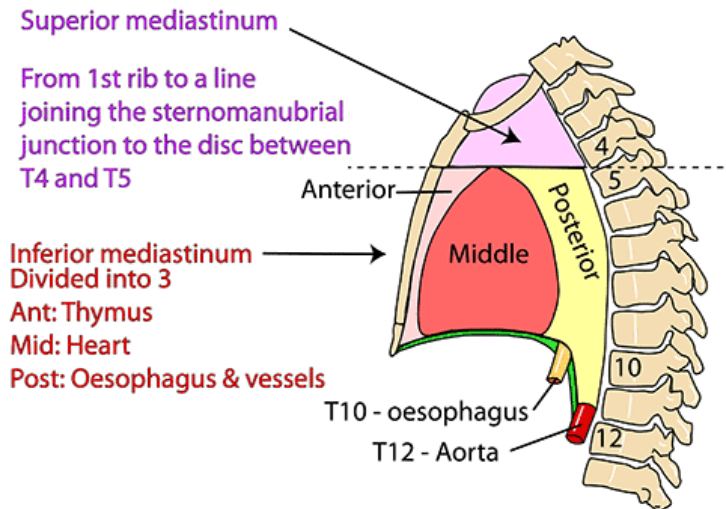


POSTERIOR MEDIASTINUM

DIVISIONS OF THE MEDIASTINUM



MEDIASTINUM

The area in the thorax that lies between the lungs. Note that although the lungs reach up above the front of the 1st rib, the mediastinum does not.

The great vessels lie in the superior mediastinum, the thymus and fat in the anterior part of the inferior, the heart in the middle and the oesophagus & aorta in the posterior parts of the inferior mediastinum

OESOPHAGUS (27cm long)

Nerves: Sensation and motor via vagus nerves

Lining: Stratified squamous (non-keratinising)

becoming columnar at stomach

Thick muscularis mucosae ++

Mucous glands in mucosa and submucosa

RELATIONS OF OESOPHAGUS

Slight
compression
from:

Cricoid
cartilage

Aorta
Left bronchus
left atrium

Diaphragmatic
hiatus

C6



Posterior: vertebrae, thoracic duct crosses to left at T5, hemiazygos/ accessory hemiazygos cross to right at T8/9, descending aorta, first 2 intercostal arteries from aorta

Anterior: trachea to T4/5, recurrent laryngeal nerves, left bronchus, left atrium, diaphragm

Left: thoracic duct, aorta, left subclavian artery, lung

Right: lung, azygos vein (hence good side to approach the oesophagus surgically)

Endoscopic narrowings as above:

From mouth at 15cm, 27cm, 40cm

Note: 40-45cm is also the length of thoracic duct, vas, femur, spinal cord and transverse colon

1/3rds	MUSCLE	ARTERY	VEIN	LYMPH	LENGTH (27cm)
Upper	Striated	Inferior thyroid	Inferior thyroid	Deep cervical	9cm
Middle	Striated/ smooth	Aortic branches	Azygos branches	Mediastinal	9cm
Lower	Smooth	Left gastric	Left gastric	Gastric	9cm

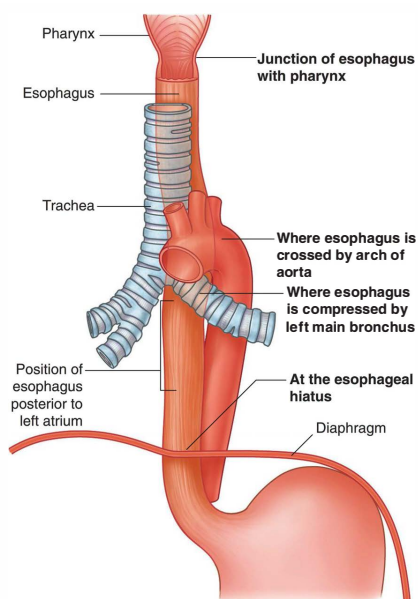
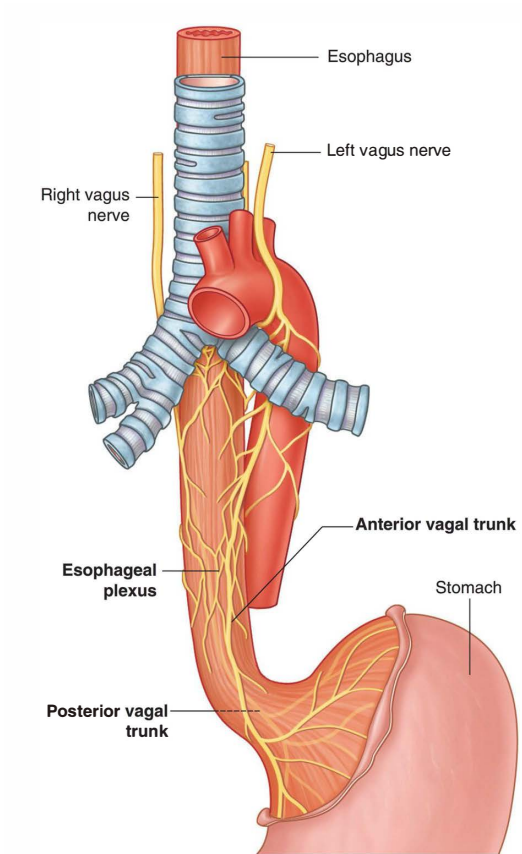


Fig. 3.91 Sites of normal esophageal constrictions.



