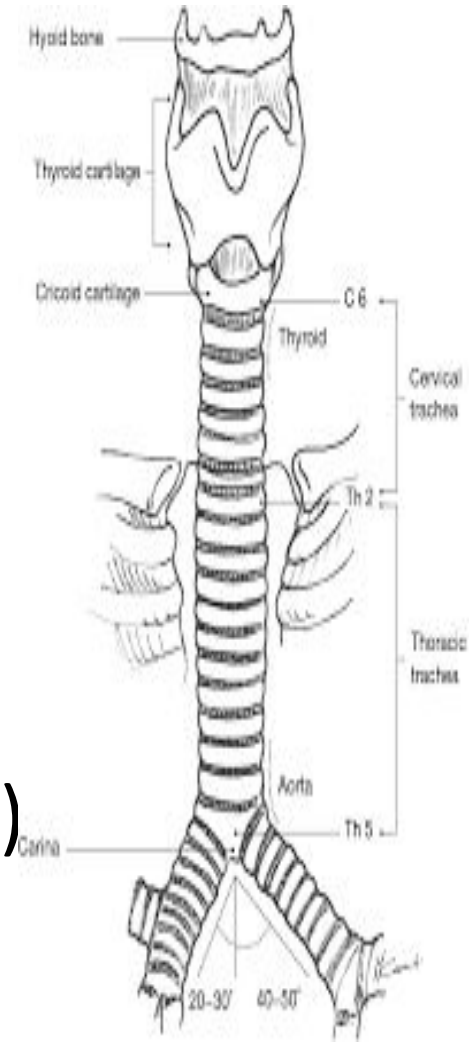
Anatomy of lower repiratory system

- The lower respiratory system is also called the tracheobronchial tree .
- And includes :
- 1.trachea
- 2.bronchi
- 3.bronchioles
- 4.alveoli

- The respiratory system consists of the respiratory and conducting zones
- The respiratory zone : it’s the site of gas exchange and consists of repiratory bronchiole ,alveolar duct and alveolar sac
- The conducting zone :provoides rigid conduits for air to reach the sites of gas exchange and consists trachea ,bronchus ,bronchiol and terminal bronchiol

TRACHEA

- Serves as a conduit for ventilation and the clearance of tracheal and bronchial secration
- The trachea begins at the lower border of the cricoid cartilage (at the level of 6 th cervical vertebra) and extends to the level of carina (at the level of 5 th thoratic vertebra)



