

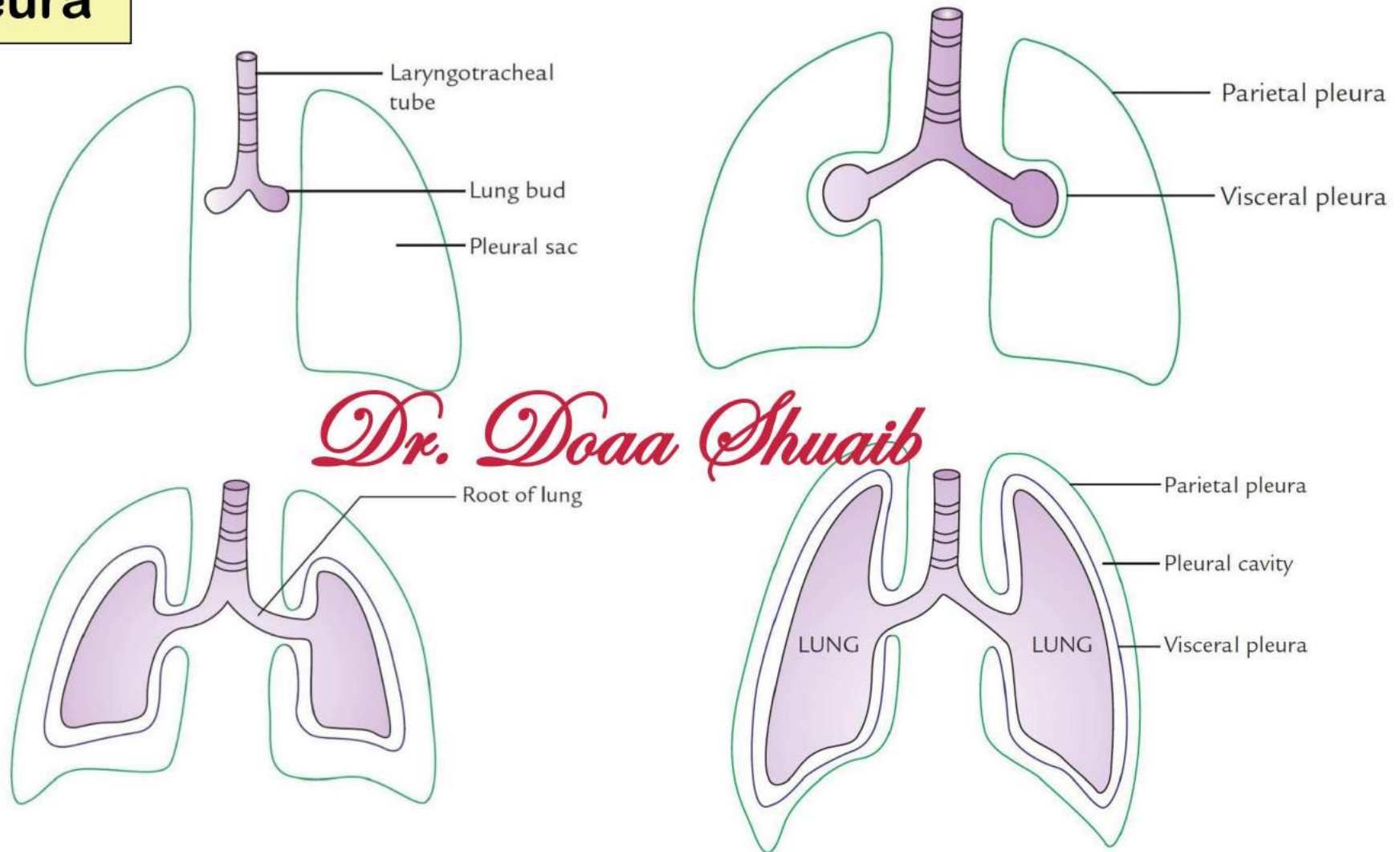
Anatomy of the pleura



Dr. Doaa Shuaib

Assistant Professor of Anatomy & Embryology
Faculty of Medicine – Cairo University
Email: doaa.shuaib@kasralainy.edu.eg