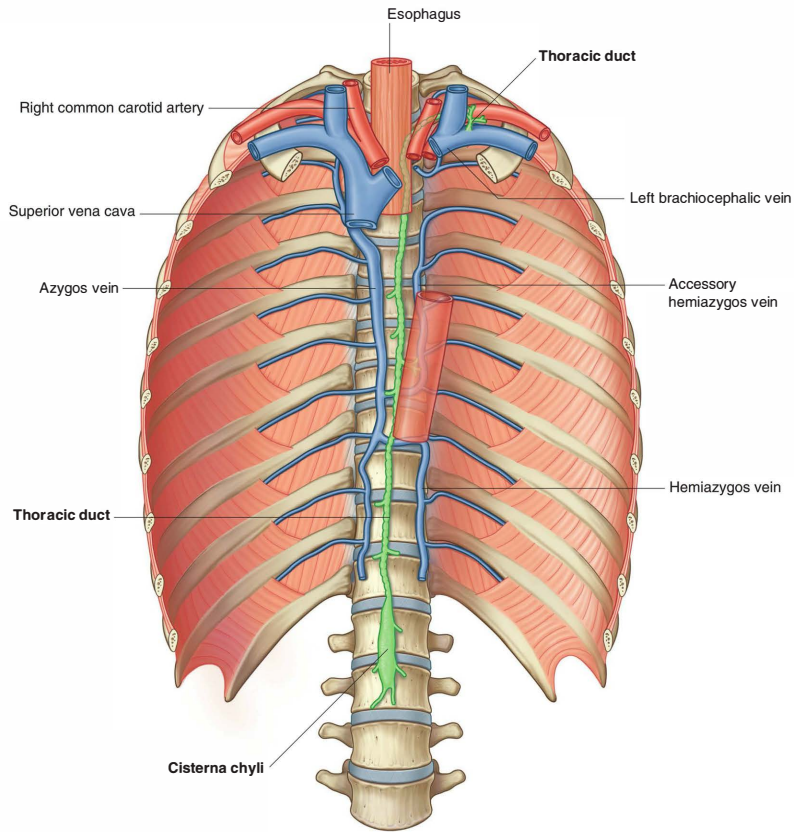
Starts C6

Diaphragm hiatus T10

Enters stomach T11

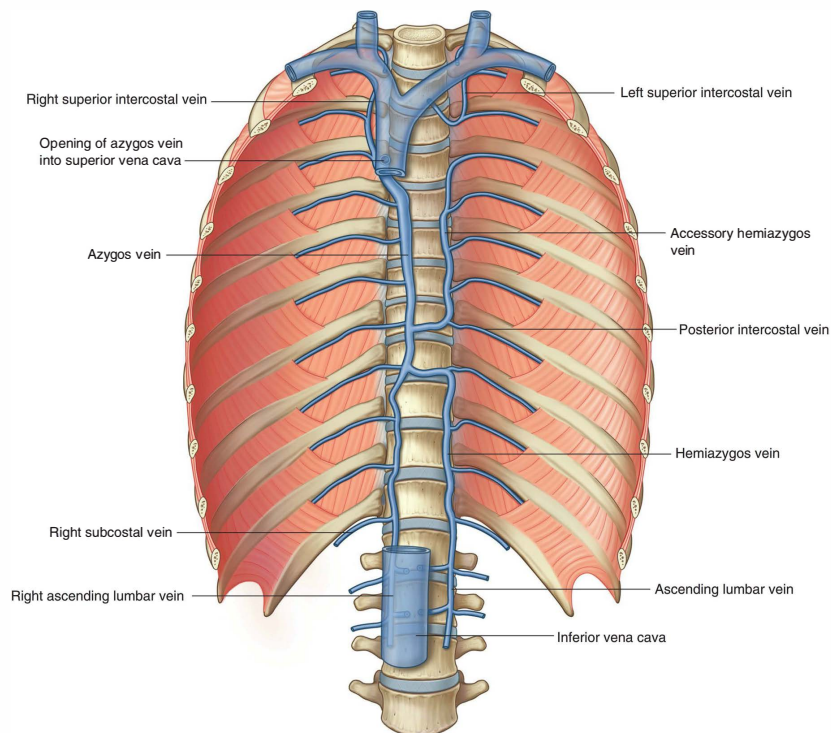
Most posterior structure in the mediastinum – slightly to the L of the midline

Both TRACHEA and OESOPHAGUS start at C6



Lymph system

- **Cisterna chyli – T12**
 - Confluence of lymphatic trunks
- Thoracic duct ascends between the azygos vein and the aorta
- Passes through aortic opening in diaphragm
- Inferior posterior mediastinum (below T5) – R side of oesophagus
- Superior posterior mediastinum (above T5) – L side of oesophagus
- Arches over dome of L pleura to enter great veins at joining of L subclavian to L IJ



Azygos vein – formed from **ascending lumbar vein + R subcostal vein**

Passes through the aortic opening of the diaphragm

R side of vertebrae

Arches over R hilum of lung at T4 to insert into SVC below 2nd costal cartilage

Drains:

- R lower 8 posterior intercostals
- R superior intercostal vein
- Bronchial veins from R lung

Hemiazygous:

- L ascending lumbar + L subcostal vein
- L side of vertebral bodies
- Drains L lower posterior intercostals

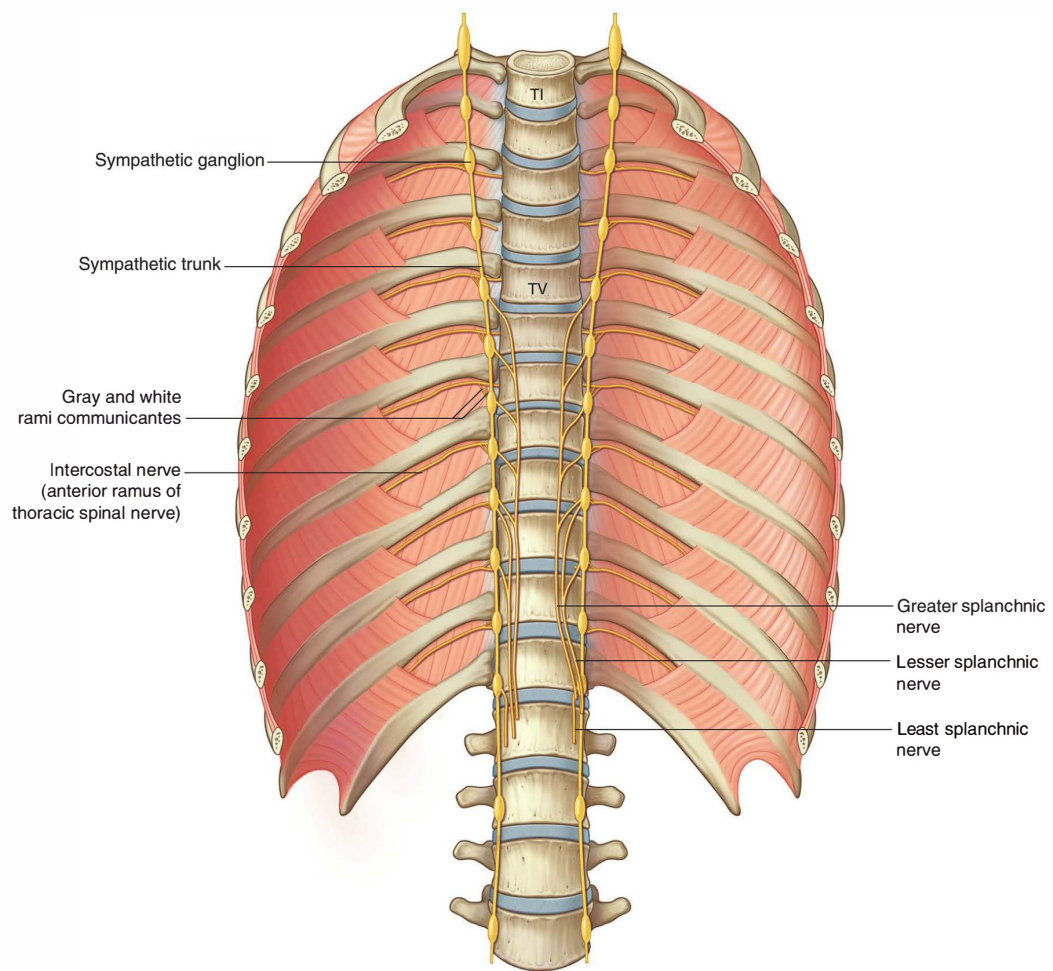
Accessory hemiazygous:

