

G05: Airways, Lungs and Diaphragm

Reading: 1. Gray's Anatomy for Students, chapter 3

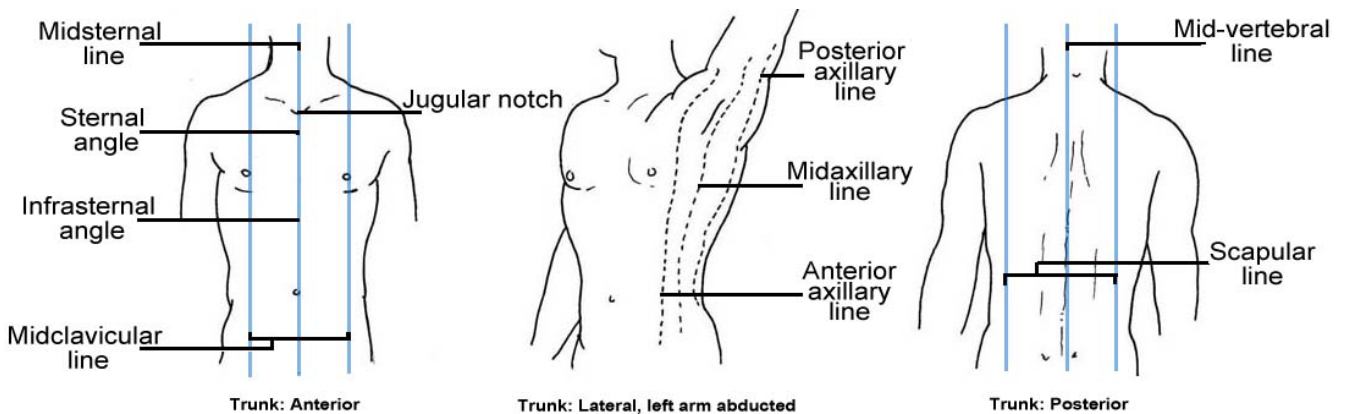
Objectives: 1. Surface anatomy of thoracic wall
2. Relationship of the pleurae and lungs
3. Anatomy of the lung

Clinical Correlates: 1. Pneumothorax
2. Bronchoscopy

Surface Anatomy of the Thoracic Wall
(pp. 200-208)

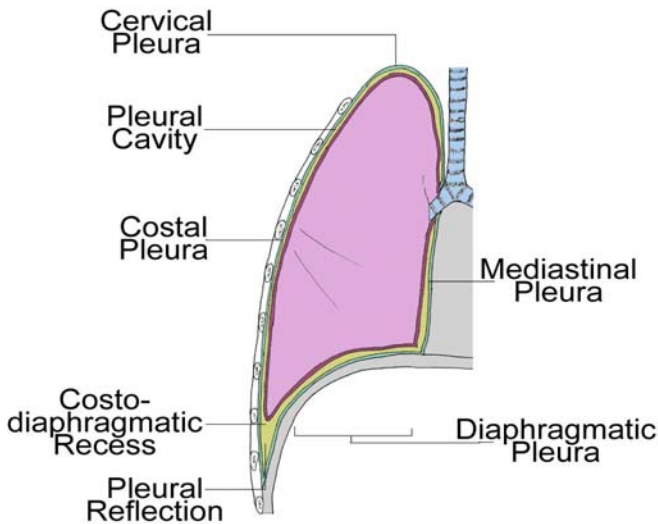
Lines of the Thoracic Wall

- Midsternal line
- Midclavicular line
- Anterior axillary line
- Midaxillary line (MAL)
- Posterior axillary line
- Mid-vertebral line
- Scapular line
- Sternal angle
- Infrasternal angle
- Jugular notch

