



RESPIRATORY SYSTEM

A lecture in Anatomy

By

Dr. Ahmed Jawad
MBCHB, FIBMS - CTVS, FACS

Dr. Muhanned Sabah
MBCHB, FIBMS - URO

Dr. Talib Chichan
MBCHB, D.O.S

**DEPARTMENT OF ANESTHESIA TECHNIQUES
AL-MUSTAQBAL UNIVERSITY COLLEGE**

RESPIRATORY SYSTEM

Consists of two major parts

1. Upper respiratory tract

- Nose, nasal cavity, and pharynx.

2. Lower respiratory tract.

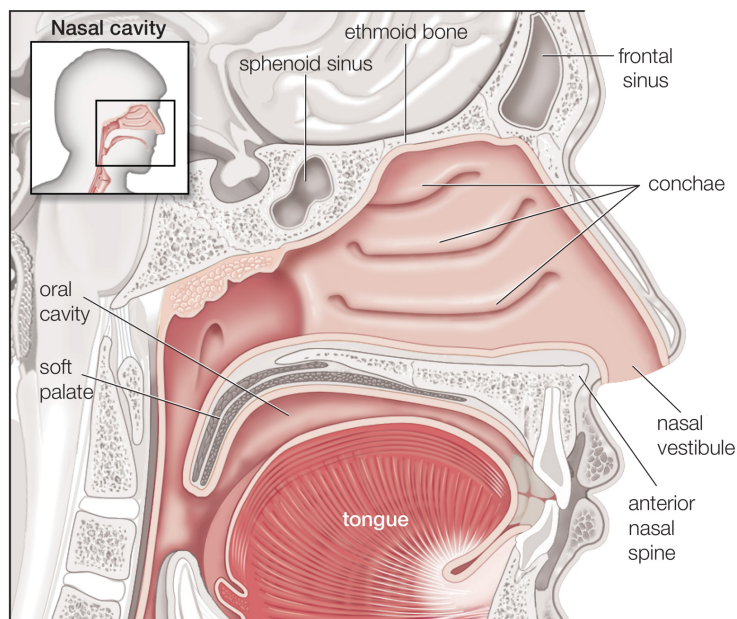
- Larynx, trachea, bronchi, and lungs.

The nose

Have two external openings called the nostrils. The dividing portion between them is the nasal septum forming the nasal cavity surrounded by paranasal sinuses. Each cavity is subdivided into three passages: superior, middle, and inferior conchae.

Functions

1. Air passageway.
2. Warms and moistens the air.
3. Filters dust, pollen, bacteria, and foreign matter.
4. Contains smell receptors.
5. Aid phonation.

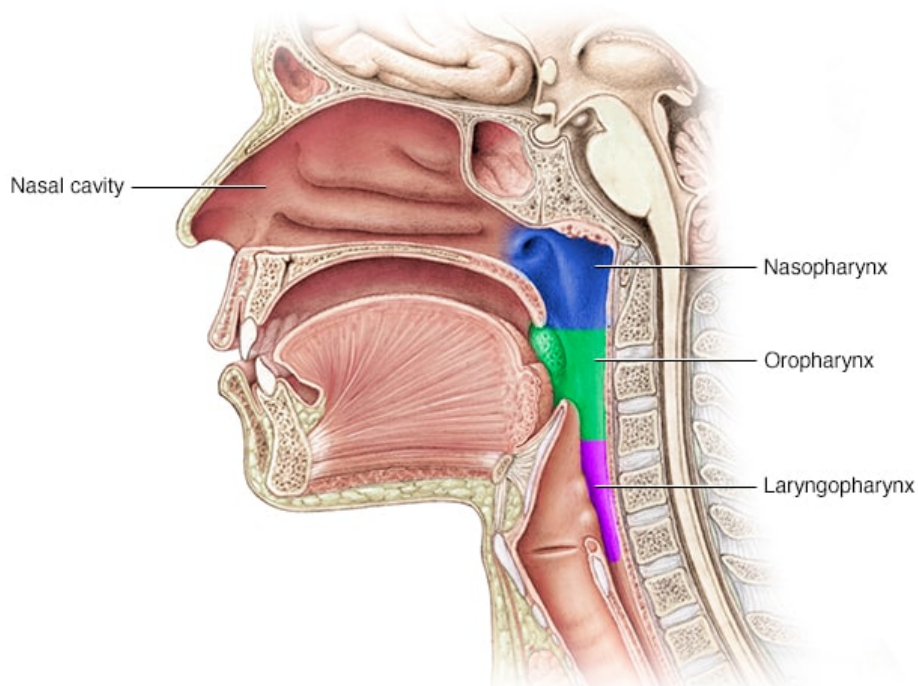


The pharynx

It is a muscular and membranous tube that is about 5 inches long, extending downward from the base of the skull. It eventually becomes the esophagus. The nasopharynx is behind the nose; the oropharynx is behind the mouth; the laryngopharynx is behind the larynx. The eustachian tubes from the ears opens in the pharynx.