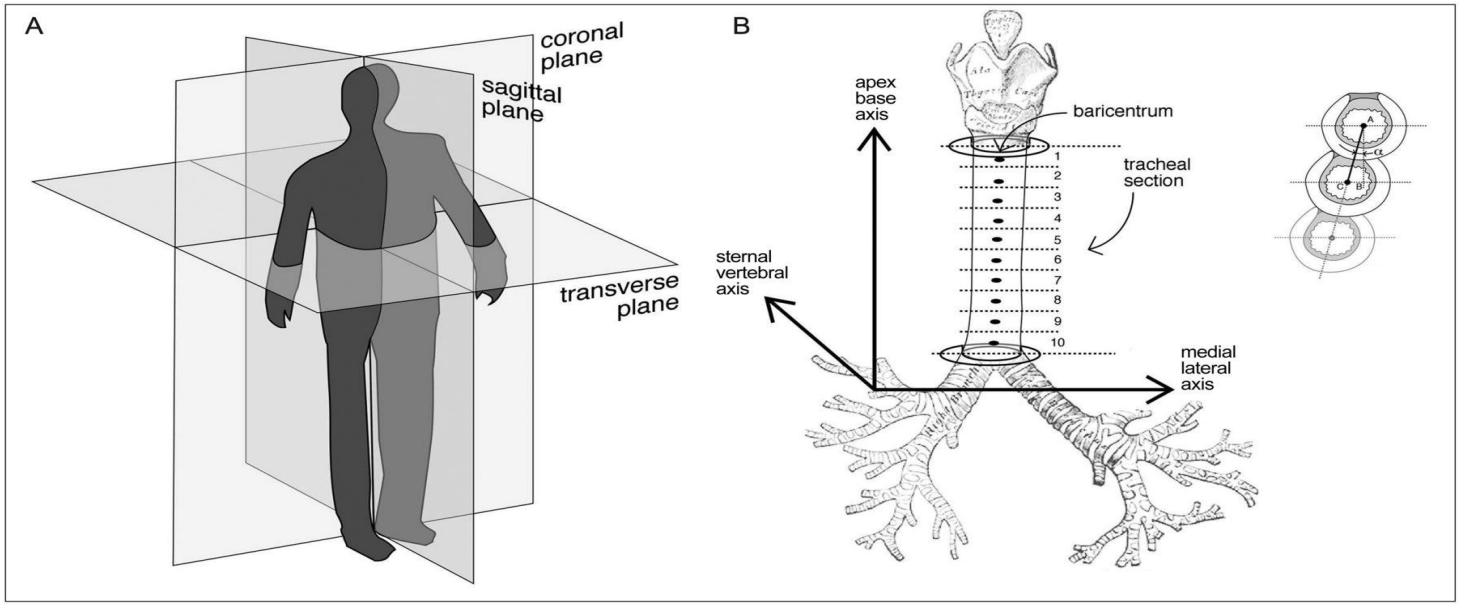
TRACHEA

- Length of trachea in averag of 10-13 cm
- and its contain of C shaped cartilage ring

(16-20), witch form the anterior and lateral walls of trahea , and posteriorly by the membrans wall ,thes cartilage hold and support the tracheal and preventing it from coolapsing but .

TRACHEA

- External diameters of trachea measure approximality 2.5 cm coronally and 1.8 cm sagitally (in men) and 2.0cm coronally and 1.4 sagittaly (in women)
-



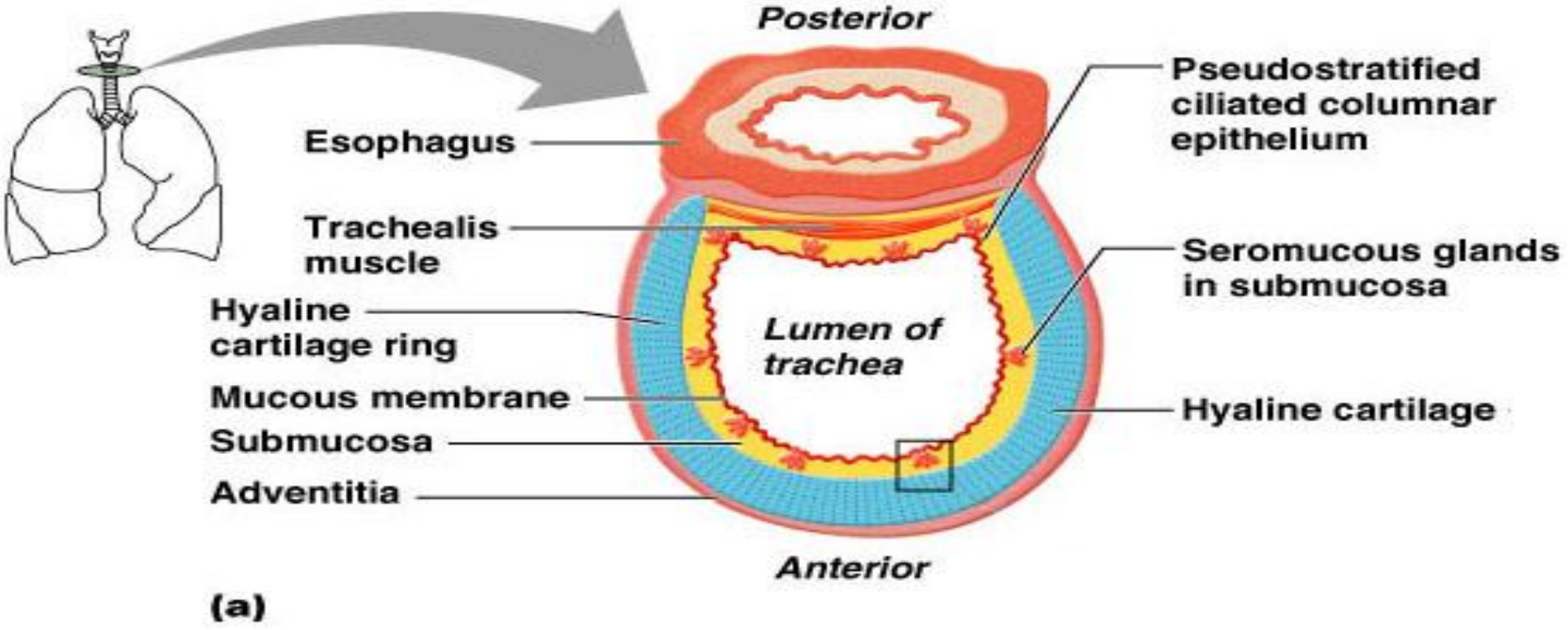
TRACHEA

Composed of three layers •

Mucosa – made up of goblet cells and ciliated epithelium –

Submucosa – connective tissue deep to the mucosa –

Adventitia – outermost layer made of C-shaped rings of hyaline cartilage –



BRONCHI

- The trachea bifurcates at the level of 5 th thoratic vertebra ,into the right and left bronchi
- The right main bronchus is shorter , Wider ,and more vertically placed than the left .