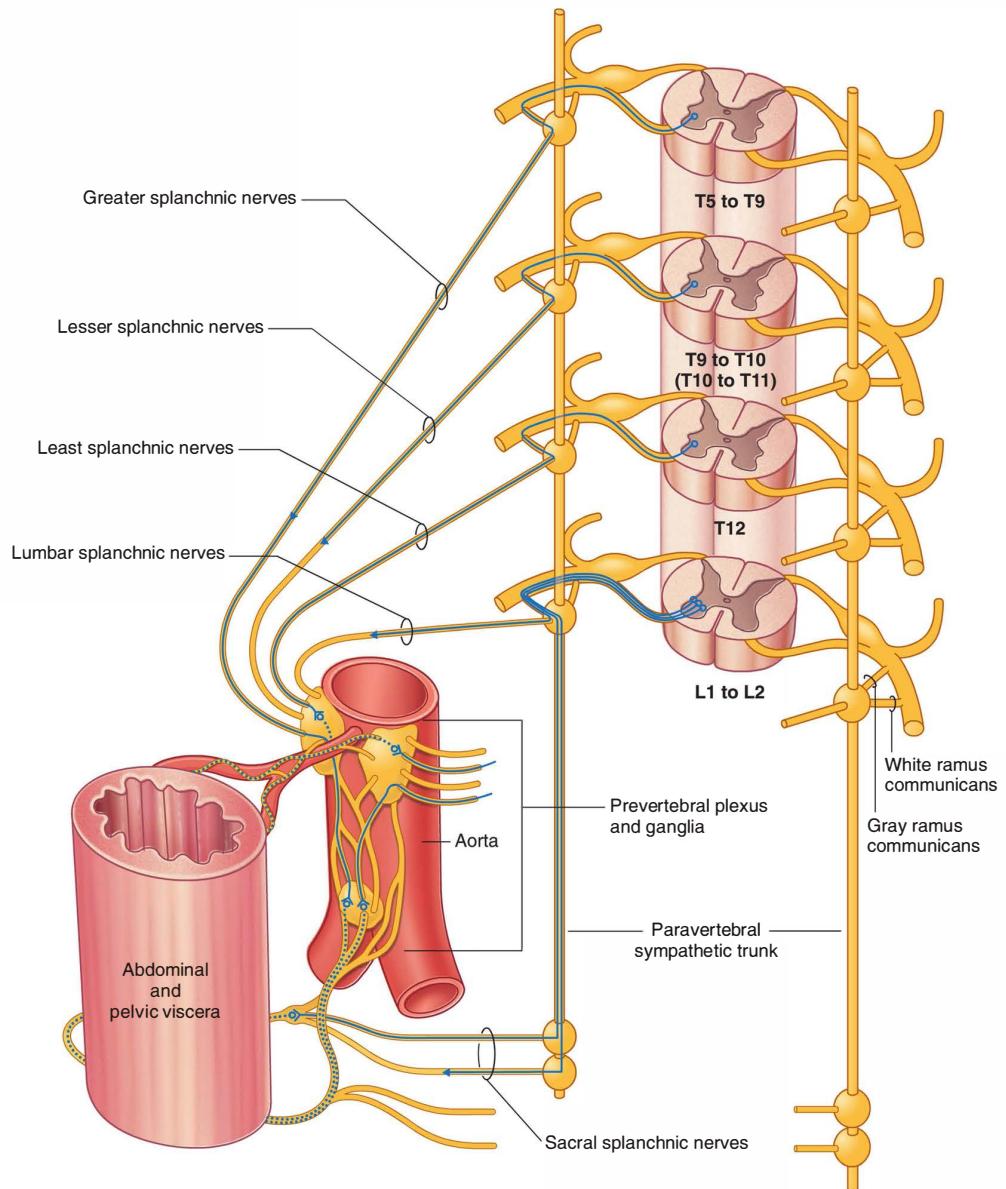
- Drains L upper posterior intercostals (not superior intercostal)
- Drains bronchial veins from L lung

SYMPATHETIC CHAIN GANGLION

- Thoracic chain = 12 ganglia
- Lies on heads of ribs
- Inferior cervical + 1st thoracic fused to form **stellate ganglion**
- Preganglionic from spinal nerve: white rami
- Postganglionic back to spinal nerve: grey rami
- Chain ganglia pass through diaphragm beneath the medial arcuate ligament
- Lower 8 thoracic ganglia give rise to the greater, lesser, least splanchnic (no synapse in paravertebral ganglia)

- The sympathetic nerves (both upper and lower thoracic) carry visceral afferents