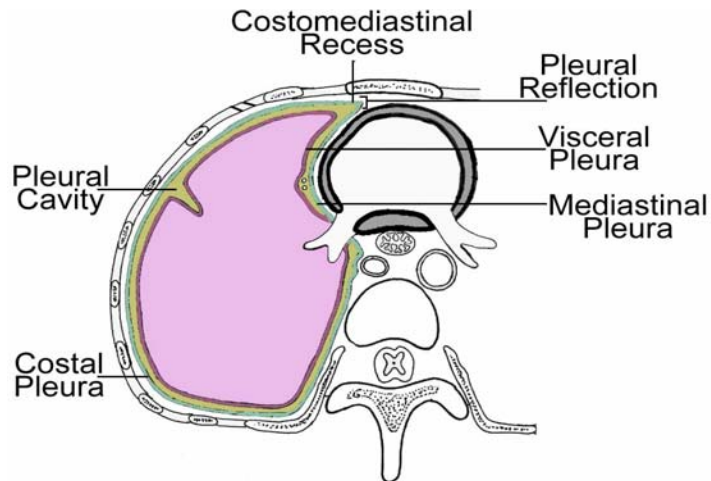


Pleurae and Pleural Cavities (pp. 136-139)

Pleurae



Thorax; Coronal section through the right lung



Thorax; section through region of the heart

Visceral pleura – invests the lungs

Parietal pleura – lines the pulmonary cavities

- Costal pleura
- Mediastinal pleura
- Diaphragmatic pleura
- Cervical pleura

Pleural cavity – Potential space between the layers of pleura

Pleural reflections – abrupt lines along which pleura changes directions

Pleural recesses – pleura-lined gutters (made by reflections)

- Costodiaphragmatic recesses
- Costomediastinal recesses

Clinical Correlate

Pneumothorax

Lungs

(pp. 140-144)

Lungs

General features

Apex

Base

Root – lung attaches to heart and trachea by these structures

Hilum – canal or opening for the structures that comprise the root

Difference between right and left lung

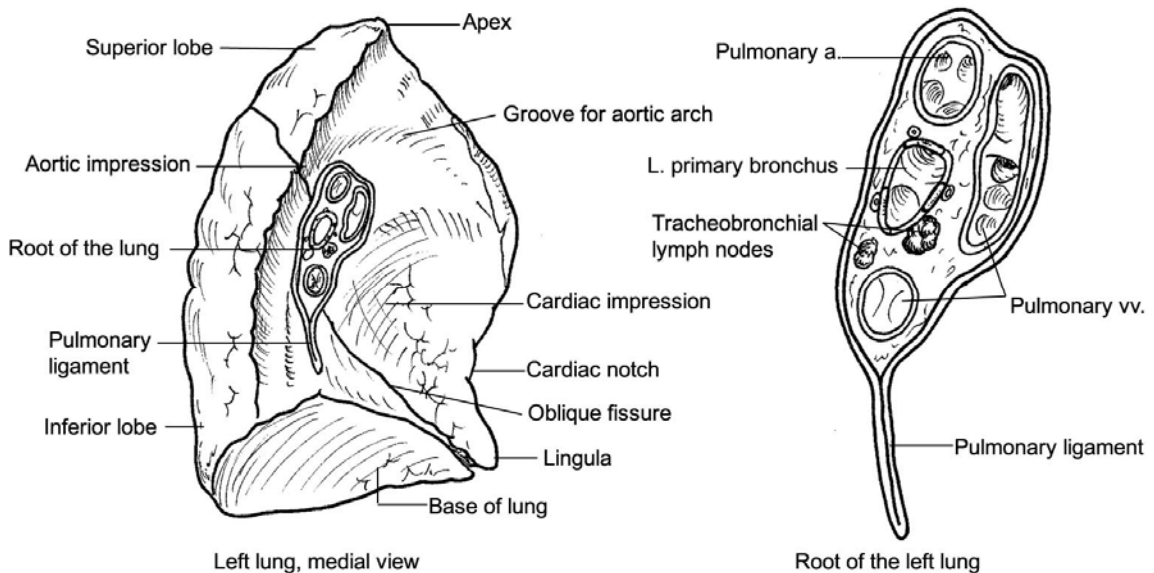
- Lobes – right lung has 3 lobes, left lung has 2 lobes

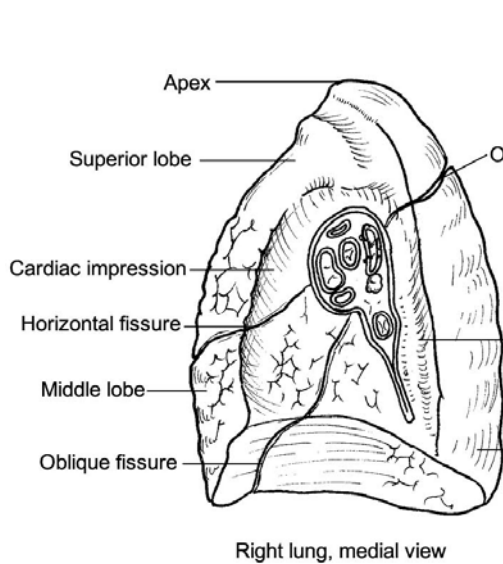
- Right lung is larger and heavier than left lung