Shorter because it gives off its upper lobe bronchus sooner (after course Of only 2.5 cm)

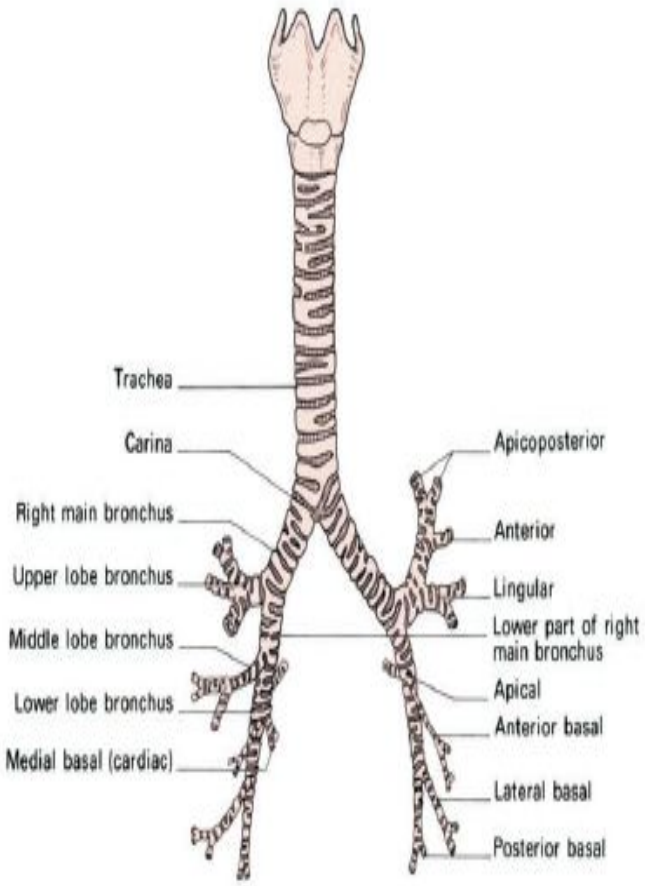


Fig. 15 The trachea and main bronchi viewed from the front.

BRONCHI

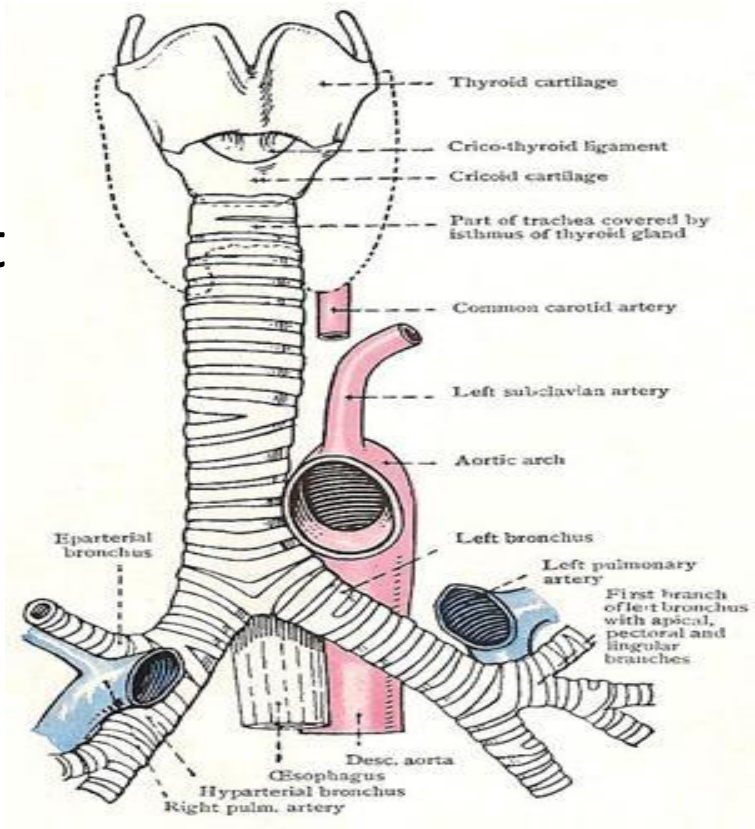
- Wider because it supplies the larger lung
- And vertically (at 25 vetrical compared with 45 on the left), because the left bronchus has to extend laterally behind the aortic arch