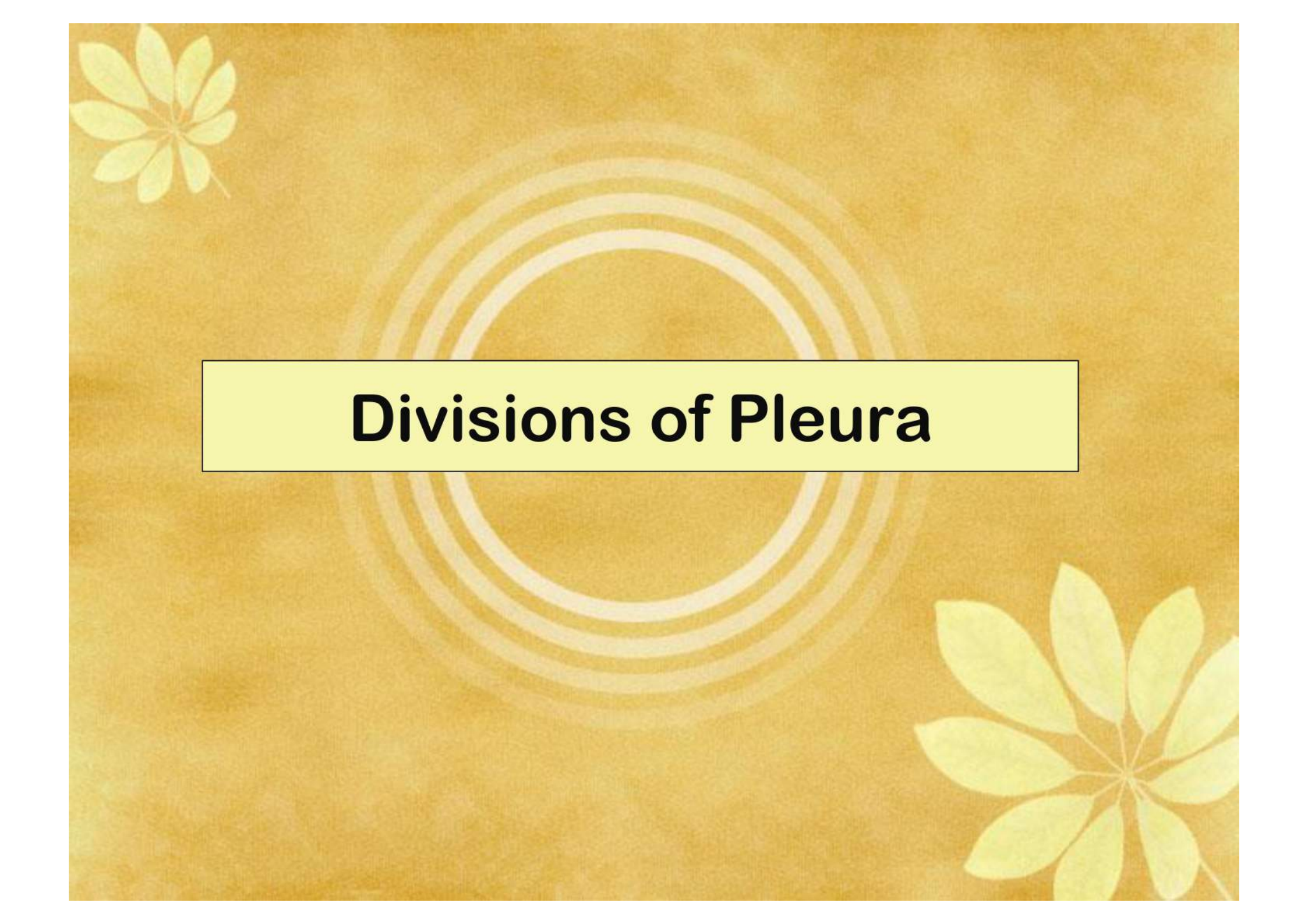
Pleura



Source: Textbook of Anatomy, upper limb & thorax, Vishram Singh, 2nd edition

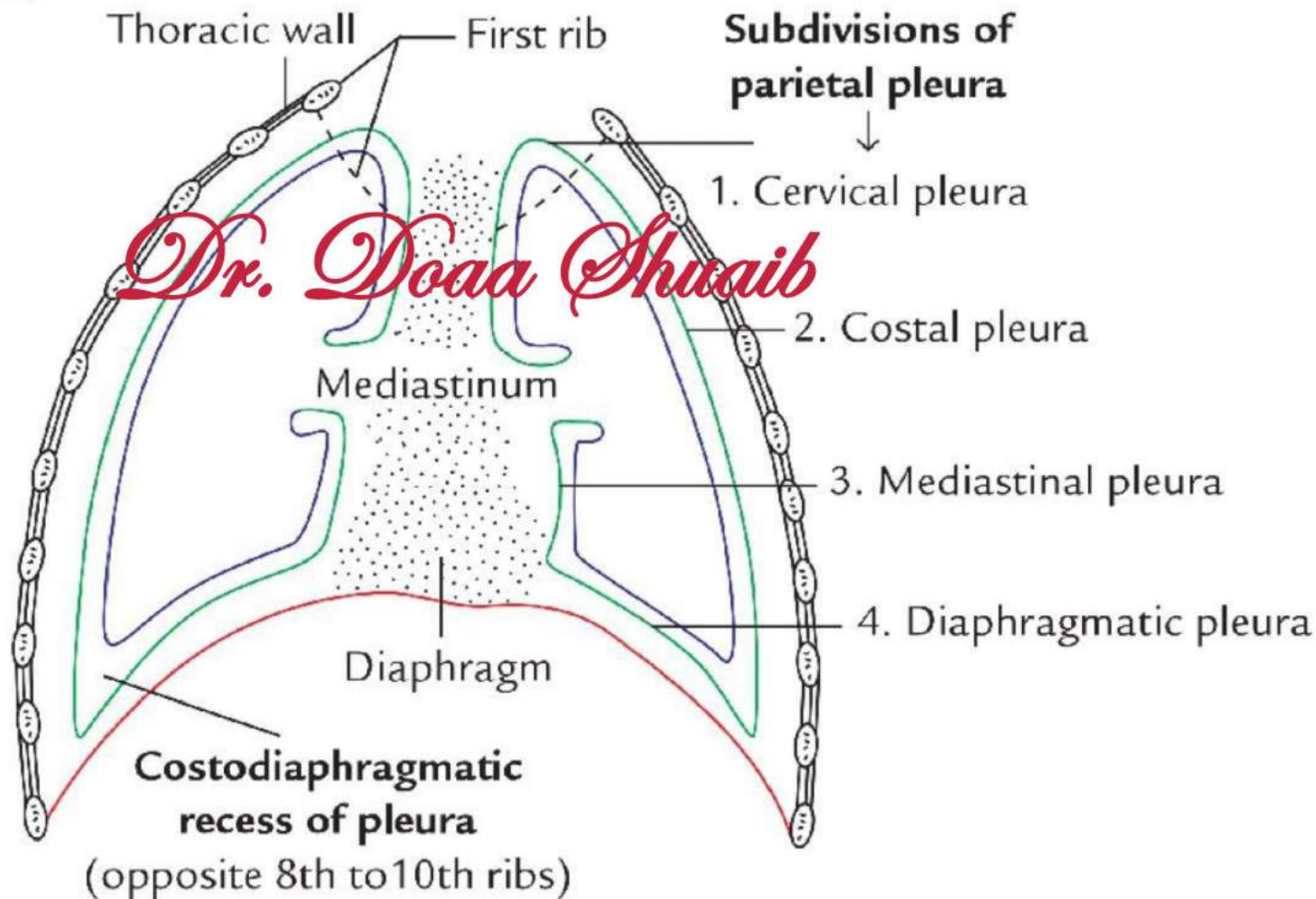
Definition

- A closed serous sac, one on each side of the thoracic cavity, invaginated from its medial aspect by the lung forming
- It is composed of 2 layers (visceral and parietal) separated by the pleural cavity
- The pleural cavity is a potential space, empty except for a thin film of serous fluid which facilitates lung movement and minimizes friction

The background is a textured, golden-yellow color. In the center, there are several concentric circles of varying shades of yellow and white, creating a subtle, circular pattern. In the top-left and bottom-right corners, there are stylized floral motifs with multiple pointed petals, rendered in a light yellow color.

Divisions of Pleura

Pleura



Source: Textbook of Anatomy, upper limb & thorax, Vishram Singh, 2nd edition

Divisions of Pleura

A- Visceral (pulmonary) pleura

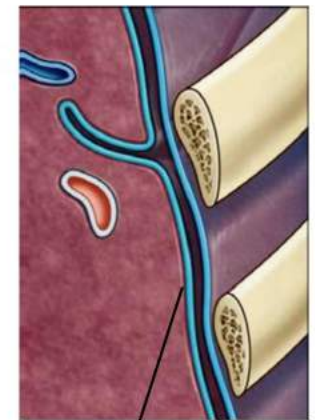
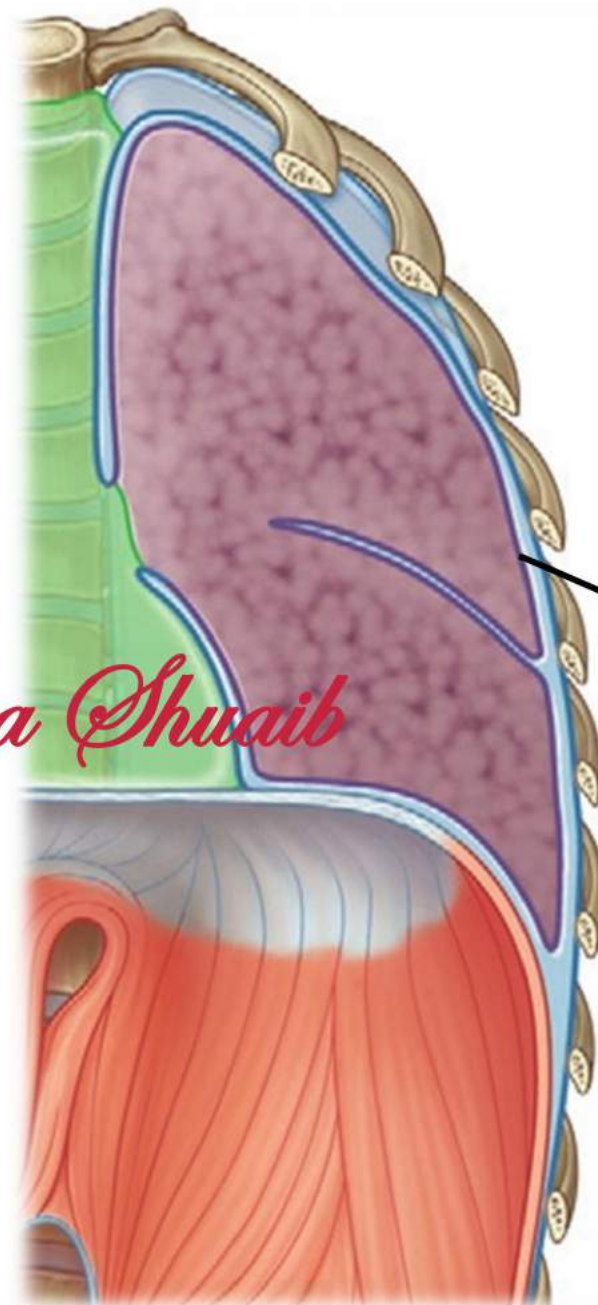
B- Parietal pleura:

- (1) Cervical pleura
- (2) Costal pleura
- (3) Mediastinal pleura
- (4) Diaphragmatic pleura

Divisions of Pleura

A- Visceral pleura

- The inner layer which covers (invests) the lung
- It is closely adherent to it.



