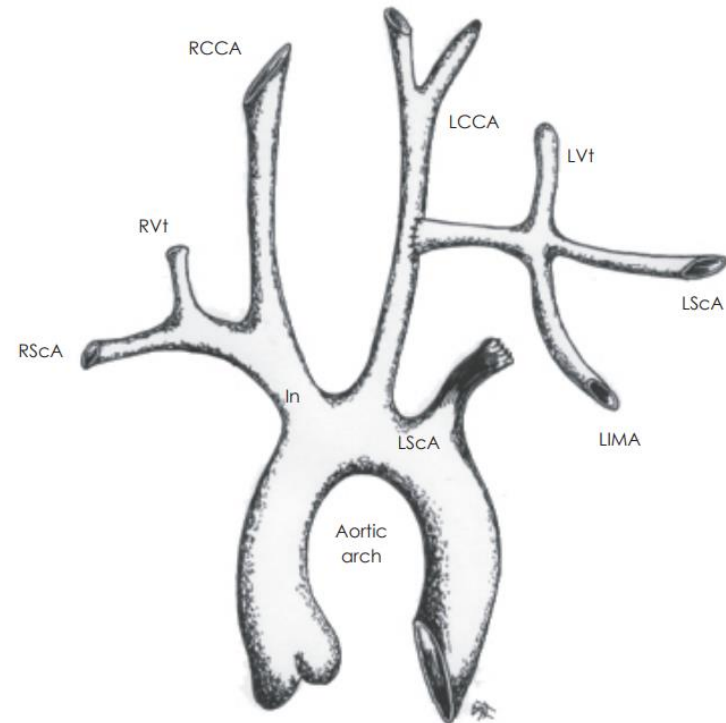
Figure 8. Proximal left subclavian artery occlusion with retrograde filling via the left vertebral artery (arrow) a) early and b) late phases.

SSS operative intervention

- CS bypass



- Subclavian Transposition



SSS endovascular intervention

- Angioplasty
- Angioplasty plus primary stenting
 - Less durable than open revascularisation
 - stroke

Primary Hyperhidrosis

- Sweating in excess of that required for thermoregulation
- 1-2.8% (1.6% teenagers)
- Axillae>hands>feet>scalp>groins

Secondary Hyperhidrosis

Differential diagnosis of generalised excessive sweating

- Infective: Acute viral/ bacterial infections; chronic infections (TB, malaria, brucellosis)
- Drugs: Alcohol, cocaine, heroin (including withdrawal), ciprofloxacin, acyclovir, esomeprazole, sertraline, and other antidepressants
- Endocrine: Diabetes, hyperthyroidism, menopause, pregnancy, carcinoid syndrome, hyperpituitarism, pheochromocytoma, acromegaly
- Neurological disorders: Stroke, spinal cord injuries, gustatory sweating after parotidectomy, Parkinson's disease
- Other: Lymphoma and other myeloproliferative disorders, congestive heart failure, anxiety, obesity

Hyperhidrosis Pathophysiology

- Sympathetic Autonomic System
- Acetylcholine
- Spinal cord segments
 - T2-8 upper limbs
 - T1-4 face and eyelids
 - T4-12 trunk
 - T10-L2 lower limbs

Hyperhidrosis Diagnosis

Multi-specialty working group recommended criteria for diagnosing hyperhidrosis

- Focal, visible, excessive sweating of at least six months' duration without apparent cause with at least two of the following characteristics:
 - Bilateral and relatively symmetrical
 - Impairs daily activities
 - At least one episode a week
 - Age of onset less than 25 years
 - Positive family history
 - Cessation of focal sweating during sleep

Hyperhidrosis Treatment

- NICE (2018 CKS)
 - Life Style
 - Topical
 - Iontophoresis
 - Oral anticholinergics
 - Botulinum Toxin
 - Sympathectomy

Thoracoscopic Sympathectomy

- 92-100% successful
- Pneumothorax, bleeding, pleuritic pain, Horner's syndrome
- T1,2 face/ hands
- T3 axillae
- Compensatory sweating
 - 85%
 - 97% T2,3 level
- CONSENT, CONSENT, CONSENT