(inhaled foreign bodeis are moe to enter the wider and more vertical than narrower)

BRONCHI

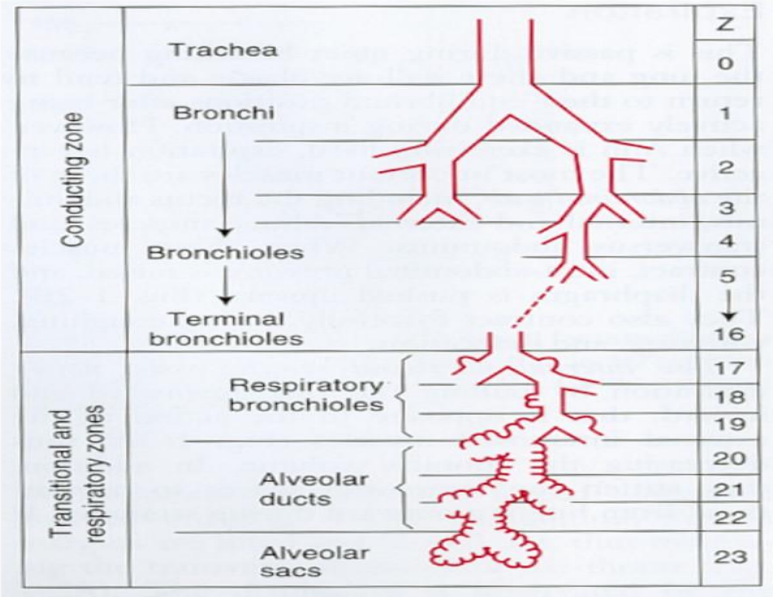
- The left main bronchus is longer than the right and in average 5 cm in men and 4.5 in women
- Its pass under aortic arch ,in

front of the oesophagus ,thoracic duct and descending aorta ,the left Pulmonary artery first above and then in front of it



The bronchopulmonary

- The bronchiols are the finer bronchial ramification ,are usually of region of 0.6mm in diameter
- The respiratory bronchiols bear small alveoli ,or there walls and are lined by a nonciliated cuboidal epithelium
- The distal extremity of each respiratpry bronchiole is termed the alveolar duct