Visceral pleura

Visceral pleura

Source: Gray's Basic Anatomy - Richard L. Drake,
Wayne Vogl, Adam W.M. Mitchell

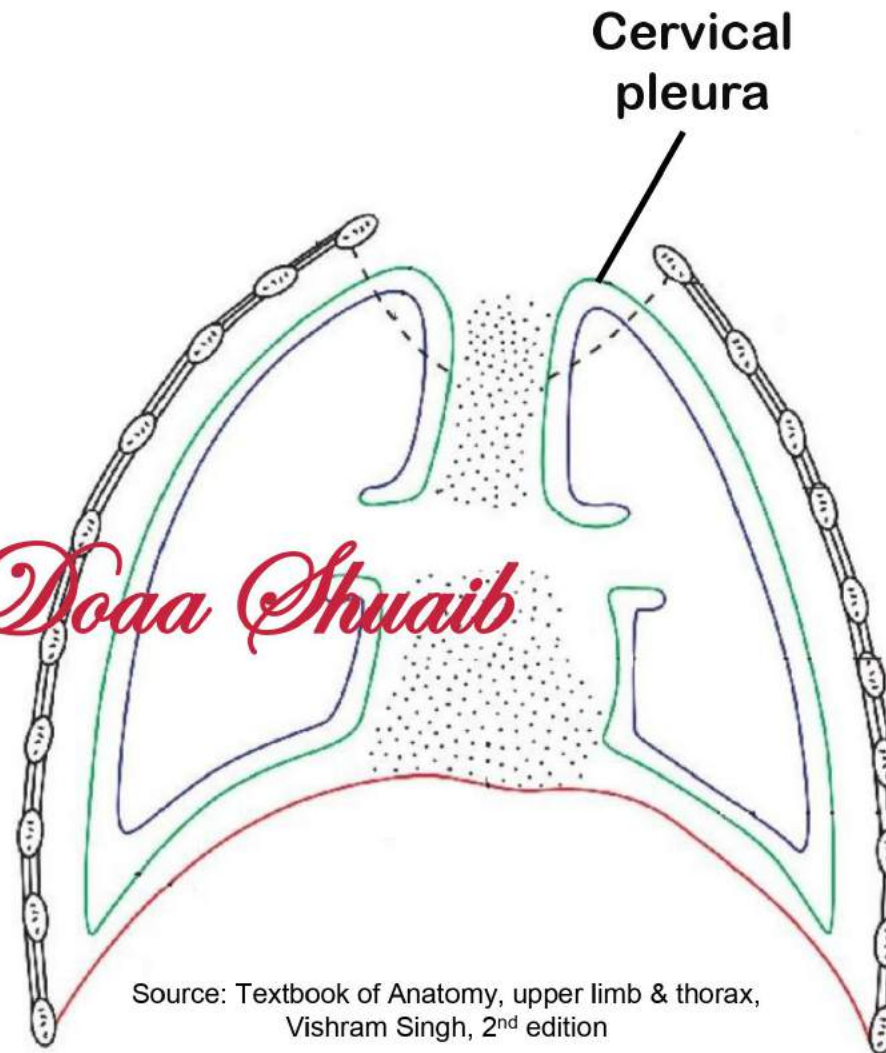
Dr. Doaa Shuaib

Divisions of Pleura

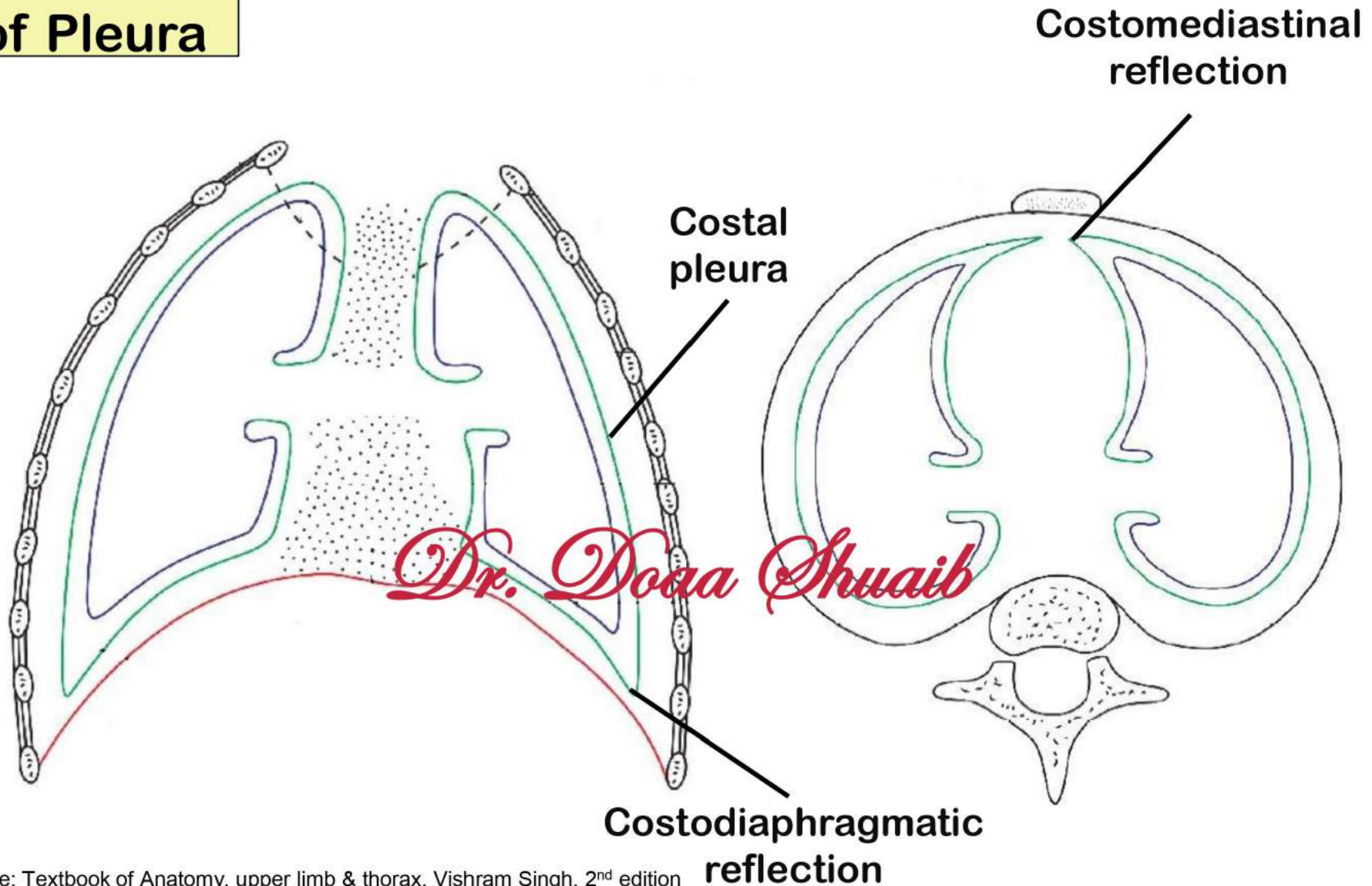
B- Parietal pleura

(1) Cervical pleura

- It covers the apex of the lung.



Divisions of Pleura



Source: Textbook of Anatomy, upper limb & thorax, Vishram Singh, 2nd edition

B- Parietal pleura

(2) Costal pleura:

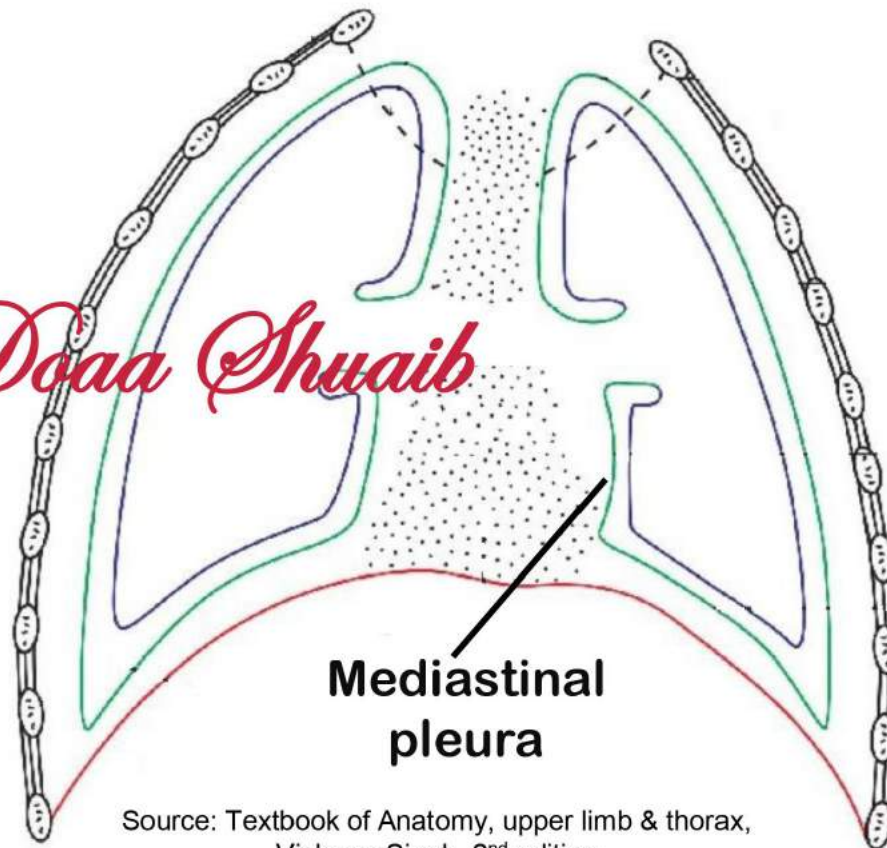
- It lines the inner surfaces of the ribs and costal cartilages and intercostal spaces.
- It is continuous with the mediastinal pleura at the **costomediastinal reflection** and with the diaphragmatic pleura at the **costodiaphragmatic reflection**