Despite being larger and heavier, the right lung is shorter and wider than the left lung because of the right dome of the diaphragm is higher

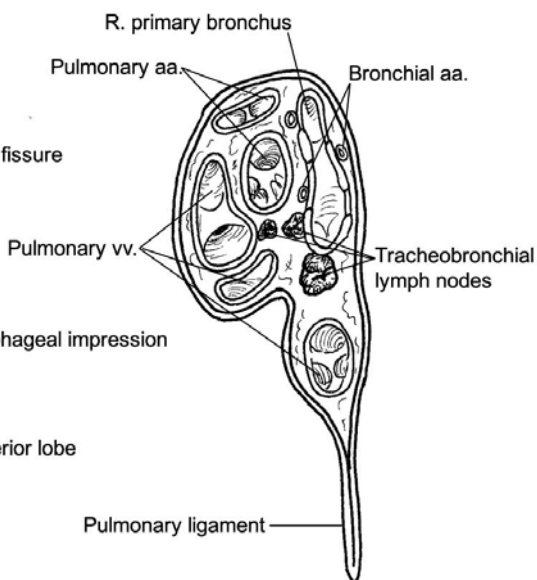
Mediastinal surface of left lung has a huge cardiac impression

Left lung contains a lingula, a tongue-like projection that extends below the cardiac notch





