SUPERIOR MEDIASTINAL MASS LESION WITH SVC OBSTRUCTION

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CHIEF COMPLAINTS :

- A 54 year old male patient, resident of Nekunampeta, who is a farmer by occupation, came to Respiratory medicine OPD with

- C/o hoarseness of voice since 1 month..

- C/o cough with expectoration since 10 days.

- C/o shortness of breath since 1 week.

HISTORY OF PRESENT ILLNESS :

- Patient was apparently well 1 month back.
- Patient complaints started as
- C/o hoarseness of voice since 1 month.
- Loss of weight since 1 month.
- Loss of appetite since 1 month.

- C/o cough with expectoration since 10 days which is whitish, scanty, mucoid.

- Aggravated during night time and during supine position and relieved on sitting.

- C/o shortness of breath grade III (acc. to mMRC grading) since 1 week which is insidious in onset, gradually progressing.

- Not associated with orthopnea or PND or swelling of feet or palpitations or abdominal distension.

- C/o facial swelling since 1 week
- No C/o headache or blurring of vision.
- No c/o fever or chest pain
- No c/o wheeze or hemoptysis.

PAST HISTORY :

- No h/o PTB or BA or COVID.
- No h/o CAD or CKD or CVA or Hypothyroidism.
- No h/o inhaler usage or seasonal variations or allergies.
- No h/o HTN or DM.

FAMILY HISTORY :

- No signficant family history

PERSONAL HISTORY:

- Takes mixed diet.
- Smoker for 35 years and stopped 1 month back.
- Known alcoholic for 35 years and stopped 1 month back.
- No h/o biomass exposure or occupational exposure.
- Normal bowel and bladder habits.

GENERAL EXAMINATION:

- Patient is moderatly built and ill nourished.
- No signs of pallor, icterus, clubbing, pedal edema.
- No signs of cyanosis.
- No palpable lymphadenopathy.

- Engorged veins are seen on the left side of the neck.

VITALS :

- **Temperature :** Afebrile.
- **Pulse rate :** 90 bpm.
- **BP :** 120/80 mmHg.
- **Respiratory rate :** 22 cycles/min
- **SpO2 :** 94% on RA.

INVESTIGATIONS :

- **CBP :** Hb - 11.7 gm/dL

  RBC - 4.05 million/cumm

  WBC - 7000 cells/cumm

  Platelets - 1.9 lakhs/cumm

  Differential count :