Divisions of Pleura

B- Parietal pleura

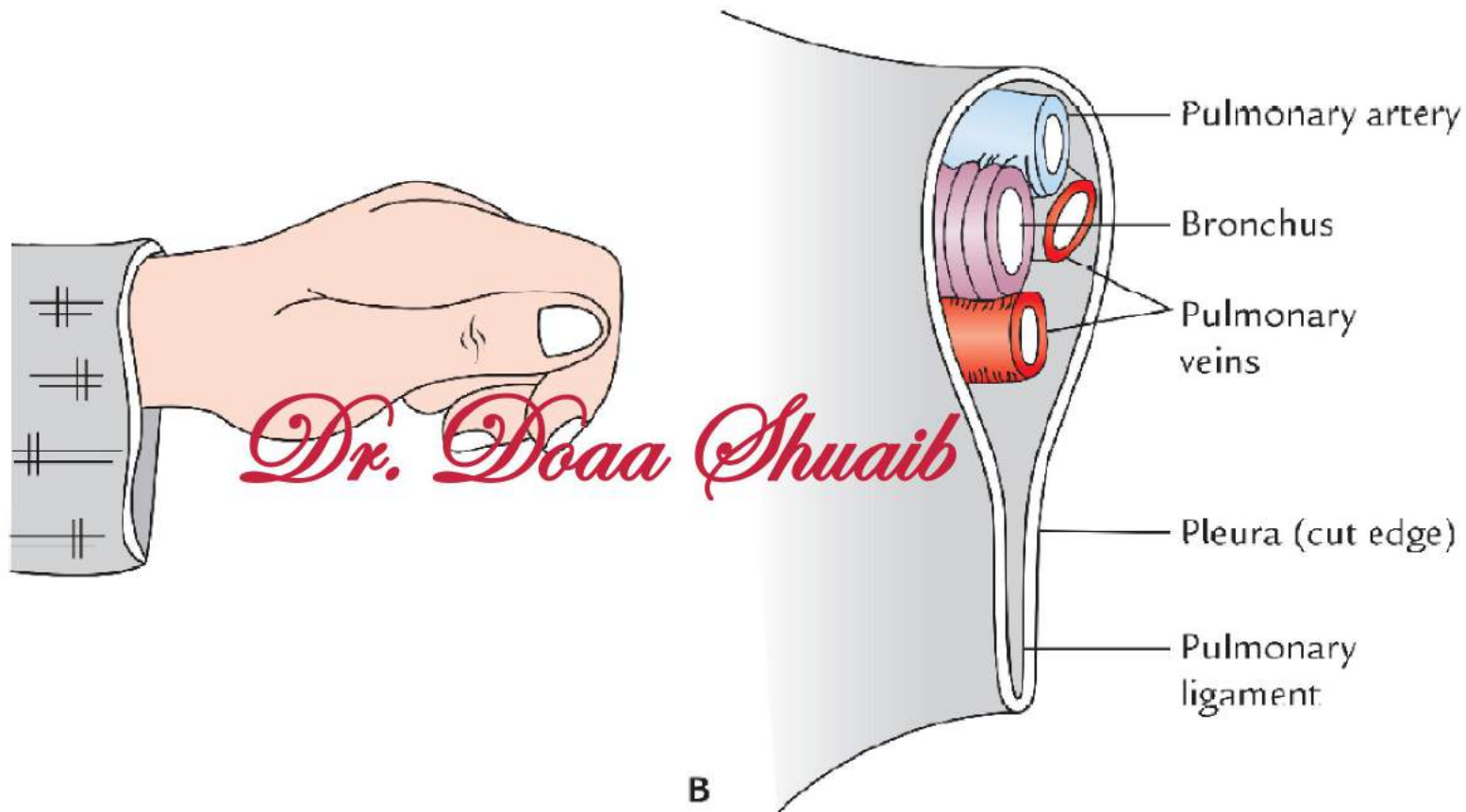
(3) Mediastinal pleura

- It covers the sides of the mediastinum.
- It has different relations on the right and left sides.
- It encloses the structures of the root of the lung like a sleeve



Source: Textbook of Anatomy, upper limb & thorax,
Vishram Singh, 2nd edition

Divisions of Pleura



Source: Textbook of Anatomy, upper limb & thorax, Vishram Singh, 2nd edition

B- Parietal pleura

(3) Mediastinal pleura

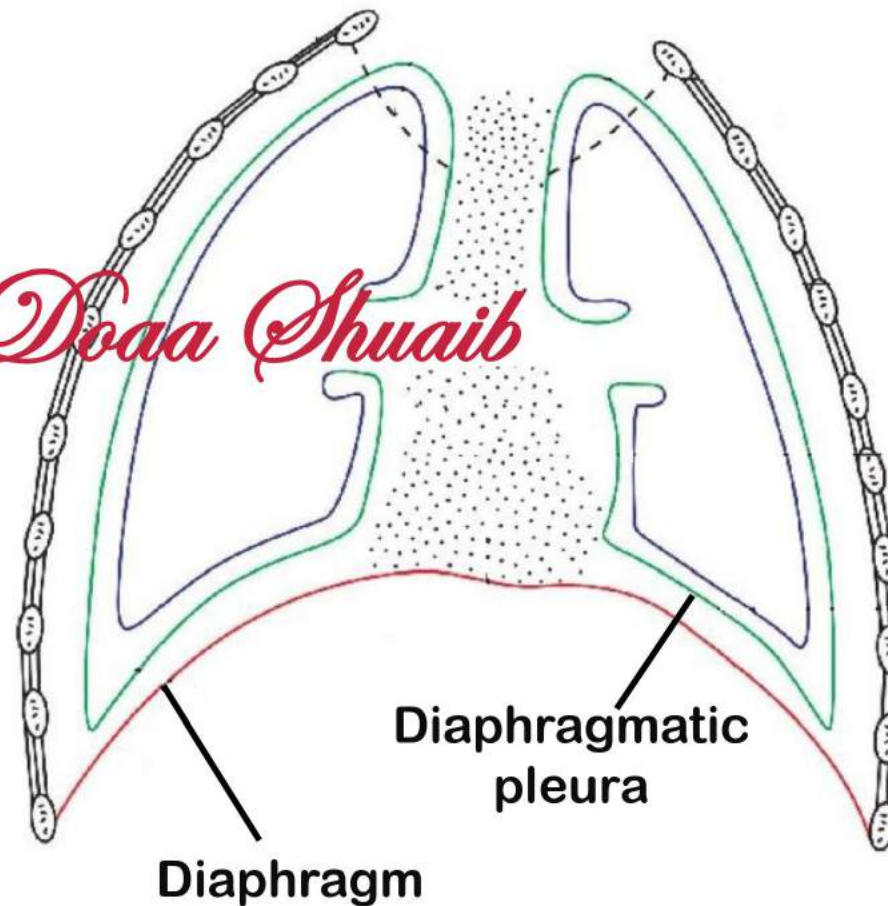
- The **pulmonary ligament** is a loose, empty double-layer fold of pleura which spans between the esophagus medially and the lung laterally.
- Its function is to provide a dead space which allows the distention of the pulmonary veins when the venous return from the lung increases