Functions

1. Passageway for air.
2. Passageway for food.
3. Aids in phonation by changing its shape.



The larynx

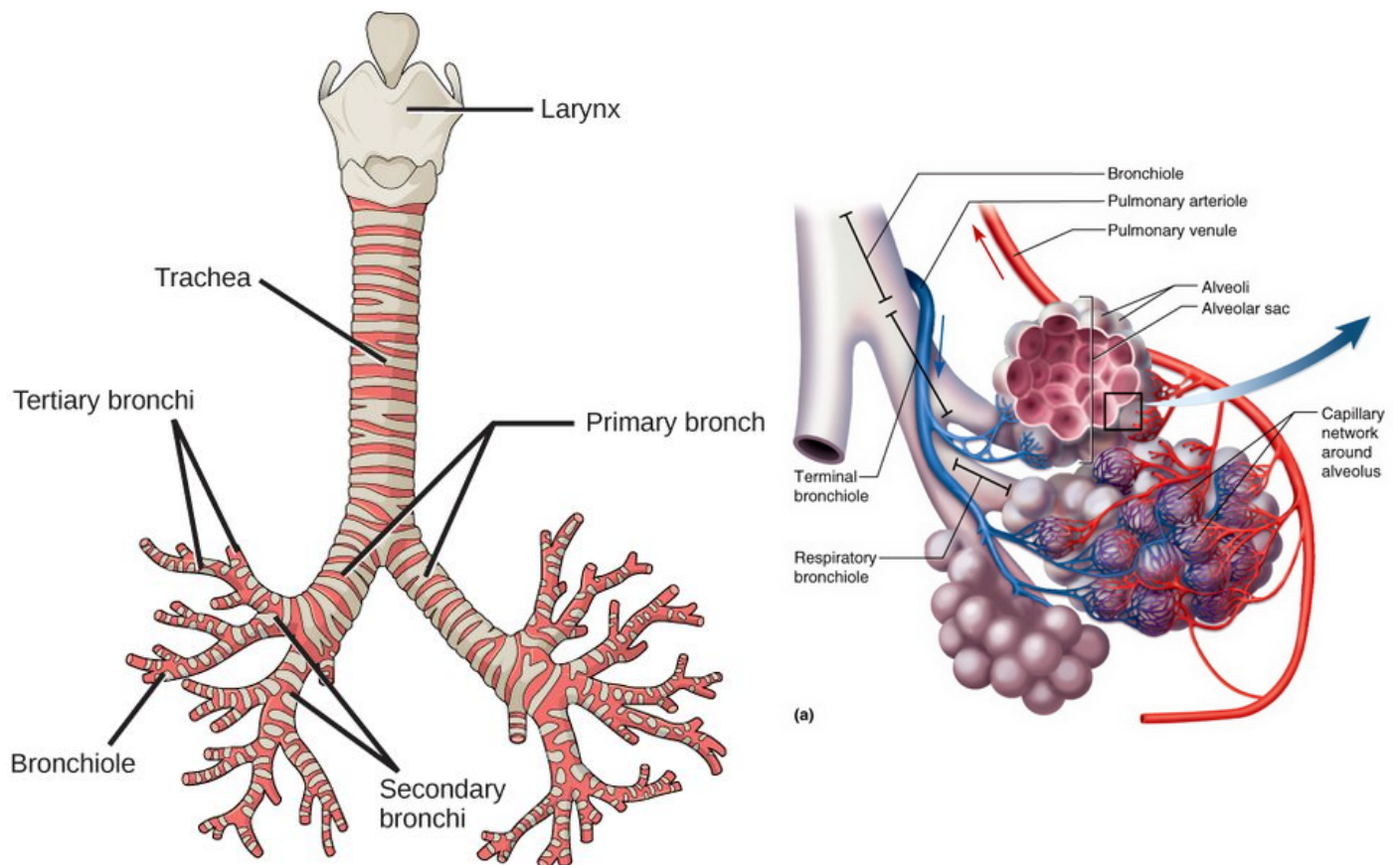
The larynx, commonly called the voice-box, is located at the upper end of the trachea, below the root of the tongue and hyoid bone. It is lined with mucous membrane. The larynx contains vocal cords, which produce sound. Its wall is reinforced by hyaline cartilage (thyroid, cricoid, and the inferior arytenoid cartilages). The epiglottis covers the larynx during Swallowing.