  N : 51%

  L : 38%

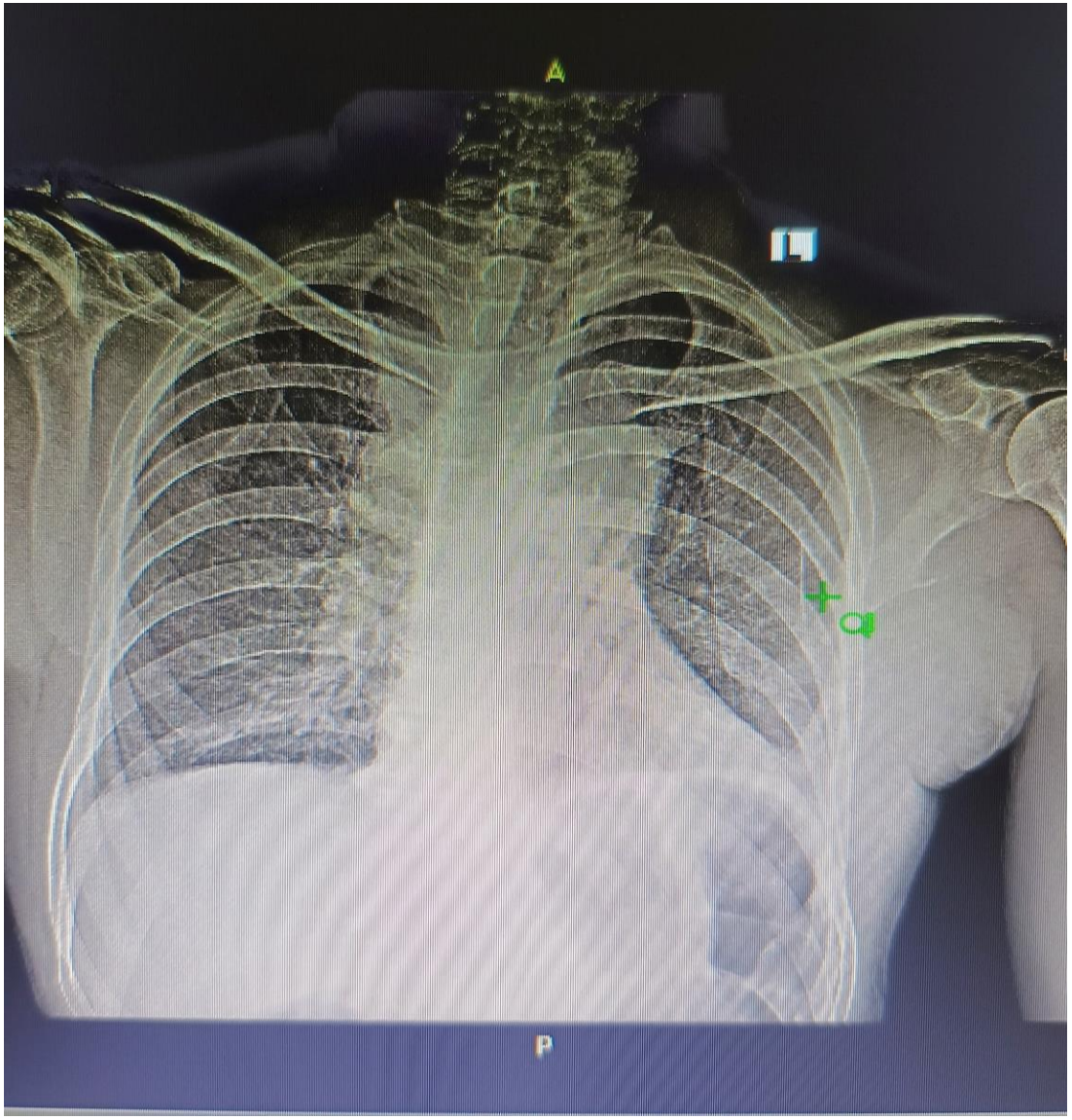
  E : 03%

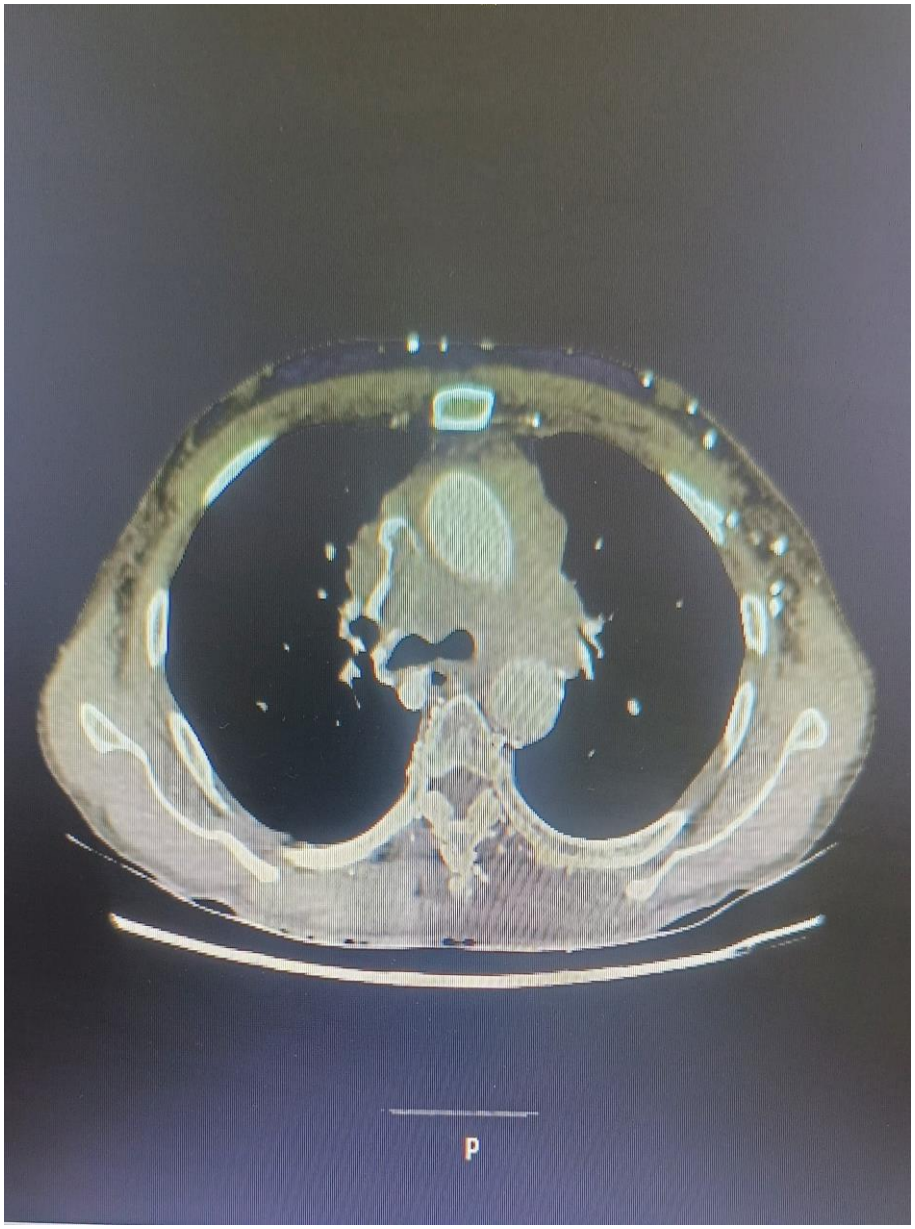
  M : 08%

- **LFT** within normal limits.
- **RFT** within normal limits.
- **VIRALS** : Non reactive.
- **ECG :** Normal.
- **2D ECHO :** Normal.

RADIOLOGICAL FINDINGS :