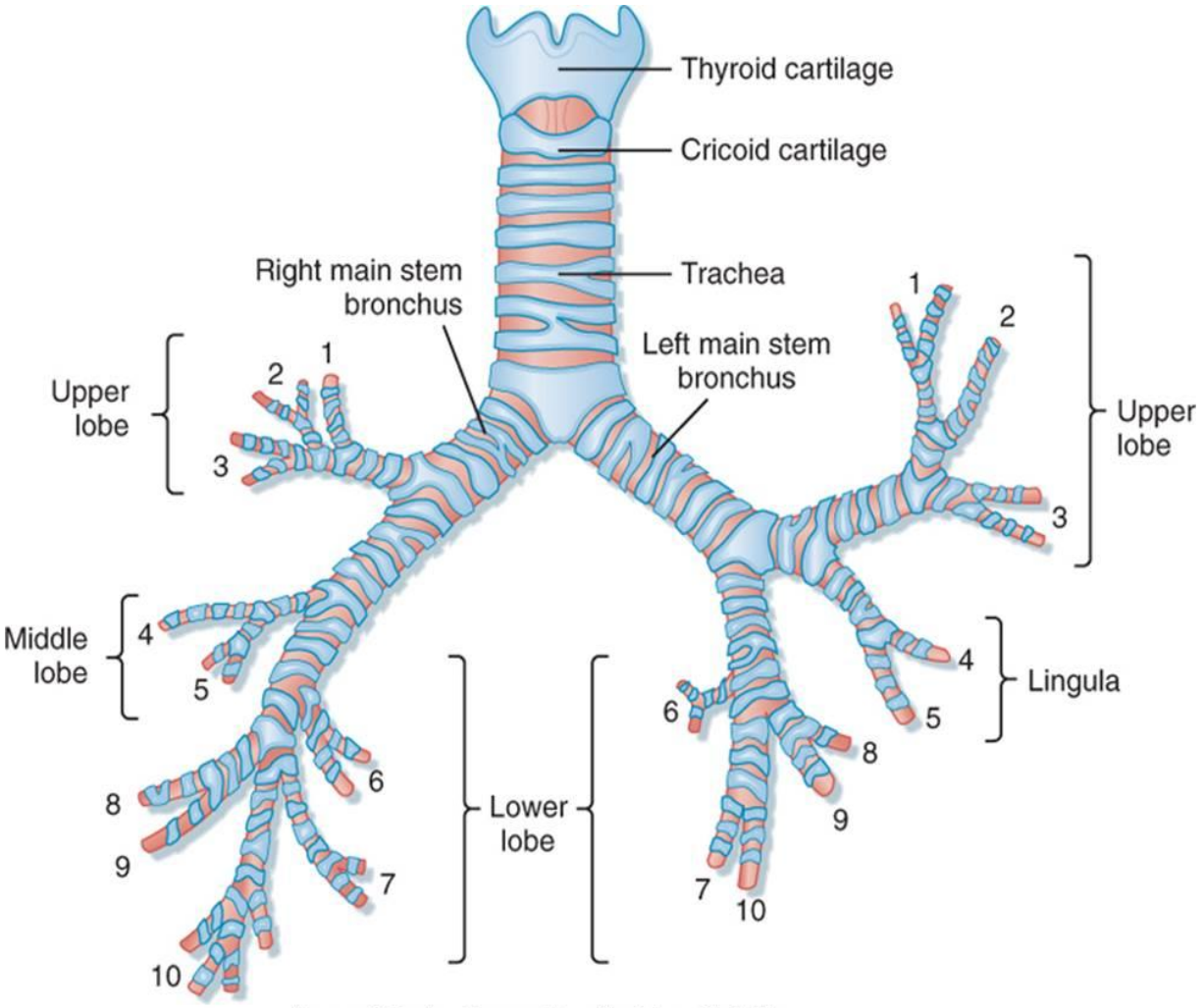
The bronchus

- The right lung :

The right main bronchus,after a course of some 2.5 cm , gives off at right angels the upper lobe bronchus , after 1 cm give bifurcation into three segmental bronchi 1) apical :upwards and lateraly 2) posterior :backwards and lateraly 3) anterior :lateraly and downwards

- The main bronch continues a long 3 cm and give middle lobe branch , after 1.5 cm give bifurcation into lateral and medial divisions
- below the middle lobe branchus to apical segment of the lower lobe ,its 1cm long and gives medial and lateral branches

The bronchus



The bronchus

- About 1.5 cm below the apical brobchus is given the medial or cardic bronches , then gives the basal bronchi : anterior ,lateral,posterior
- The left lung has a course of 5 cm before giveng off the left upper lobe bronchus ,and thes pass lateraly for about 1cm and then bifurcates into superior and inferior , superior supply the apical
- After 1-2cm bifurcated into superior and inferior

ALVEOL

- 300 million alveoli in adult for gas exchange
- The alveol a lined with thin and thick side
- In the thin side less than 0.4mic m thick ,where gas exchange occurs ,the alveolar epithelium and capillary endothelium are separated only with basement membrane ,
- In the thich side 1-2 thick , where the fluid and solute exchange occurs,the pulmonary interstitial space(collagen and nerve fibers) separates alveolar from capillary endothelium

ALVEOL

- The pulmonary epithelium contains the cells
- A) type 1 pneumocytes :are flat and form 1 –nm junction with another and thes important to prevent the passage large active molecules into the alveols
- B) type 2 pneumocytes : are more than type 1 and thes contain surfactan and cane produce type 1 pneumocytes

The pulmonary blood supply

- The blood supply to the lung ,lymphs ,bronchi is provided by the bronchial arteries

And thes provoids small amount of cardic output 4%,branch the bronchial artery supply the bronchi as far as terminal bronch (anastamosis with pulmonary arterial and continue to alveolar duct) below thes level lung tissue is supporeted by compination the alveolar gas and pulmonary circulation

Innervation

- Sympathic (t2-4) and parasympathic (vagal) form a posterior pulmonary plexus at the root of the lung
- Fiber pass around the lung root to form an anterior pulminary nerve plexus ,from the plexus to the lung and bronchi