Divisions of Pleura

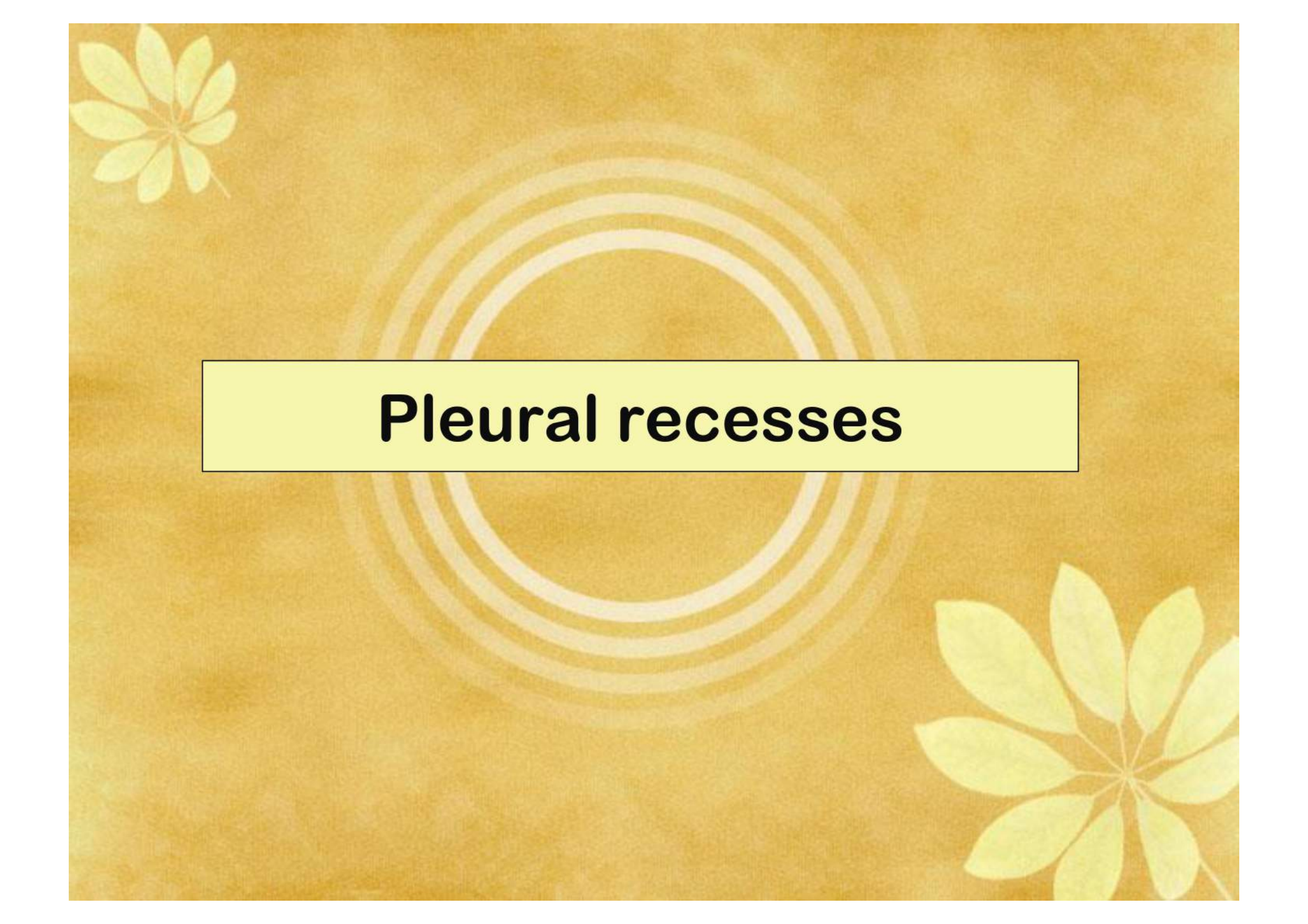
B- Parietal pleura

(4) Diaphragmatic pleura

- It covers the upper surface of the diaphragm
- It is continuous at its circumference with costal and mediastinal pleurae.

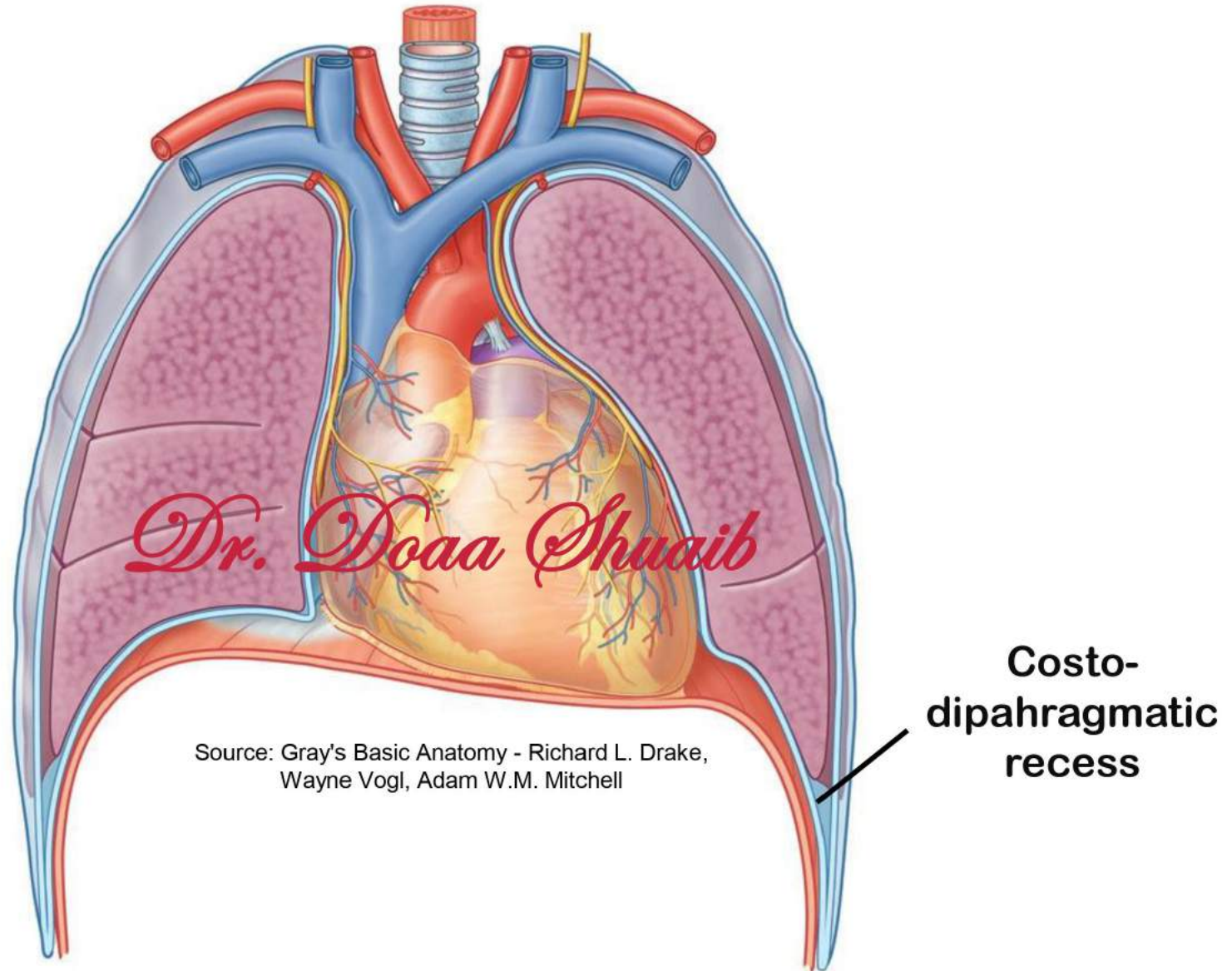


Source: Textbook of Anatomy, upper limb & thorax,
Vishram Singh, 2nd edition

The background is a textured, golden-yellow surface. In the center, there are several concentric, light-colored circles that create a ripple effect. In the top-left and bottom-right corners, there are stylized, light-green floral or leaf-like motifs. A horizontal rectangular box with a thin black border is centered on the page, containing the title text.

Pleural recesses

Pleural recesses

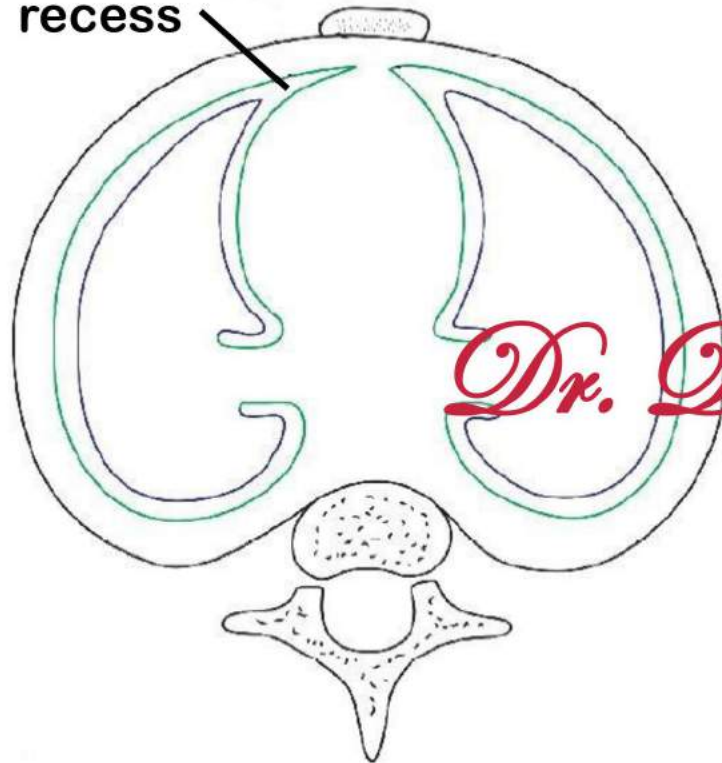


Definition

- These are narrow spaces of the pleural cavity which are not occupied by the lung except in forced inspiration.
- Each pleural sac has 2 recesses: 1. costodipahragmatic recess
2. costomediastinal recess