CXR PA view

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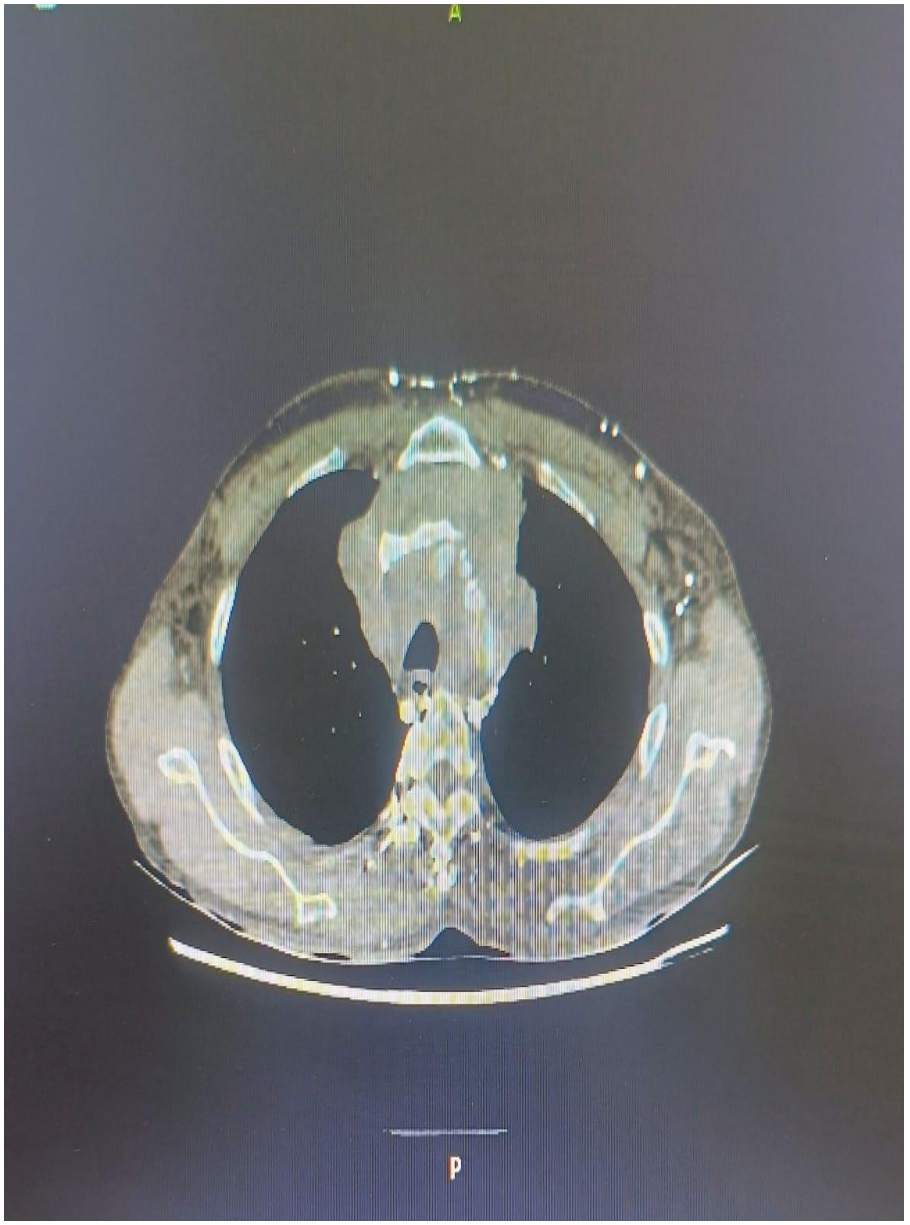
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✓CECT CHEST findings :

- Heterogeneously enhancing soft tissue density lesion in superior mediastinum with tumour invasion into SVC, other extensions and vascular relations - likely malignant etiology.

- Mediastinal and bilateral lower cervical lymphadeopathy.

- Right adrenal and bone metastases.

- Left IJV thrombosis causing near total luminal narrowing.

- The patient was advised CT guided biopsy.

- CT guided biopsy was done on 16/7/2025 and sent for histopathological examination.

SUPERIOR VENACAVA OBSTRUCTION SYNDROME

- Superior Vena Cava (SVC) obstruction refers to partial or complete blockage of blood flow through the SVC.