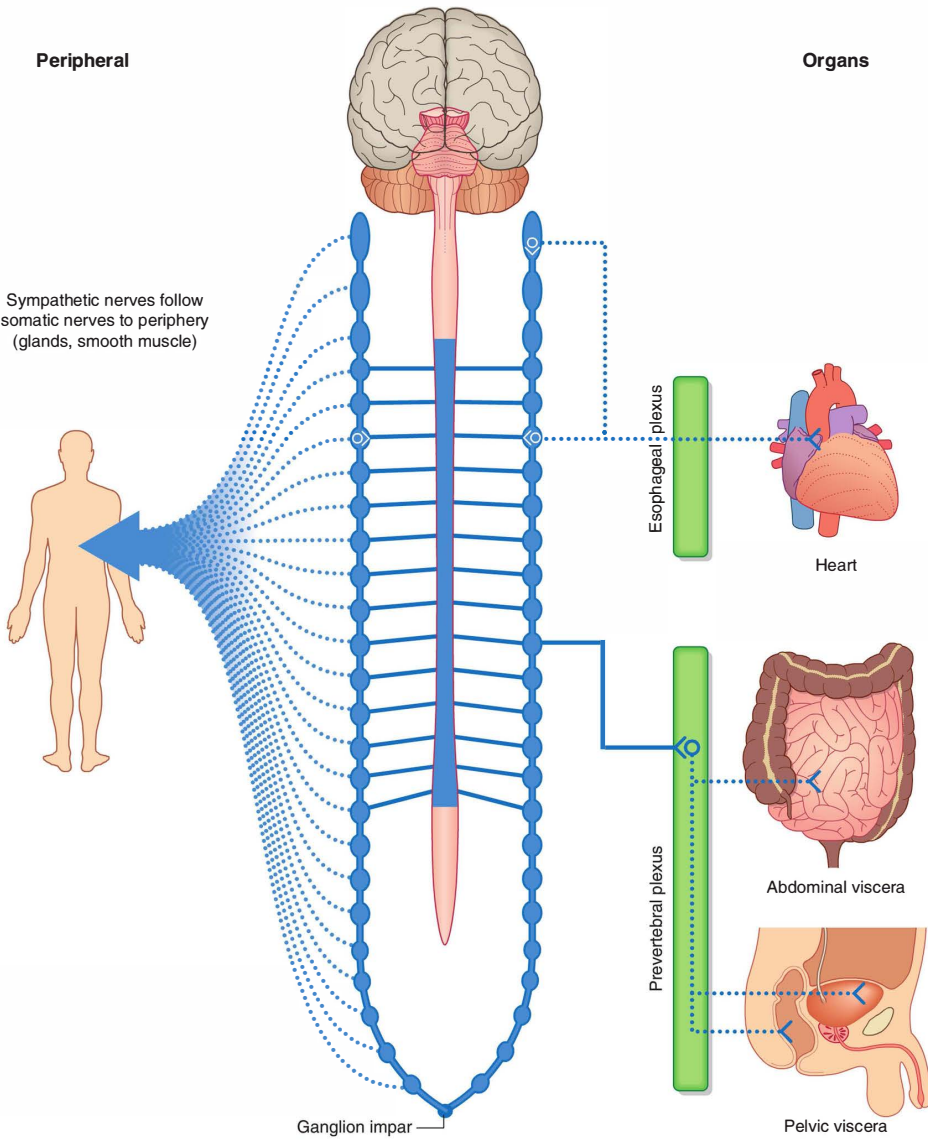




Peripheral

Organs

Sympathetic nerves follow somatic nerves to periphery (glands, smooth muscle)



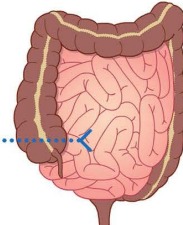
Ganglion impar

Esophageal plexus

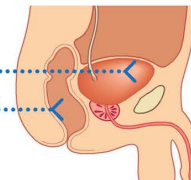


Heart

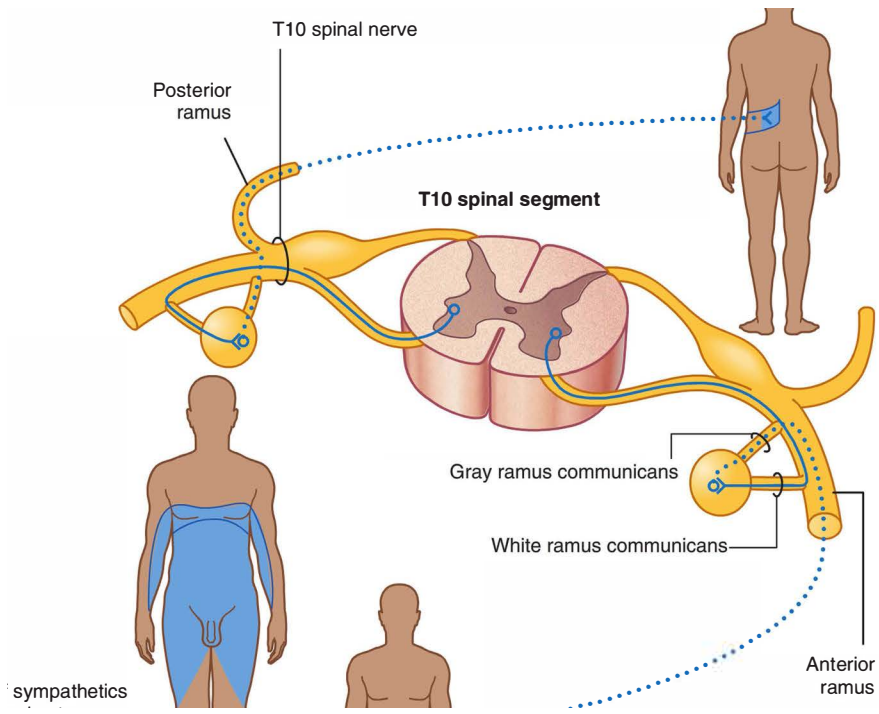
Prevertebral plexus



Abdominal viscera

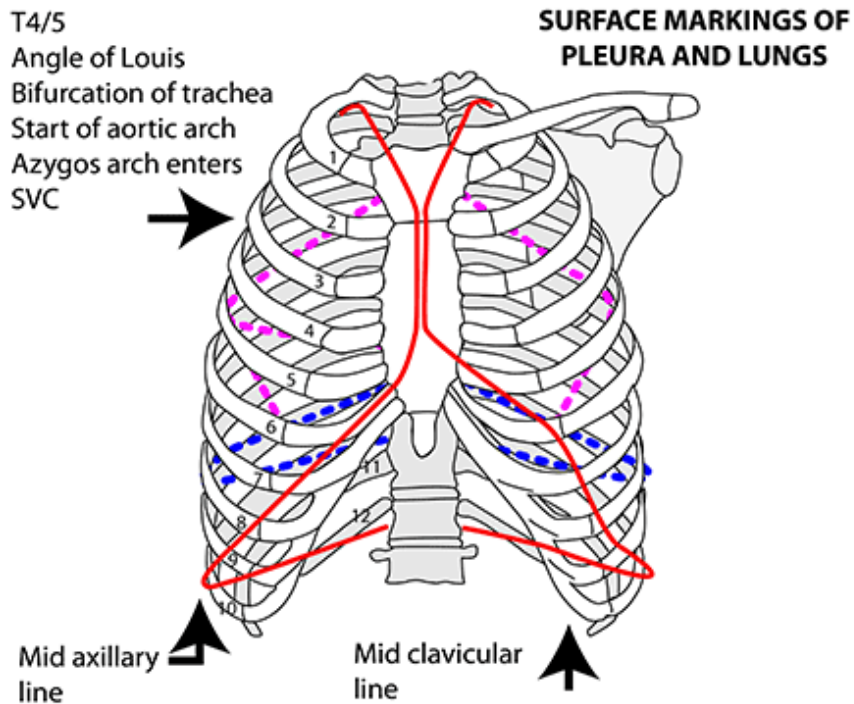


Pelvic viscera



LUNGS:

THORAX - SURFACE MARKINGS



Pleura 2-4-6-8-10-12

Continuous Red line, starting 1" (2.5cm) above mid point of medial 1/3 of clavicle. Meet in midline at rib 2, left side then diverges at rib 4 to make room for the heart, whilst right continues parasternally to rib 6. Both cross rib 8 in the mid-clavicular line, then rib 10 in the mid-axillary line. Both reach posterior chest just below rib 12.