Right lung, medial view



Root of the right lung

Lobes and Fissures

Left Lung

Superior lobe

Inferior lobe

Oblique fissure

Right lung

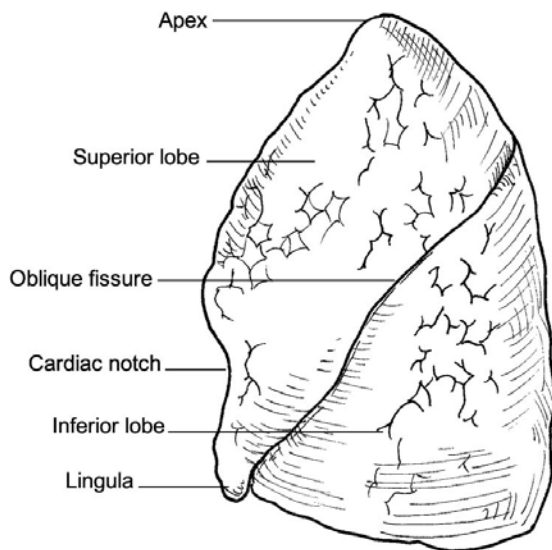
Superior lobe

Middle lobe

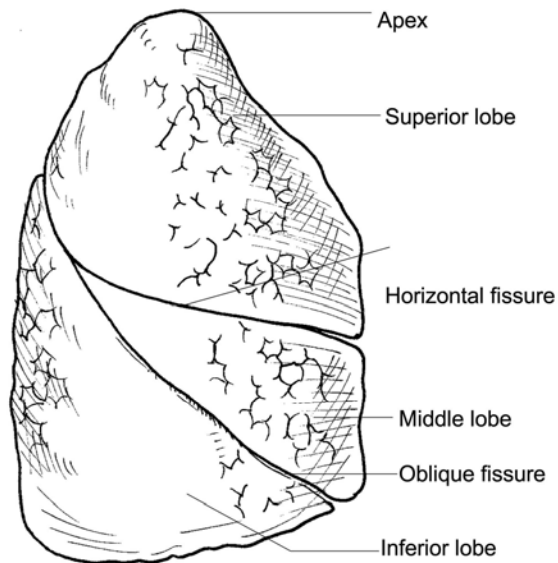
Inferior lobe

Oblique fissure

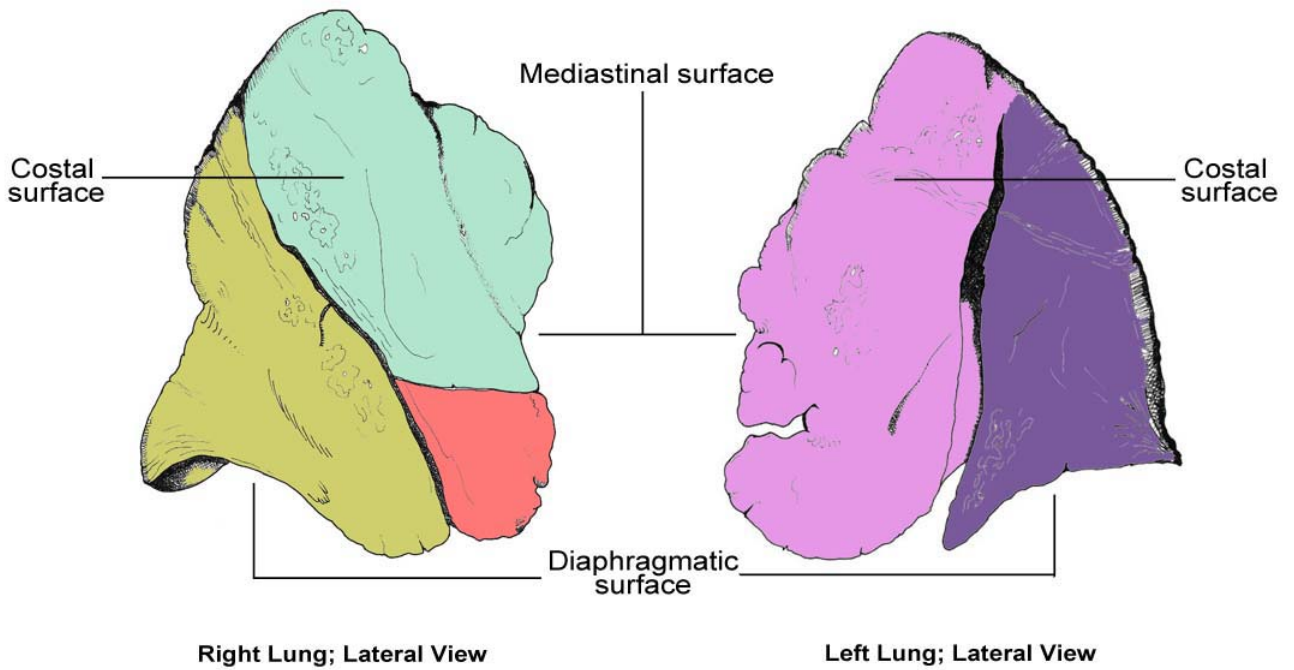
Horizontal fissure



Left lung, anterior view



Right lung, anterior view



Surfaces of the Lung

Costal surface

Mediastinal surface

Diaphragmatic surface

Borders of the Lung

Anterior

Inferior

Posterior

Airways (pp. 145-146)

Main bronchi – right and left bronchus

- Right bronchus is wider, shorter and runs more vertically than left bronchus

- Left bronchus passes inferolaterally, inferior to arch of aorta

Lobar bronchi – also called secondary bronchi

Each lobar bronchi supplies a lobe of the lung (3 right, 2 left)