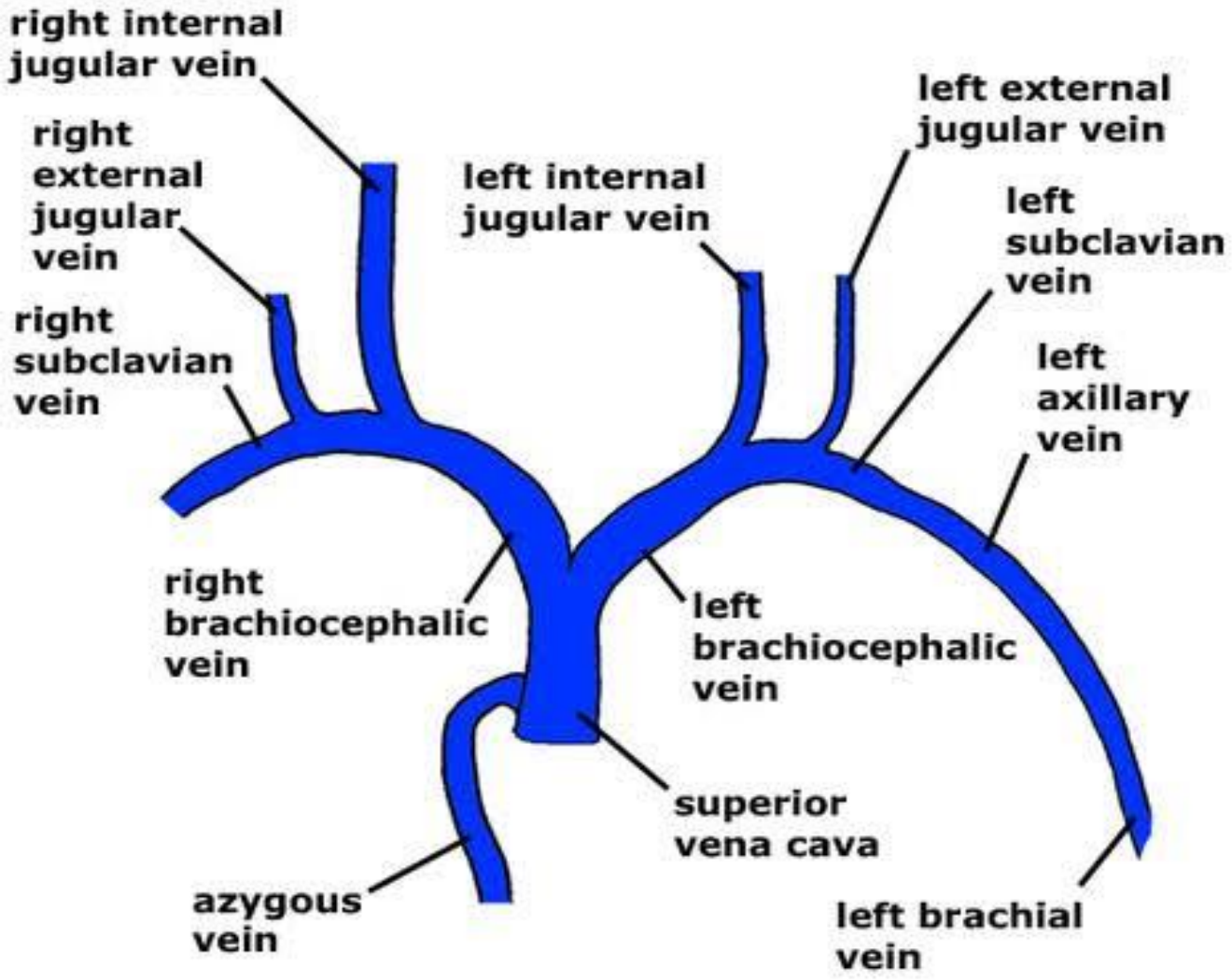
- This is the major vein that returns blood from the head, neck, upper limbs, and upper thorax to the right atrium.

ANATOMY OF SVC :

- Formed by union of right and left brachiocephalic veins.

- Lies in the superior mediastinum, anterior to the trachea and right main bronchus.

Major veins superior to the heart



ETIOLOGY :

- **Malignant Causes (80–85%).**

✓Bronchogenic carcinoma (NSCLC) – most common (~60% of SVCS).

✓Lymphoma (especially non-Hodgkin's).

✓Metastatic cancers (breast, testicular, thymoma, mediastinal tumors).

- **Benign Causes (15–20%)**

✓ Thrombosis from indwelling catheters or pacemaker leads.

✓ Fibrosing mediastinitis (e.g., due to histoplasmosis or TB).

✓ Aortic aneurysm.

✓ Post-radiation fibrosis.