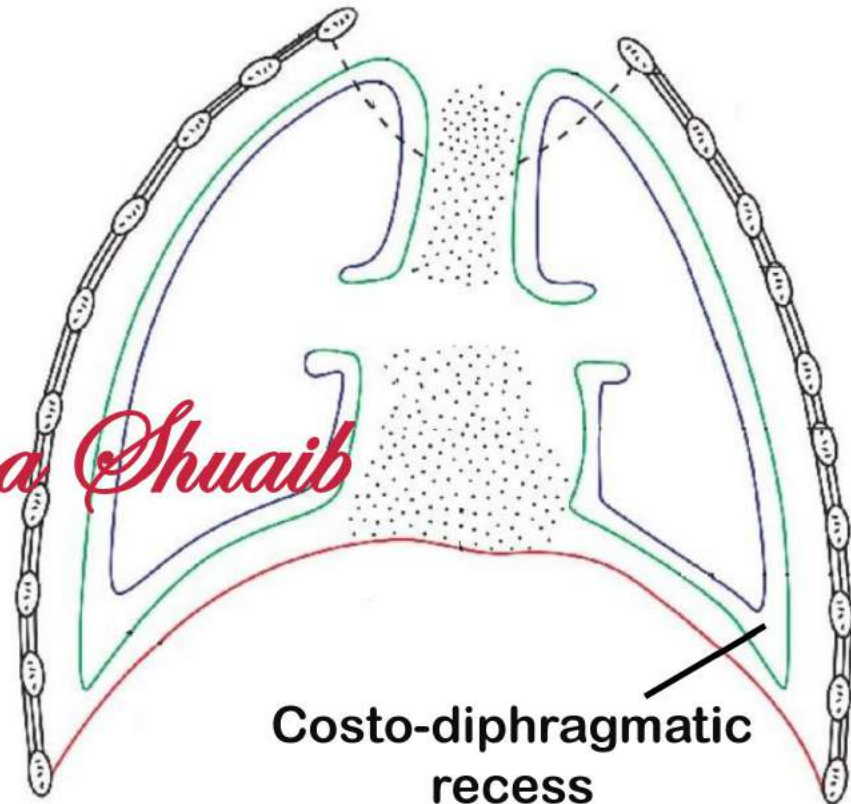
Pleural recesses

Costo-
mediastinal
recess



Dr. Doaa Shuaib

Costo-diphragmatic
recess



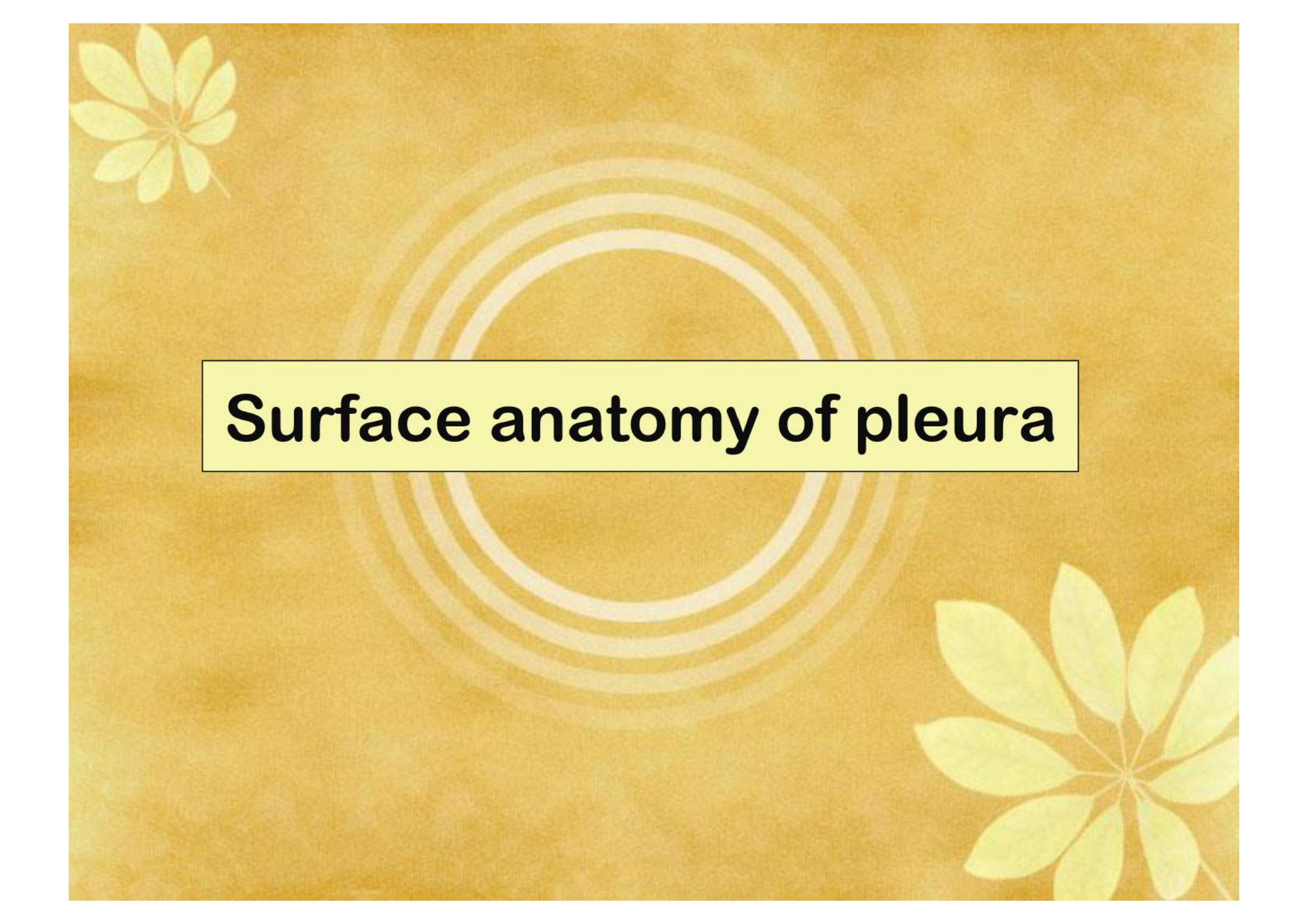
Source: Textbook of Anatomy, upper limb & thorax, Vishram Singh, 2nd edition

Costomediastinal recess

- lies between the costal and mediastinal pleurae, along the anterior border of the pleura, directly behind the sternum.
- It receives the expanding anterior border of the lung in forced inspiration.

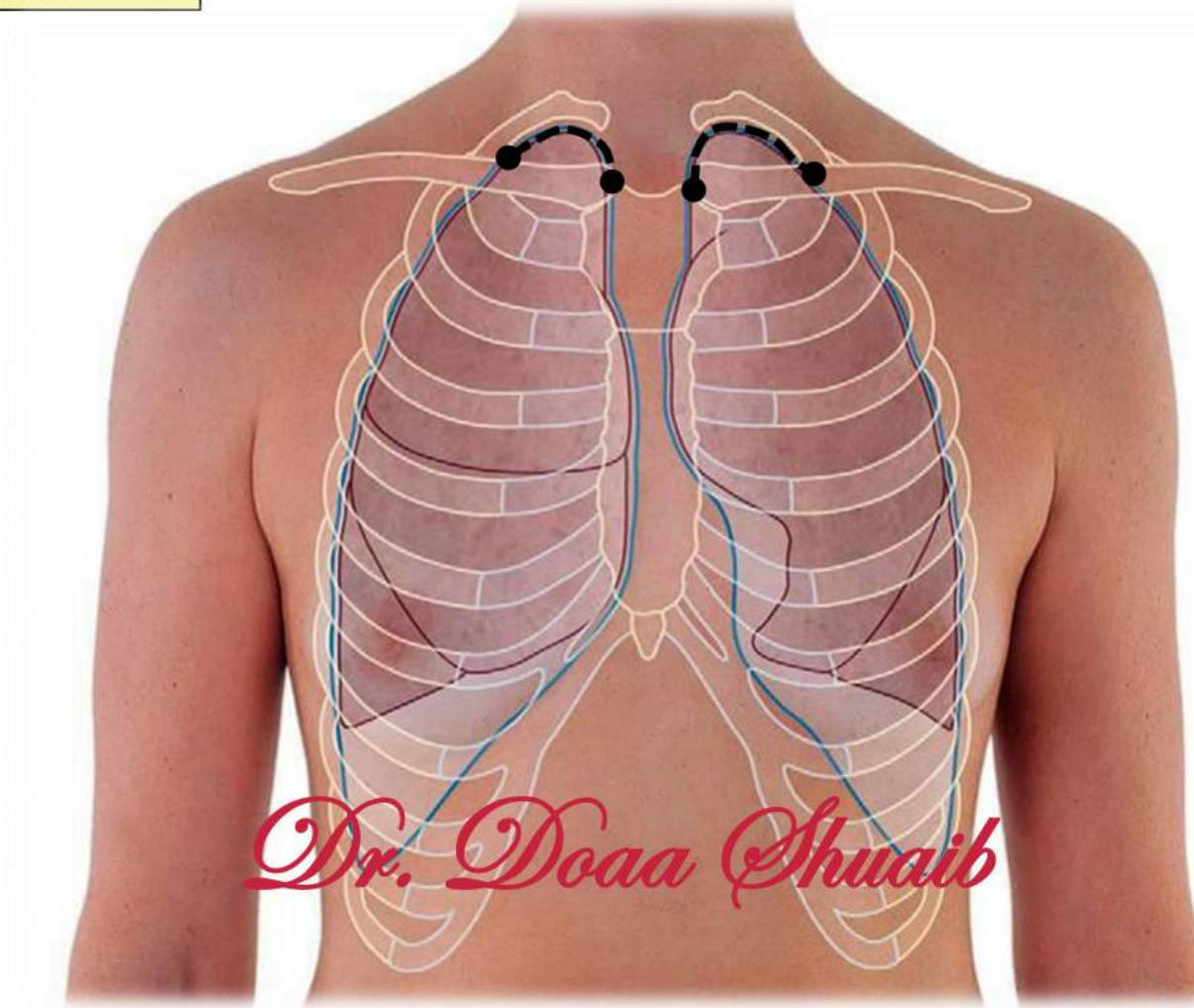
Costodiaphragmatic recess

- lies between the costal and diaphragmatic pleurae, along the inferior border of the pleura, at the outlet of the thorax.
- It receives the expanding inferior border of the lung in forced inspiration.