Lungs 2 less than pleura

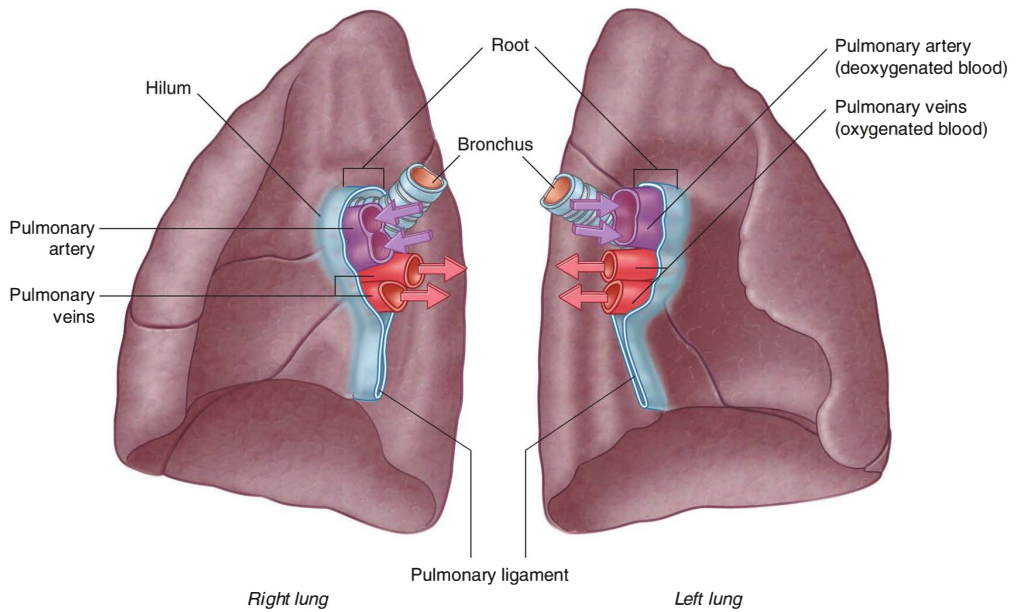
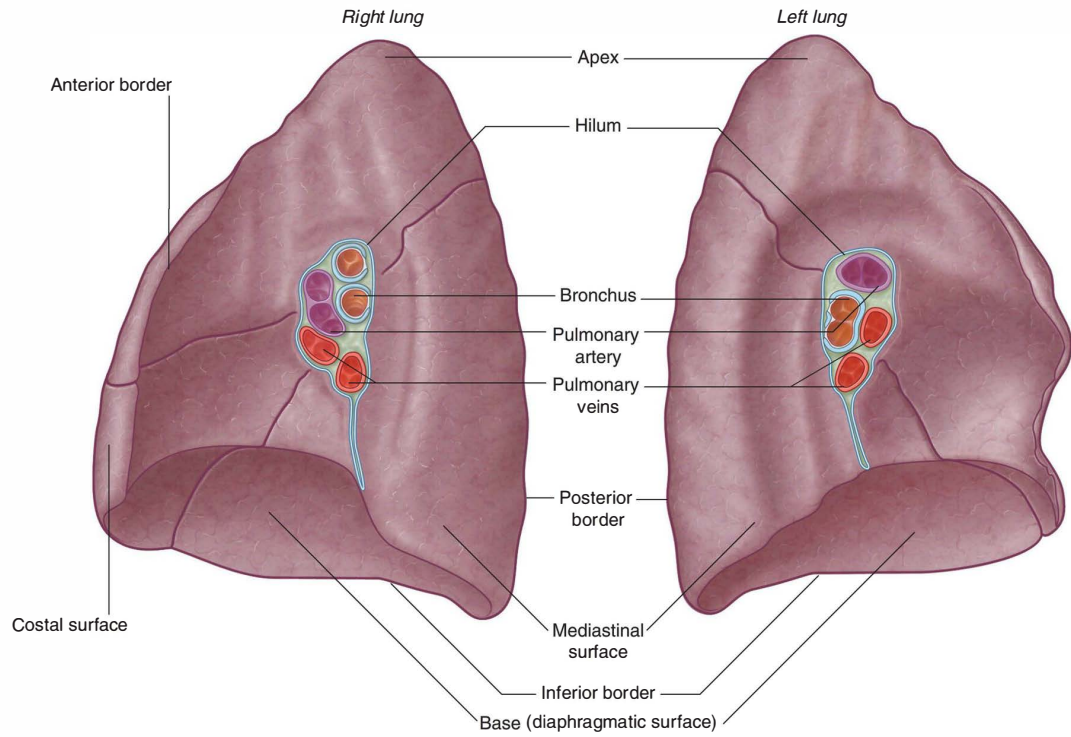
Blue dotted lines indicate lower extension of lungs in expiration. Below ribs 6, the lungs extend to 2 rib spaces less than the pleura.

Fissures 3-6-4-5

(purple dotted lines)

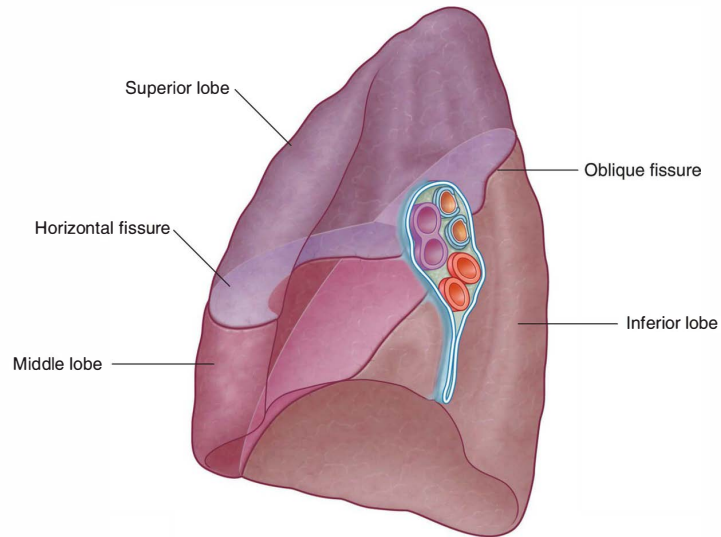
Oblique: spine of T3 vertebra to rib 6 anteriorly along medial border scapula

Horizontal (on R only): rib/costal cartilage 4 to rib 5 in mid-axillary line.

