ANATOMY OF THE LUNGS AND THE PLEURA

Introduction

The lungs are two intra-thoracic organs, surrounded by a serous envelope called the pleura. The lungs ensure gas exchange (hematosis). They occupy the pleuro-pulmonary cavities of the thorax, on both sides of the mediastinum.

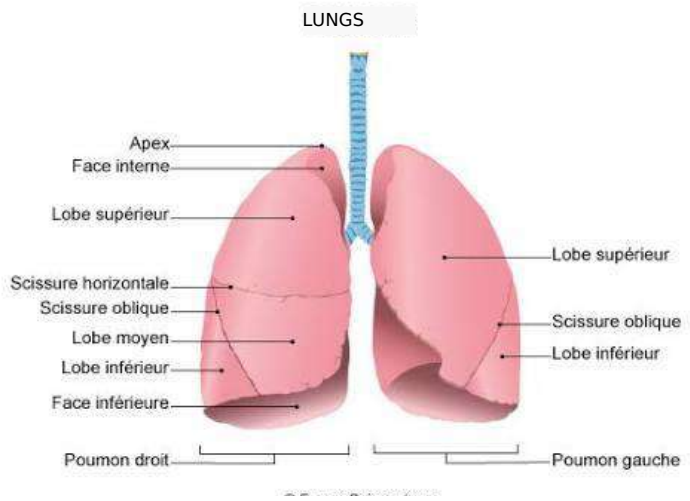
Descriptive anatomy

Shape: The lung has a half-conical pyramid shape. One describes a lateral or costal face, convex; a medial or mediastinal face, concave, presenting the pulmonary hilum in the shape of a racket, where the pulmonary pedicle passes; a lower or diaphragmatic face forming the base; a superior apex; and three borders: anterior, posterior and inferior

(circumferential). Surface and texture: The surface is smooth and shiny. The consistency is spongy and elastic. Coloring: The course describes a light pink coloration in infants and children. In adults, there are dark markings and spots, more pronounced especially with cigarette consumption, pollution and dust. Measurements: Height: 25 cm. Thickness: 16 cm. Width: 7 to 10 cm. Weight of the two lungs: about 1200 g. The right lung is larger than the left. Segmentation: Each lung divides into lobes; each lobe divides into segments; each segment into lobules. The lobule is a set of alveoli. Pulmonary alveoli: Alveoli are the functional units of the lungs where gas exchange occurs between air and blood. They are minute sacs lined by numerous capillaries. Structure: The pulmonary tissue is heterogeneous. It consists of the elements of the pulmonary pedicle contained in connective tissue.

Pulmonary pedicle: It includes:

- nourishing elements — bronchial arteries, bronchial veins, bronchial lymphatics and bronchial nerves
- and functional elements — right and left main bronchi, pulmonary arteries and their right and left branches, as well as the right and left pulmonary veins.



Right lung

The right lung has three lobes: superior, middle, and inferior. Lateral surface: It is marked by the costal impressions. It is divided into three lobes by two fissures: the oblique fissure, which separates the inferior lobe from the middle and superior lobes, and the horizontal fissure, which separates the superior and middle lobes. Medial surface: It is centered by the right pulmonary hilum. Above the hilum are notably the major fissure and the impressions of the superior vena cava, the arch of the azygos, and the brachiocephalic arterial trunk. In front and below the hilum are the fissures, the cardiac impression (right atrium). Behind the hilum are the elements of the posterior mediastinum and the dorsal spine.

Base: It is transversally marked by the great fissure. Its main relations are the diaphragm and the liver.

Apex: It protrudes above the upper opening of the thorax. Its relationships include the elements of the right supraclavicular fossa: subclavian vessels, brachial plexus and the cervical sympathetic chain.

Left lung

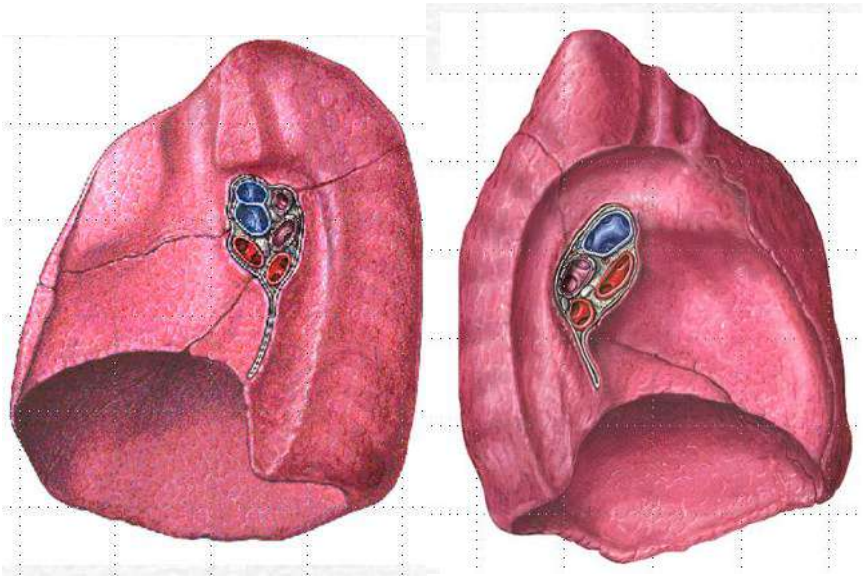
The left lung has two lobes: upper and lower, separated by the great fissure or oblique fissure.

Lateral face: Marked by costal impressions and divided into two lobes by the great fissure.

Medial face: It is centered by the left pulmonary hilum. Above the hilum are the impressions of the aortic arch, the left subclavian artery, the esophagus. In front of the hilum are the cardiac impression and the origin of the pulmonary artery. Behind the hilum are the impressions of the aorta and the esophagus.

Base: Its relations are the diaphragm, the liver, the stomach, the left kidney and adrenal gland, as well as the spleen.

Apex: It protrudes above the upper opening of the thorax. Its relations are the elements of the left supraclavicular fossa: subclavian vessels, brachial plexus and the cervical sympathetic chain.



Medial surface of right lung Medial surface of left lung

Pleurae

Definition: The pleura are two independent serous membranes, enveloping the two lungs, right and left, and lining the deep face of the pleuro-pulmonary cavities.

Structure: Each pleura is formed of two layers, visceral and parietal, separated by a virtual space called the pleural cavity.

Visceral layer: It lines the surface of the lung and folds into the pulmonary fissures. Pleural reflection: The visceral layer reflects at the hilum around and continues as the parietal layer, drawing the reflection line of the pleura. Below the pedicle, this reflection forms the triangular ligament of the lung, stretched between the lung and the mediastinum.

Parietal layer: It lines the deep face of the lateral parts of the thoracic cavity.

Segments of the parietal layer: Four segments are distinguished: costal (costal pleura), mediastinal (mediastinal pleura), diaphragmatic (diaphragmatic pleura) and the pleural dome, which covers the apex of the lung.

Pleural recesses: The different segments continue by forming the pleural recesses. On each side, the anterior mediastino-costal recess, the posterior mediastino-costal recess, the mediastino-diaphragmatic recess, and the costo-diaphragmatic recess (or inferior) are described. Pleural cavity: This is a virtual cavity that appears only in the case of a gaseous or liquid effusion. It normally contains a fluid film that facilitates the sliding of the two layers during respiratory movements. Practical interest: Liquid effusions: Accumulation of fluid in the pleural cavity. Pneumothorax: Presence of air in the pleural cavity During liquid effusions (pleurisy, hemothorax), the recesses become filled, especially

the costo-diaphragmatic recess, which is best explored by a frontal chest X-ray.