Surface anatomy of pleura

Surface anatomy of pleura

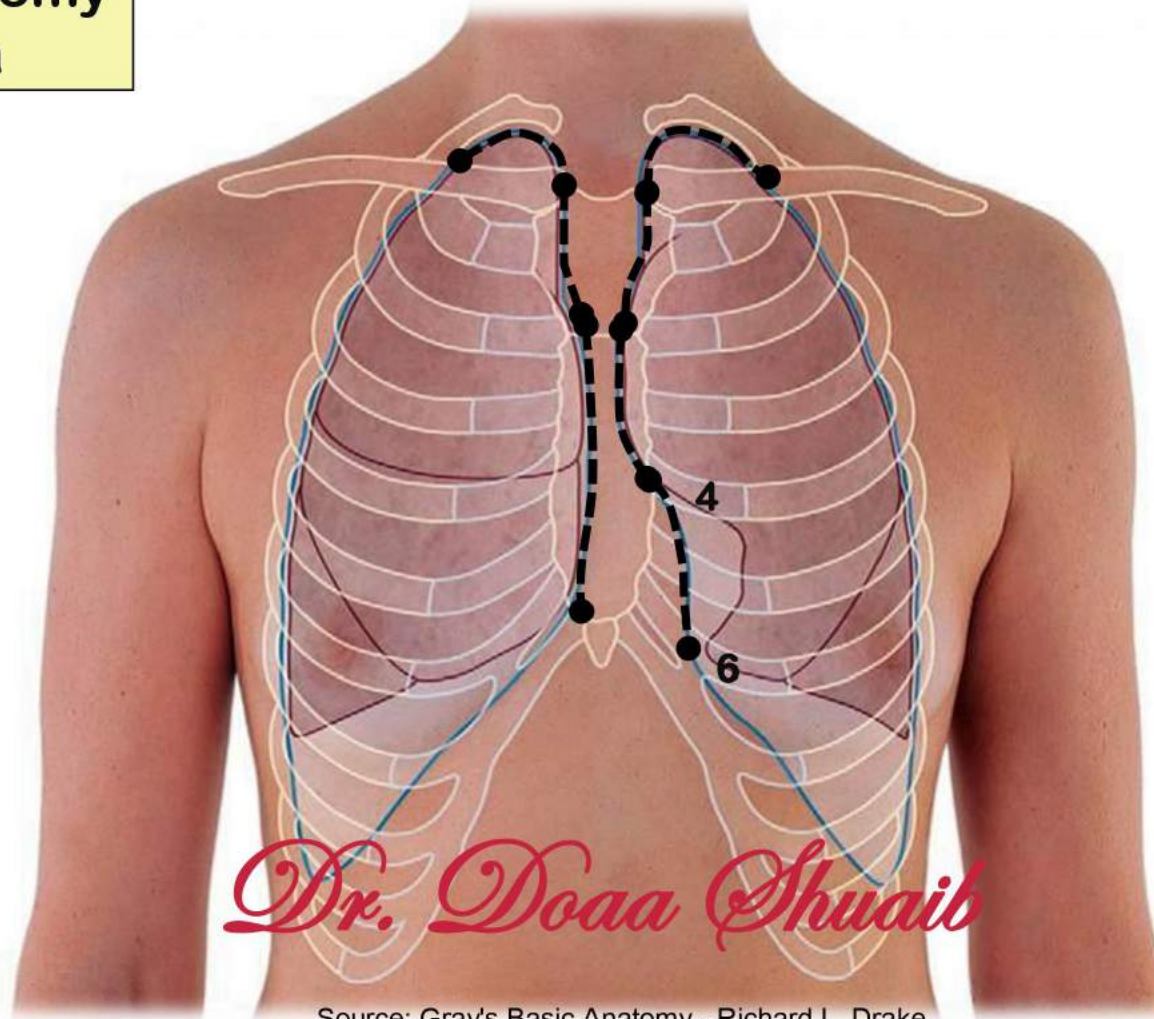


Source: Gray's Basic Anatomy - Richard L. Drake,
Wayne Vogl, Adam W.M. Mitchell

1- Cervical pleura

- Represented by a curved line, convex upwards, drawn from the junction of the medial and middle thirds of the clavicle to the sternoclavicular joint.
- The highest point of this arch lies about 3 cm above medial 1/3 of clavicle

Surface anatomy of pleura



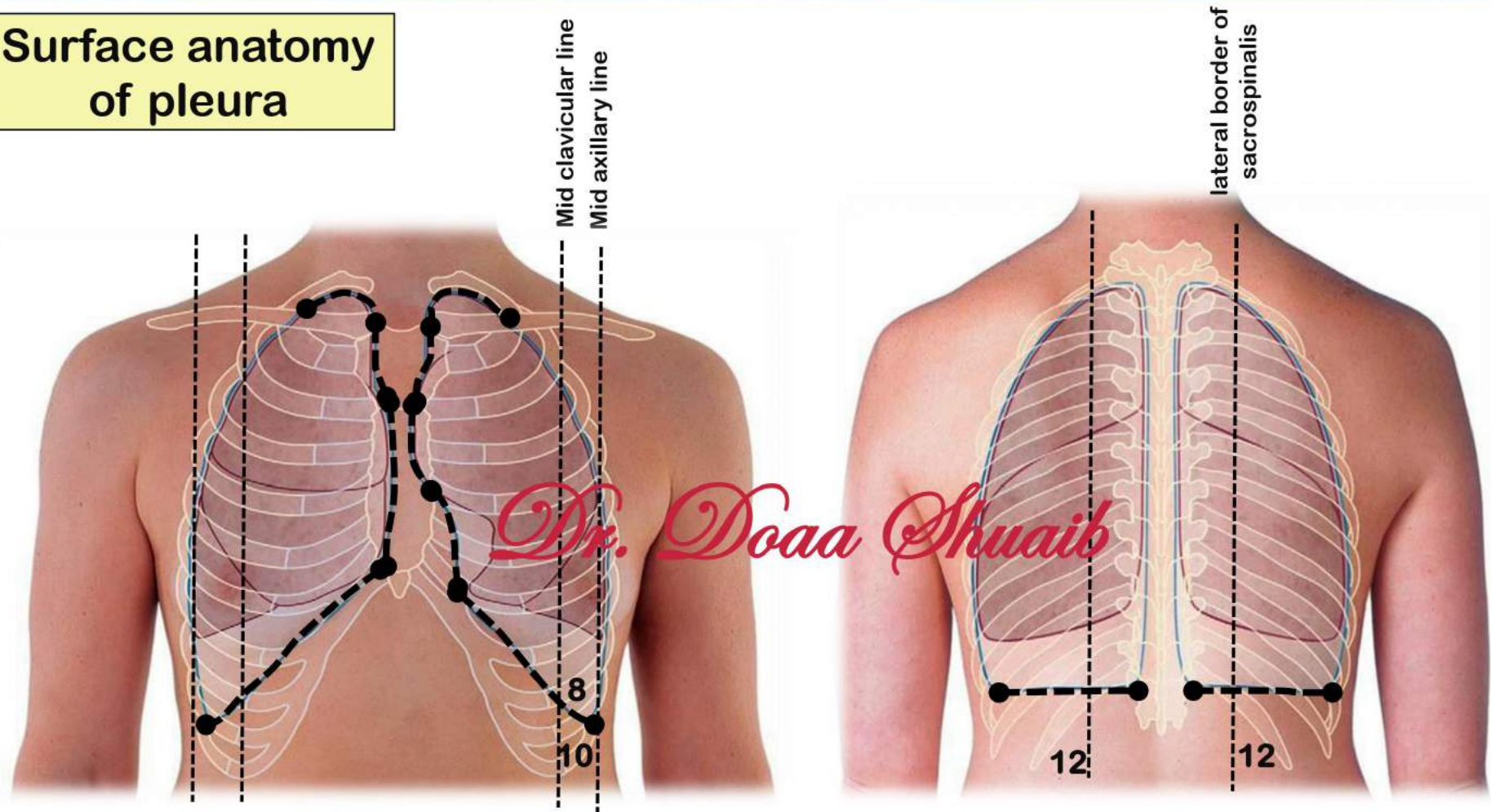
Dr. Doaa Shuaib

Source: Gray's Basic Anatomy - Richard L. Drake,
Wayne Vogl, Adam W.M. Mitchell

2- Anterior border

- The upper part is the same for both lungs. It descends obliquely downwards and medially from the sternoclavicular joint to the sternal angle
- Below this level:
 - **Anterior border of right lung:** it descends vertically to the xiphisternal junction.
 - **Anterior border of left lung:** it descends vertically down to the 4th costal cartilage, then it deviates laterally to gain the left border of the sternum along which it descends vertically to the 6th costal cartilage.