Segmental bronchi – also called tertiary bronchi

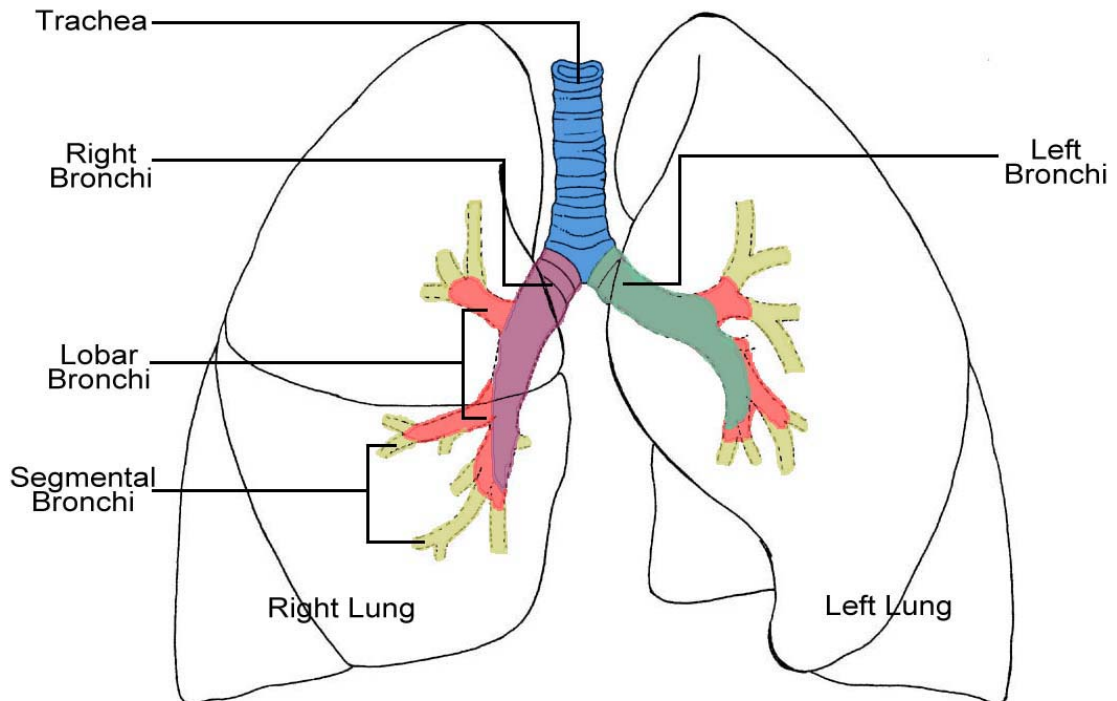
Supplies bronchopulmonary segments

Bronchopulmonary segments –structural unit of lung

- Terminal bronchioles
- Respiratory bronchioles
- Alveolus

CLINICAL CORRELATE

Bronchoscopy (p. 151)



Arterial Supply of the Lungs (p. 146)

Pulmonary arteries – carry poorly oxygenated blood to lungs for oxygenation

-Give rise to lobar arteries

Bronchial arteries – supply blood for nutrition of structures that comprise the root of the lung

Left bronchial arteries – arise from thoracic aorta

Right bronchial artery – may have different origins

Venous Drainage of the Lungs (p.146)

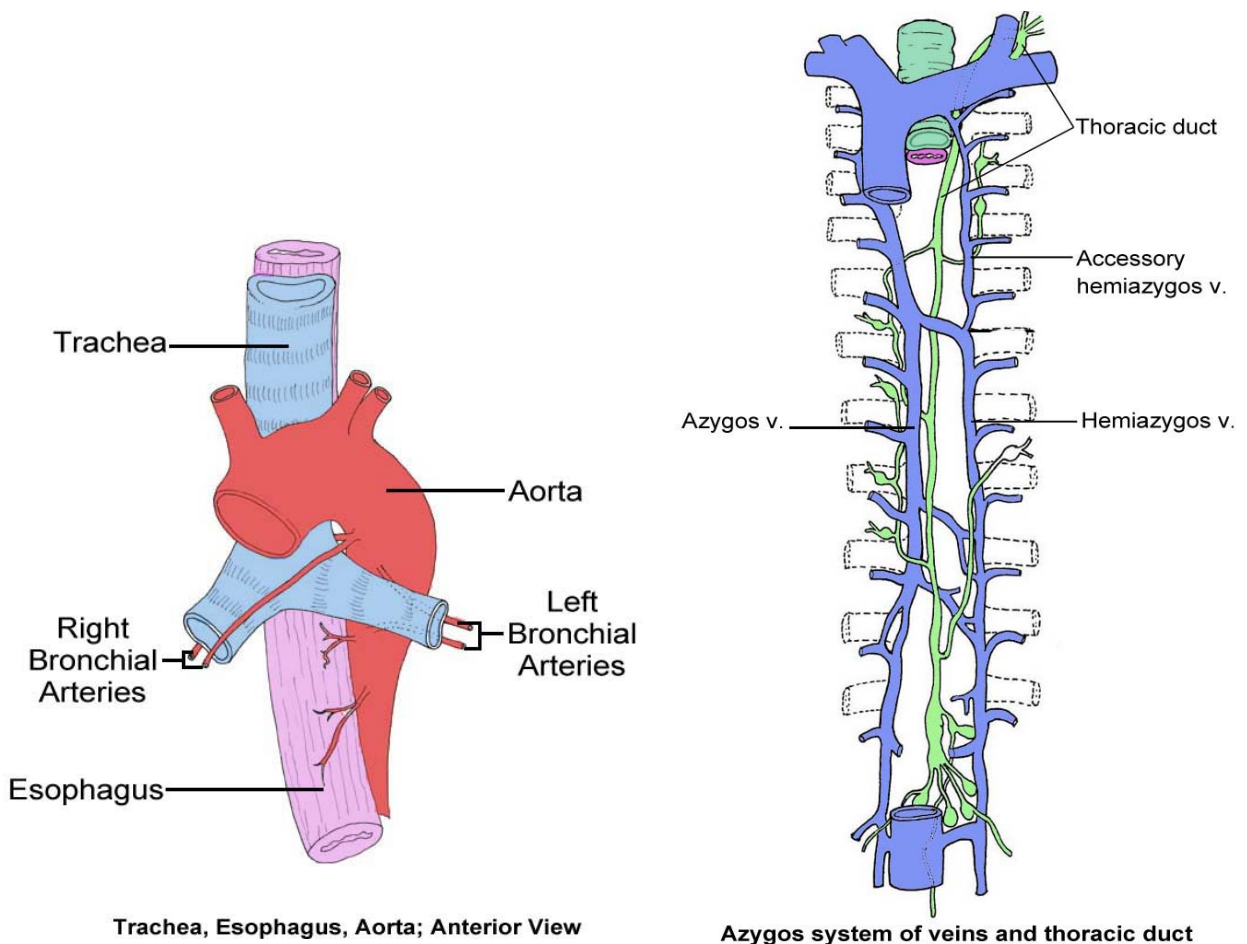
Pulmonary veins – carry oxygenated blood from lungs to left atrium

