ANATOMY OF MEDIASTINUM

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Mediastinum

- The median portion of the thoracic cavity (interpleural)
- Limited by:
  - Thoracic inlet superiorly
  - Diaphragm inferiorly
  - Sternum anteriorly
  - 12 Thoracic vertebrae posteriorly
Mediastinum

It is divided into:

1. **Superior mediastinum**: lies between the first rib and the sternal angle.

2. **Inferior mediastinum**: lies between the sternal angle and the diaphragm.
Mediastinum

- Inferior mediastinum: is subdivided into:
  - Anterior mediastinum
  - Middle mediastinum
  - Posterior mediastinum
**Superior Mediastinum**

**Boundaries**
- Ant: Manubrium sterni
- Post: T-1 to T-4
- Lateral: Mediastinal pleura
- Sup: Plane of thoracic inlet
- Inf: Imaginary line joining sternal angle and lower border T-4

[Diagram showing structures like Superior mediastinum, Trachea, Aortic arch, Sternal angle, Rib II, TIV, TV, and Inferior mediastinum.]
SUP & MIDDLE MEDIASTINUM

SUP. MEDIASTINUM

MIDDLE MEDIASTINUM

HEART

PERICARDIUM
Superior Mediastinum

- It contains:
  - Blood vessels (large veins & arteries)
  - Thoracic duct
  - Trachea
  - Esophagus
  - Thymus
  - Nerves
Superior Mediastinum

1. Blood Vessels
2. Superior vena cava
3. Brachiocephalic veins
4. Pulmonary trunk
5. Arch of Aorta
Nerves

2. Vagus nerve
3. Left Recurrent Laryngeal nerve.
4. Phrenic nerve.
Superior Mediastinum: Contents:

Muscles:
- Sternohyoid
- Sternothyroid
- Longus colli

Thymus: (in childhood & puberty)

Veins:
- SVC
- Lt & Rt brachiocephalic veins,
- Lt Sup Intercostal vein

Arteries:
- Arch of Aorta
- Brachiocephalic artery
- Lt Common carotid
- Lt subclavian artery

Trachea & Esophagus

Nerves:
- Vagus
- Phrenic
- Cardiac &
- Lt recurrent laryngeal nerve (b/w trachea & oesophagus)

Thoracic Duct

Lymph nodes:
- Brachiocephalic,
- Tracheobronchial,
Anterior Mediastinum-(narrowest)

**Boundaries**
- Ant: Body of sternum
- Post: Pericardium
- Sides: Mediastinal pleura
- Sup: Imaginary plane
- Inf: Diaphragm

**Contents**
- Thymus (in children)
- Sternopericardial lig.
- Internal thoracic artery & branches
- Lymphatics & Lymph nodes
Middle Mediastinum

Contents:

Heart enclosed in pericardium

Arteries: Ascending Aorta, Pulmonary trunk with its Lt & Rt branches

Veins: SVC, Termination of Azygos, Pulmonary veins

Nerves: Phrenic, Deep cardiac plexus

Bifurcation of Trachea with two principal bronchi

Tracheobronchial lymph nodes
Posterior Mediastinum

Boundaries:

Ant. Pericardium, Bifurcation of trachea
Post. T5 to T12
sup. Transverse thor plane
Inf. diaphragm

Sides: Mediastinal pleura
Posterior Mediastinum

Contents:
- Oesophagus
- Arteries
  - Descending Aorta with its brs
- Veins
  - Azygos
  - Hemizygos
  - Accessory hemizygos
- Nerves:
  - Vagus
  - Splanchnic nerves
  - Thoracic duct
  - Lymph nodes
  - Posterior mediastinal

Diagram showing the posterior mediastinum with labeled structures such as the oesophagus, thoracic duct, and various veins and arteries.
Nerves in mediastinum

The **right vagus nerve** descends in the thorax, first posterolateral to the brachiocephalic artery then lateral to the trachea. Passes **behind** the root of the right lung and assists in the formation of the **pulmonary plexus**. On leaving the plexus, the vagus passes onto the posterior surface of the esophagus and takes part in the formation of the **esophageal plexus**. It then passes through the esophageal opening of the diaphragm.
Nerves in mediastinum

- The **left vagus nerve** descends in the thorax between the left common carotid and the left subclavian arteries.
- It then crosses the left side of the aortic arch.
- The vagus then turns backward **behind** the root of the left lung and assists in the formation of the **pulmonary plexus**.
- On leaving the plexus, the vagus passes onto the anterior surface of the esophagus and takes part in the formation of the **esophageal plexus**.
Clinical correlations

- **Deflection of Mediastinum**

  ✓ If air enters the pleural cavity (a condition called *pneumothorax*), the lung on that side immediately collapses and the mediastinum is displaced to the opposite side.

  ✓ Patient’s being breathless and in a state of shock; on examination, the trachea and the heart are found to be displaced to the opposite side.
Applied Anatomy:

Mediastinitis

- From infections of neck
- Pus under prevertebral fascia reach
  till T4 only, not beyond it, as PV fascia
  is attached here

- Pus b/w pretracheal and prevertebral
  fascia seeps through sup.
  Mediastinum to reach post.
  Mediastinum

- In front of pretracheal fascia to ant
  mediastinum
- Mediastinal syndrome:
  - Engorgement of veins
  - Dyspnea
  - Dysphagia
  - Hoarseness of voice

- Mediastinal widening

- Mediasinal shift
Clinical correlations

- **Mediastinal Tumors or Cysts**
  - Enlargement of mediastinal tumor may compress the left recurrent laryngeal nerve, producing paralysis of the left vocal fold.
  - An expanding cyst or tumor can partially occlude the superior vena cava, causing severe congestion of the veins of the upper part of the body.
  - Other pressure effects can be seen on the sympathetic trunks, phrenic nerves, and sometimes the trachea, main bronchi, and esophagus.
Clinical correlations

- **Mediastinoscopy**
  - diagnostic procedure by which tracheobronchial lymph nodes are obtained without opening the pleural cavities.
  - A small incision is made in the midline in the neck just above the suprasternal notch, and the superior mediastinum is explored down to the region of the bifurcation of the trachea.
  - The procedure can be used to determine the diagnosis and degree of spread of carcinoma of the bronchus.