PATHOPHYSIOLOGY :

- Obstruction leads to elevated venous pressure in areas drained by the SVC.

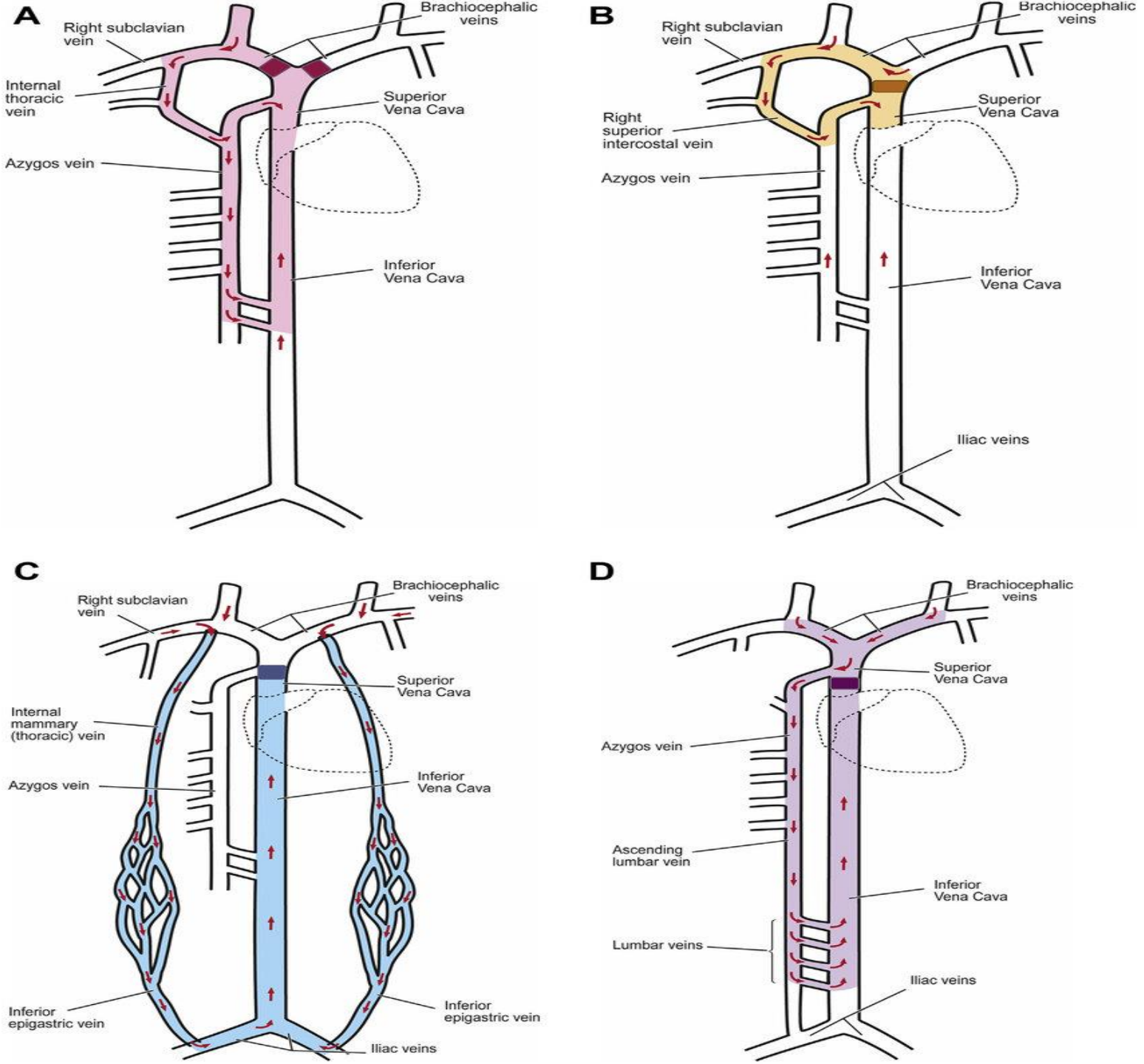
- Collateral circulation develops via:

✓ Azygos-hemiazygos system.