The trachea

Is a smooth, muscular tube bound anteriorly by 16-20 C-shaped cartilaginous rings keeps the trachea open. the trachea leads from the larynx to the main bronchi. It is lined with cilia, which sweep foreign matter out of the pathway

The bronchi

The trachea divides into right and left bronchi, the left is smaller than the right, while the right is steeper than the left because it has to accommodate for the heart, that's why most foreign bodies in the airways go to the right main bronchus. The main bronchi bifurcate into secondary, tertiary bronchi, then bronchioles.



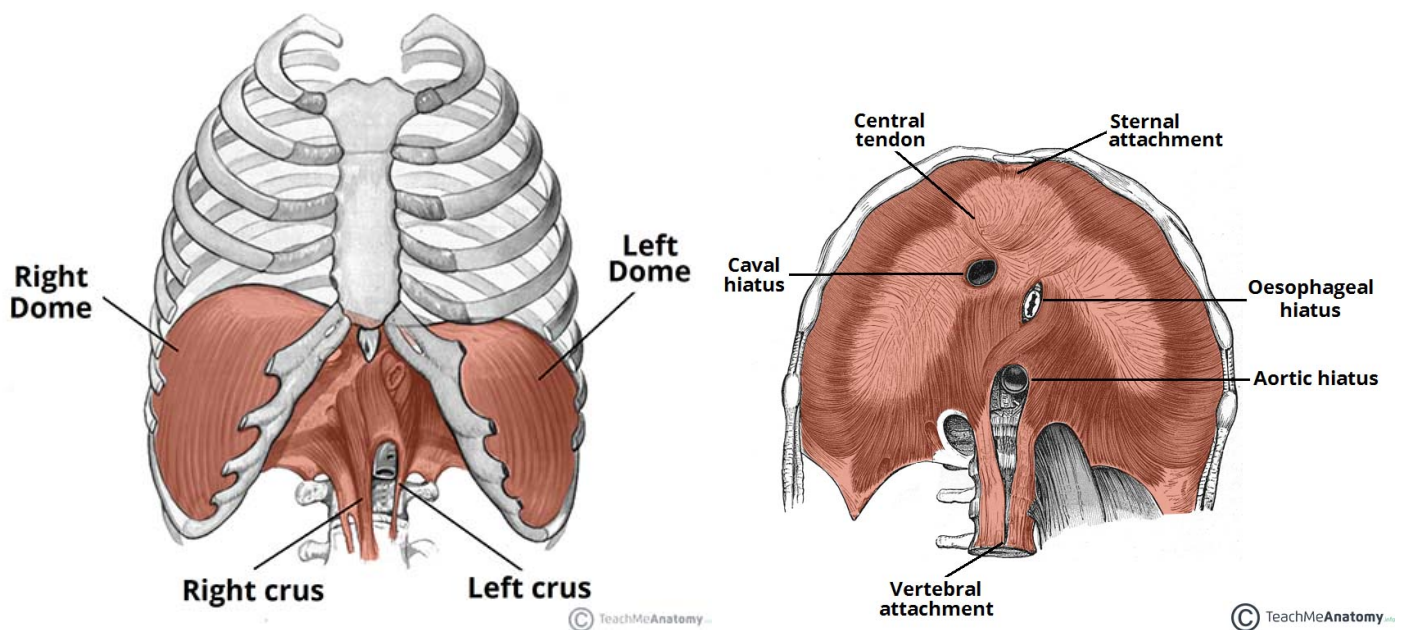
The lungs

The two lungs are spongy organs located in the thoracic cavity, they consist of elastic tissue, filled with a network of tubes and sacs that carry air and blood vessels that carry blood. Each lung is divided into lobes, the right lung into 3 lobes and the left lung into 2. The left lung has an indentation called the cardiac depression or notch for placement of the heart. The bronchioles within the lung end into alveolar ducts supplying each alveoli. The alveoli is the basic component of the lung where the gas exchange occurs; oxygen and carbon dioxide exchange with the capillaries, both lungs contain about 300 million alveoli.

The diaphragm

Dome-shaped, muscular and membranous structure that separates the thoracic (chest) and abdominal cavities in mammals; it is the principal muscle of respiration. The muscles of the diaphragm arise from the lower part of the sternum (breastbone), the lower six ribs, and the lumbar vertebrae of the spine and are attached to a central membranous tendon.

Contraction of the diaphragm increases the internal height of the thoracic cavity, thus lowering its internal pressure and causing inspiration of air. Relaxation of the diaphragm and the natural elasticity of lung tissue and the thoracic cage produce expiration. The diaphragm is also important in coughing, sneezing, vomiting, crying, and expelling feces and urine. The diaphragm is pierced by many structures, notably the esophagus, aorta, and inferior vena cava.



The pleura

A double layer serous membrane that covers the outer surface of the lungs and lines the internal surface of the thoracic cavity. The membrane attached to lung tissue is called the visceral pleura and the membrane lining the thoracic walls is the parietal pleura, between them there is very small space called the pleural cavity contains small amount of fluid called the pleural fluid.