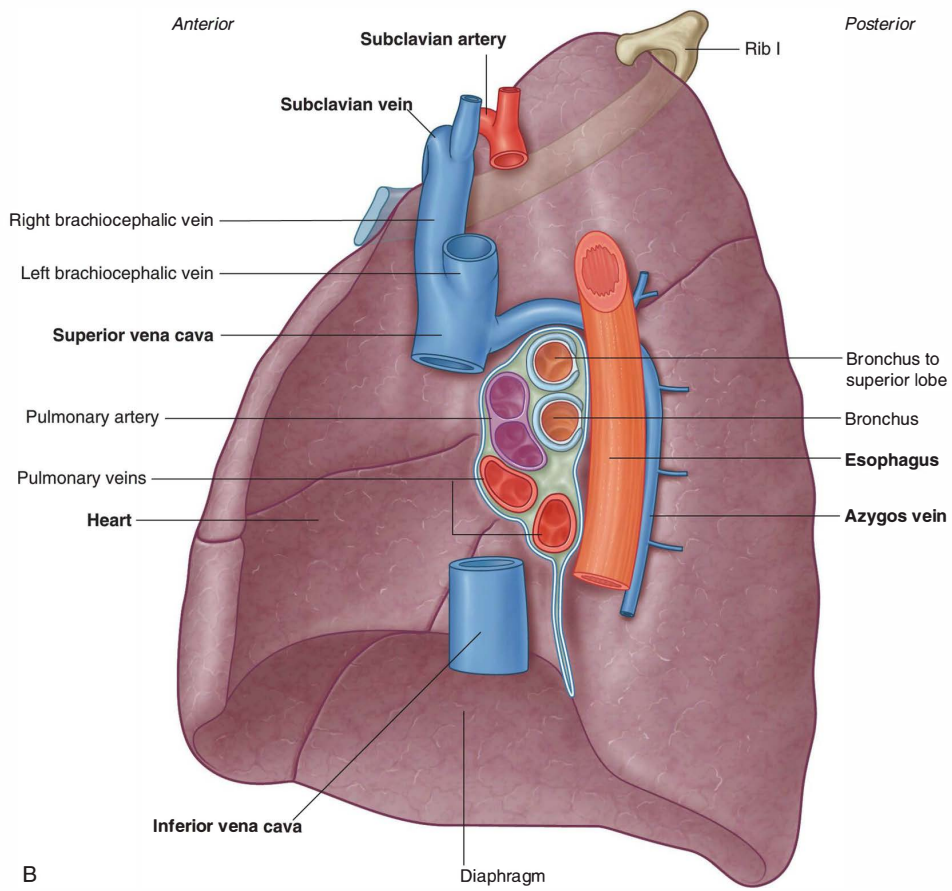


R lung:

- Upper lobe bronchus arises from main bronchus outside the lung
- Upper lobe pulmonary artery arises outside the lung