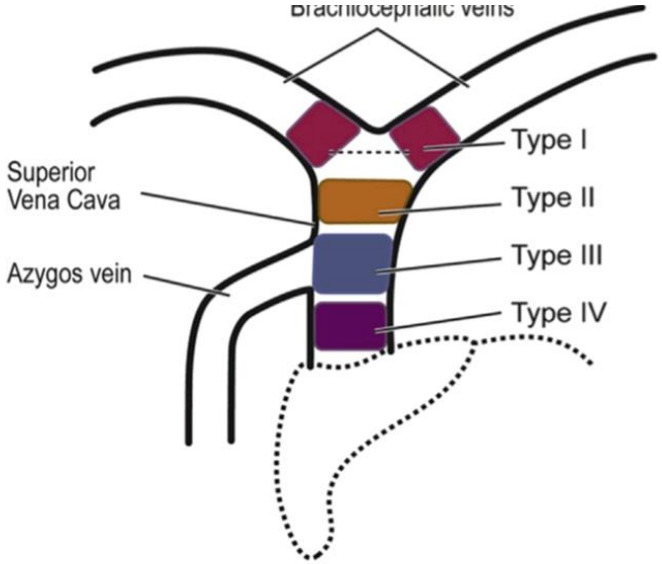
✓ Internal thoracic veins.

✓ Lateral thoracic veins.

✓ Vertebral plexus.


A
Right subclavian vein
Brachiocephalic veins
Internal thoracic vein
Superior Vena Cava
Azygos vein
Inferior Vena Cava
B
Right subclavian vein
Brachiocephalic veins
Right superior intercostal vein
Superior Vena Cava
Azygos vein
Inferior Vena Cava
Iliac veins
C
Right subclavian vein
Brachiocephalic veins
Superior Vena Cava
Internal mammary (thoracic) vein
Azygos vein
Inferior Vena Cava
Inferior epigastric vein
Inferior epigastric vein
Iliac veins
D
Brachiocephalic veins
Superior Vena Cava
Azygos vein
Ascending lumbar vein
Inferior Vena Cava
Lumbar veins
Iliac veins

Obstruction at different levels



Lesion location	Grade A Severity	Grade B severity	Grade C severity
Type I – Bilateral brachiocephalic vein occlusion with or without supra-azygos SVC	Moderate to severe (50-90%)	Pre-occlusive (>90%)	Totally occluded (100%)
Type II – Supra-Azygos SVC without brachiocephalic involvement	Moderate to severe (50-90%)	Pre-occlusive (>90%)	Totally occluded (100%)
Type III – Azygos SVC	Moderate to severe (50-90%)	Pre-occlusive (>90%)	Totally occluded (100%)
Type IV – Infra-Azygos SVC	Moderate to severe (50-90%)	Pre-occlusive (>90%)	Totally occluded (100%)

CLINICAL FEATURES :

● Symptoms :

- ✓ Dyspnea (commonest symptom)
- ✓ Neck and upper limb swelling
- ✓ Facial swelling and plethora (worse on bending forward)
- ✓ Headache, dizziness, visual disturbances
- ✓ Cough, hoarseness, chest pain
- ✓ Dysphagia (if esophagus compressed)

●Signs :

- ✓Distended neck veins (non-pulsatile)
- ✓Facial and upper limb edema
- ✓Dilated superficial veins on chest wall
- ✓Cyanosis
- ✓Stridor (if larynx/trachea compressed)
- ✓Papilledema (rare, suggests cerebral edema)

DIAGNOSIS :

- **Clinical Diagnosis**

✓Based on typical signs and symptoms.