-Lobar veins drain into pulmonary veins

Bronchial veins – drain blood in lungs supplied by bronchial arteries although pulmonary vein tributaries drain some of bronchial arterial blood

-Left bronchial vein drains into accessory hemiazygos vein (usually)

-Right bronchial vein drains into azygos vein



Lymphatic Drainage of the Lungs (pp. 149-150)

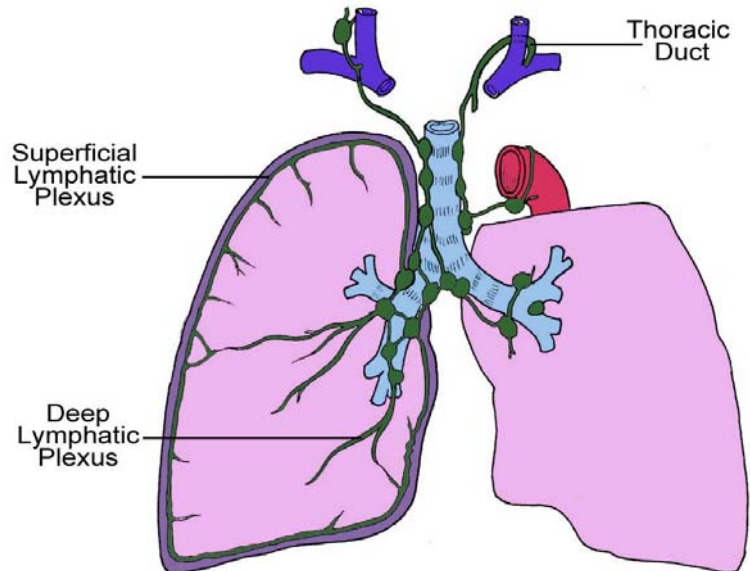
Superficial (subpleural) lymphatic plexus

- Lies just deep to the visceral pleura and drains this area
- Drains into bronchopulmonary lymph nodes

Deep lymphatic plexus

- Largely drain structures that form the root of the lung
- Drain into pulmonary and bronchopulmonary lymph nodes

*Note - Lymph from the superficial and deep plexuses drains into superior and inferior tracheobronchial lymph nodes



Lymphatic Drainage of Lungs

Innervation of the Lungs (p. 149)

Lungs and viscera

- Parasympathetic – from Vagus nerve
- Sympathetic – from sympathetic fibers of sympathetic trunk

Parietal pleura – from intercostal and phrenic nerves