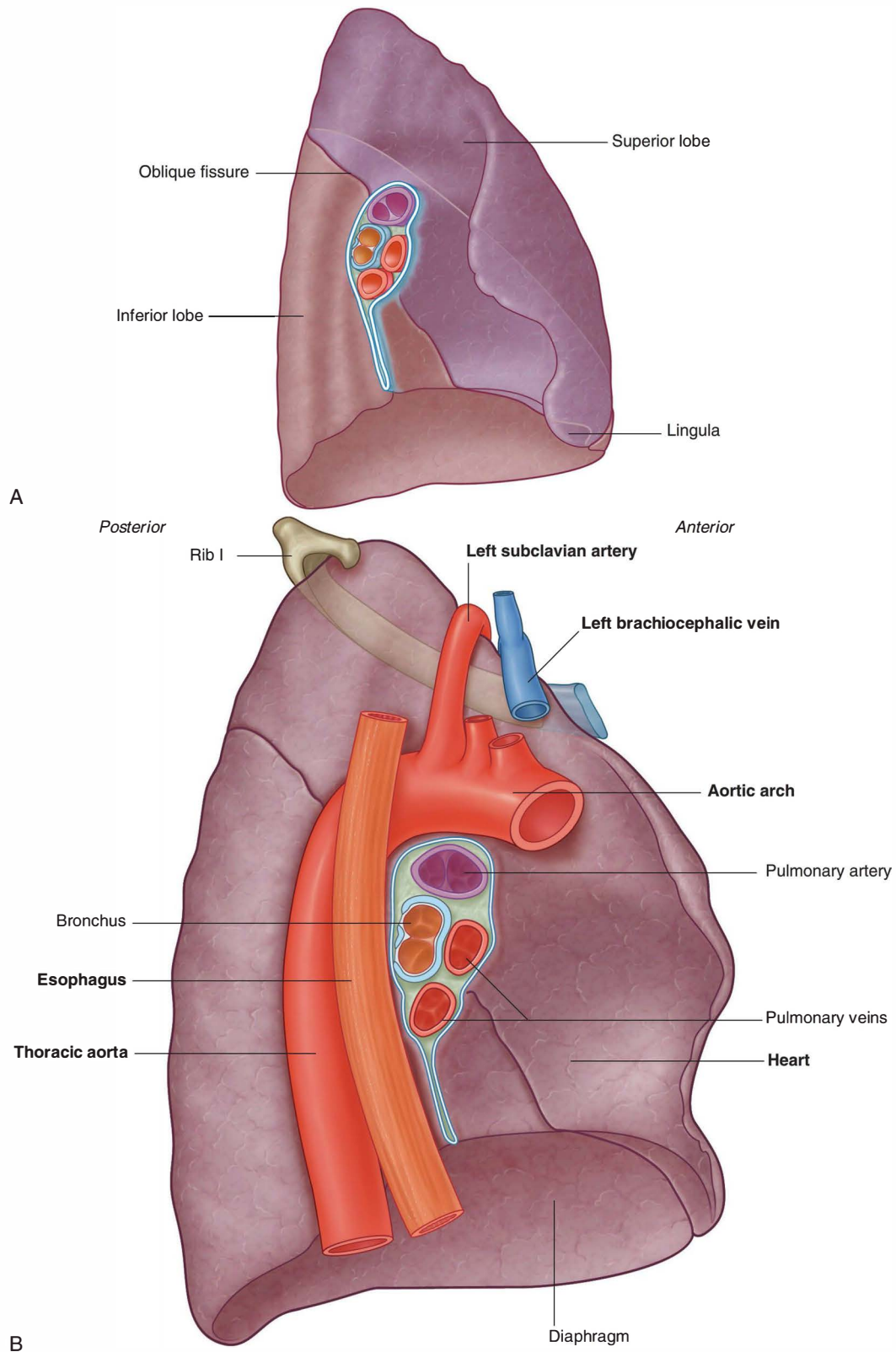


A



B

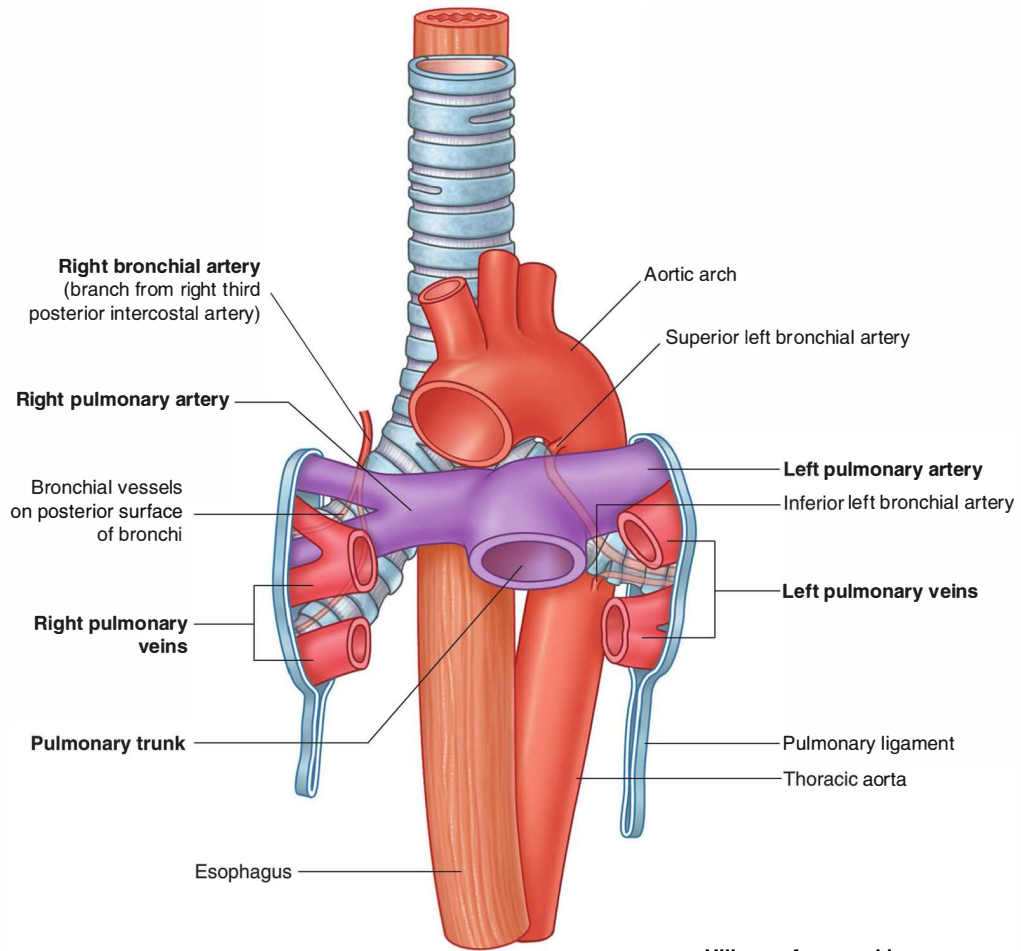
R lung: PA anterior to bronchi
 PA and R main bronchus have already split



L lung: PA superior to bronchi
PA and L main bronchus have not yet split

*Less structures entering L lung (less L handed people than right handed)

*L side PA is superior to bronchus (L handed people are superior)



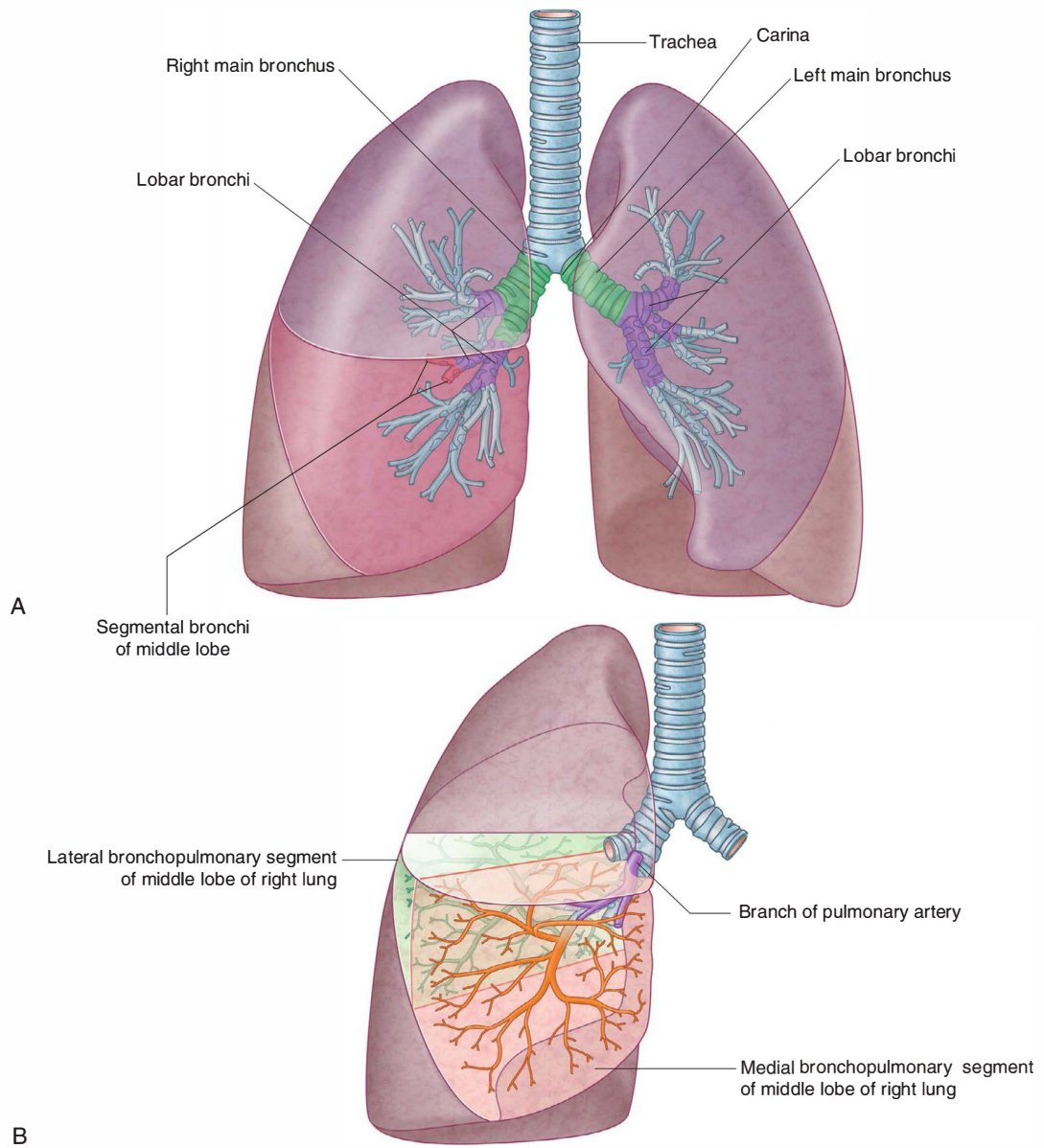
Hilum surface marking:

Sternal edge
3rd + 4th CC
(T5,6,7)