- **Imaging**

1. Chest X-ray

✓Mediastinal widening, mass, pleural effusion

2. Contrast-enhanced CT (CECT) of chest

✓Identifies site, extent, and cause of obstruction

✓Shows collateral venous circulation

3. MRI

✓Alternative to CT for evaluating soft tissue

4. Venography

✓Gold standard investigation

✓Now rarely needed

●5. PET-CT

✓For staging of malignancies.

●Tissue Diagnosis

✓Biopsy of mass (e.g., bronchoscopy, mediastinoscopy, CT-guided FNAC).

✓Pleural fluid cytology, if present.

GRADING OF SVC OBSTRUCTION

- ✓**Grade I -** Mild symptoms. Mild facial edema or plethora, no venous distention.

- ✓**Grade II -** Moderate symptoms. Facial and neck edema, jugular venous distension.

- ✓**Grade III -** Severe symptoms. Facial, neck, and upper limb edema, prominent chest wall collaterals.

- ✓**Grade IV -** Severe symptoms including cerebral edema, airway compromise, syncope, coma

MANAGEMENT :

- **Supportive Measures :**

✓Head elevation

✓Oxygen

✓Corticosteroids (e.g., dexamethasone) – useful in lymphoma

✓Diuretics – to reduce edema

●Specific Treatment :

- Depends on the etiology

✓Malignant SVCS :

✓**Radiotherapy** (NSCLC, lymphoma) – rapid symptom relief

✓**Chemotherapy** (esp. small-cell lung cancer or lymphoma)

- ✓**Endovascular stenting** – rapid relief; bridge to definitive therapy.

- ✓**Anticoagulation** – if thrombosis is present.

- ✓**Thrombolysis** – selected cases with recent thrombus.

- ✓**Benign SVCS :**
- ✓Anticoagulation
- ✓Stent placement
- ✓Surgical bypass (rare, last resort)

PROGNOSIS :

- **Depends on underlying cause.**

✓Poor in malignant causes (e.g., lung cancer)

✓Good in benign or treatable malignancies. (e.g., lymphoma)

✓Stenting provides rapid and often dramatic symptomatic relief.

COMPLICATIONS :

- Cerebral edema
- Laryngeal/tracheal obstruction → respiratory failure
- Thromboembolism

DIFFERENTIAL DIAGNOSIS :

- Congestive heart failure
- Angioedema

- Based on the histopathological report, the diagnosis is **poorly differentiated squamous cell carcinoma of lung.**

- Based on the radiological findings the TNM staging of the cancer is **T4 N3 M1c.**

Stage Grouping of NSCLC (Including Squamous Cell Carcinoma)	
Stage	**TNM**
Stage 0	Tis N0 M0
Stage IA_1	T1b N0 M0
Stage IA_2	T1c N0 M0
Stage IB	T2a N0 M0
Stage IIB	T1–2 N1 M0
Stage IIA	T1–2 N2 M0/T3 N0 M0 T4 N0–1 M0
Stage IIIB	T3–4 N2 M0/ Any T N3 M0 T4 N0–1 M
Stage IIIC	T4 N3 M0
Stage IVA	Any T Any N M1a or M1b
Stage IVB	Any T Any N M1c

- Based on the stage grouping of squamous cell lung cancer, this is **Stage IV B.**

- Treatment varies by stage, performance status, and comorbidities.

- The treatment for stage IV cancer is

✓**Goal:** Palliative, prolong survival and improve QoL

✓**Chemotherapy:** Platinum-doublet (cisplatin/carboplatin + gemcitabine or paclitaxel)

✓**Immunotherapy:**

- **PD-L1 ≥1%:** Pembrolizumab monotherapy or in combination
- **PD-L1 <1%:** Combination chemo-immunotherapy

✓**Targeted therapy**: Rare in SCC due to low incidence of EGFR, ALK mutations

✓**Radiation:** For symptom relief (e.g., bone pain, brain metastasis).


Thank
you!