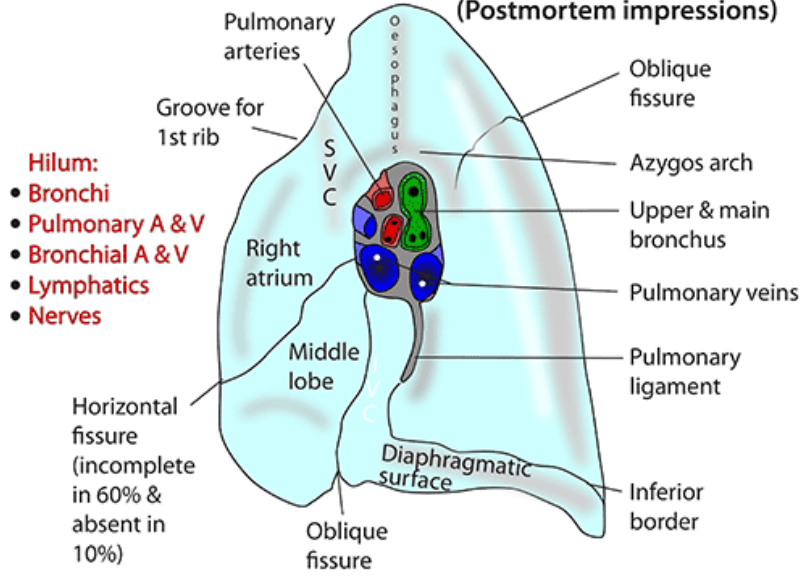
Bronchial arteries:

- L: x 2 from aorta
- R: x 1 from 3rd posterior intercostal artery

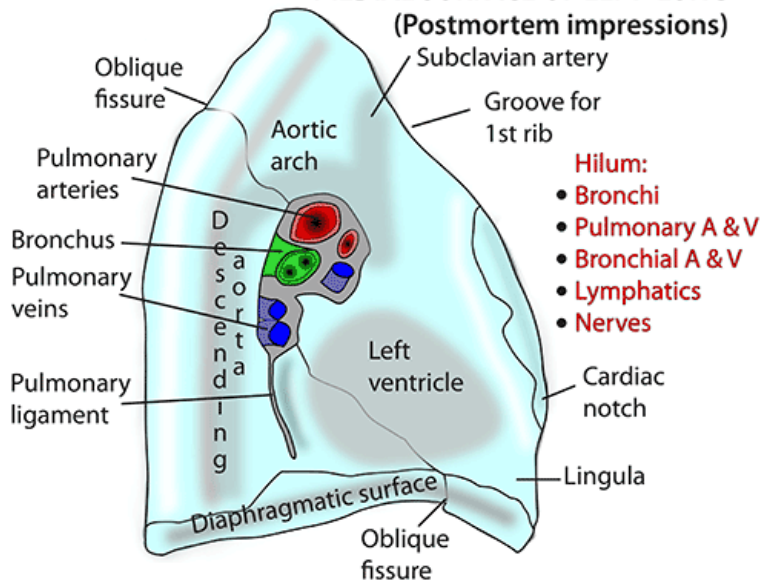
Supply bronchi from carina to respiratory bronchioles



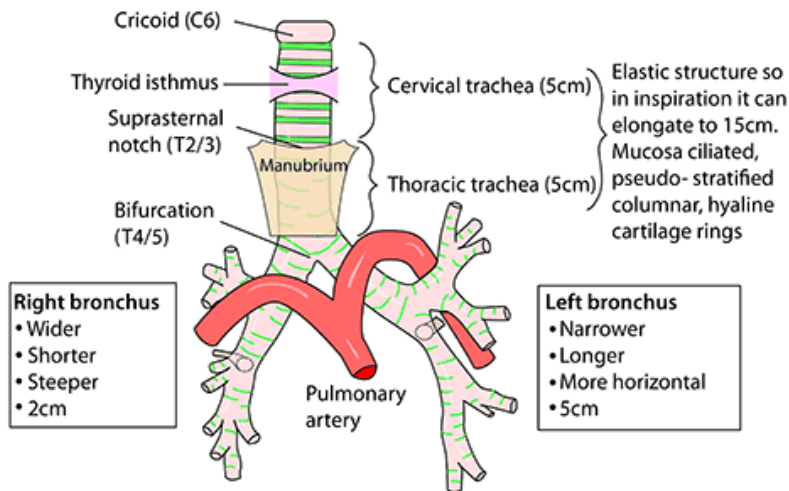
**MEDIAL SURFACE OF RIGHT LUNG
(Postmortem impressions)**



**MEDIAL SURFACE OF LEFT LUNG
(Postmortem impressions)**

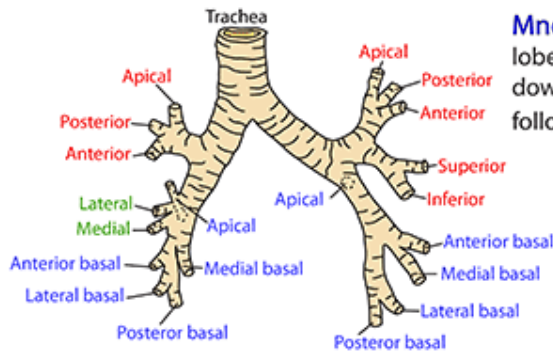


RELATIONS OF TRACHEA & BRONCHI



Inhaled foreign bodies are more likely to enter the right main bronchus and then pass into the apical bronchus of the right lower lobe - the first one that points posteriorly

BRONCHOPULMONARY SEGMENTS



Mnemonic: Starting on right at upper lobe, working down right lobe then down left lobe the segments are as follows: **APALM APALM APAIS APAL**

PARASYMPATHETIC (vagus)
 Vasodilatation
 Bronchoconstriction
 Increase glandular secretions
 Sensation

SYMPATHETIC (chain)
 Vasoconstriction
 Bronchodilatation (beta 2)
 Suppress glandular secretion (alpha)

Lymph: Hila nodes then carina then tracheobronchial then thoracic duct and right lymphatic duct

Red = Upper lobe Blue = Lower lobe Green = Middle lobe

BRONCHI

Blood supply: Bronchial arteries from aorta (2 on left, 1 on right)

Venous drainage: On right -azygos, left - hemiazygos. Also a little via bronchial veins and pulmonary veins

Nerve Supply: Pulmonary plexus at hilum

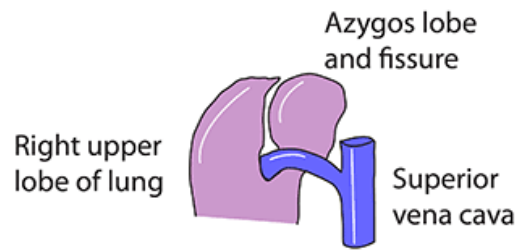
R lung: APA(LM) APALM

Brackets = middle lobe

L lung: APA(IS) APALM

Brackets = lingula

AZYGOS LOBE OF RIGHT LUNG



Occasionally the azygos vein reaches the superior vena cava by passing through the substance of the right lobe trapping a segment of upper right lobe and creating an azygos fissure

Other notes:

- The lingula of the left lobe arises from the upper bronchus
- Incomplete segmentation is common
- Left lung is longer and lower but lighter