Surface anatomy of pleura

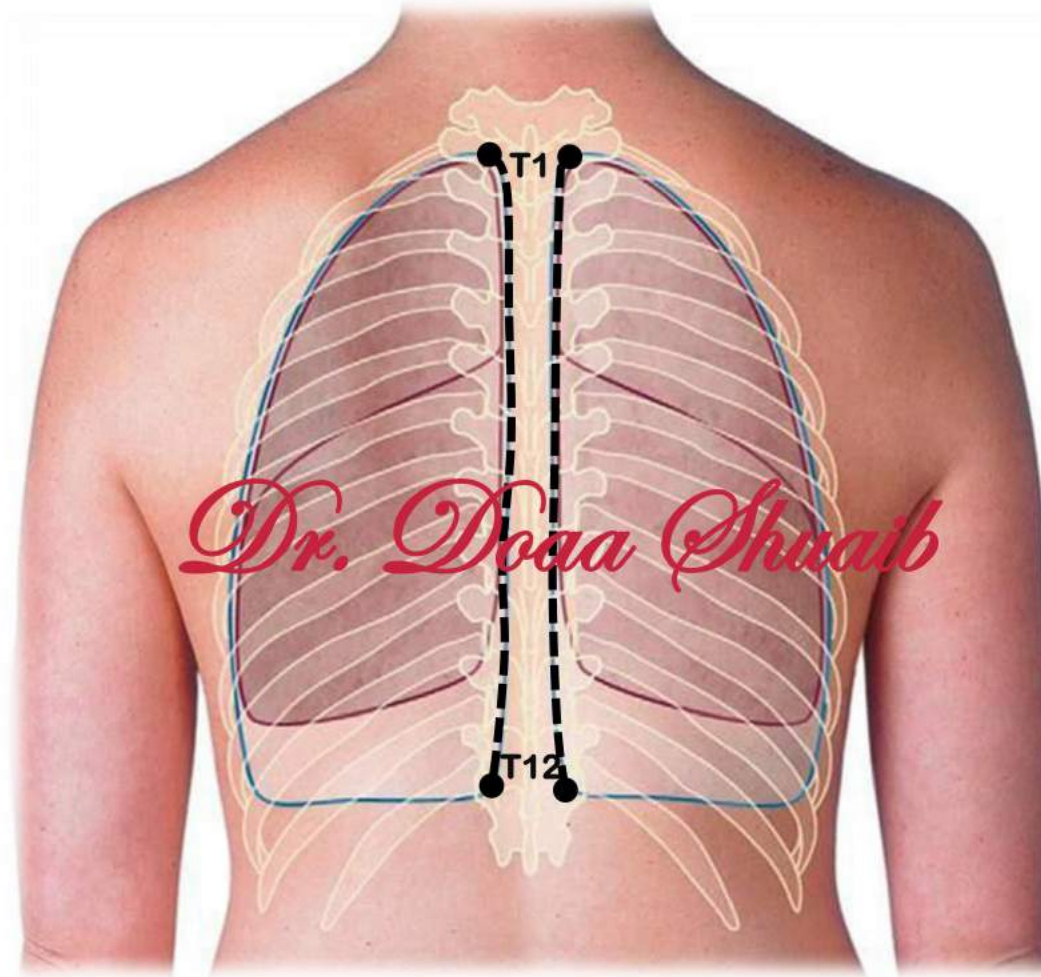


Source: Gray's Basic Anatomy - Richard L. Drake, Wayne Vogl, Adam W.M. Mitchell

4- Posterior border

- The inferior border on both sides is the same
- it passes laterally then backwards around the thoracic wall till it reaches the vertebral column at the level of the 12th thoracic spine. The line is oblique.
- It crosses the following ribs:
 - a- the 8th rib: in the midclavicular line.
 - b- the 10th rib: in the midaxillary line.
 - c- the 12th rib: opposite the lateral border of sacrospinalis muscle.

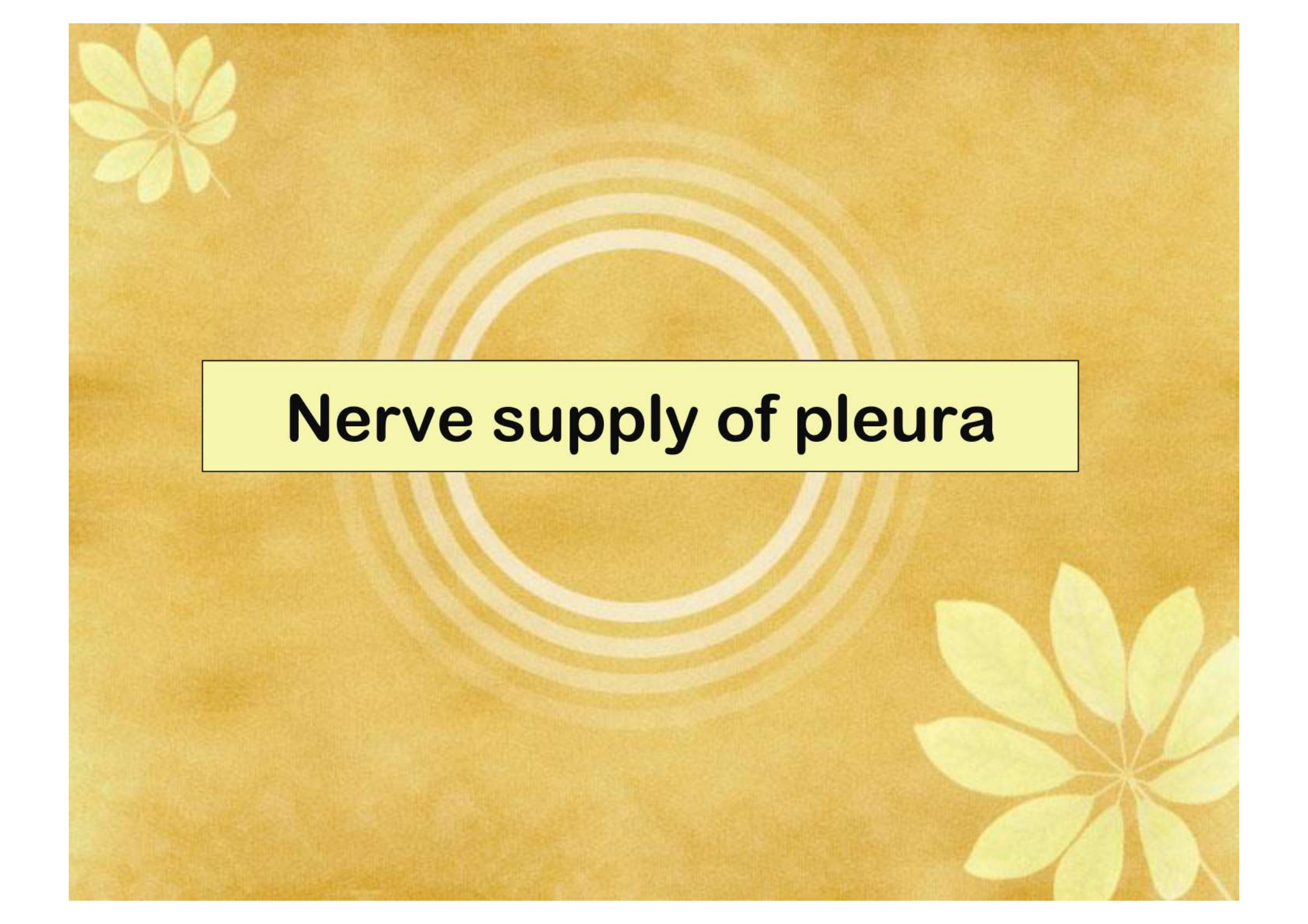
Surface anatomy of pleura



Source: Gray's Basic Anatomy - Richard L. Drake,
Wayne Vogl, Adam W.M. Mitchell

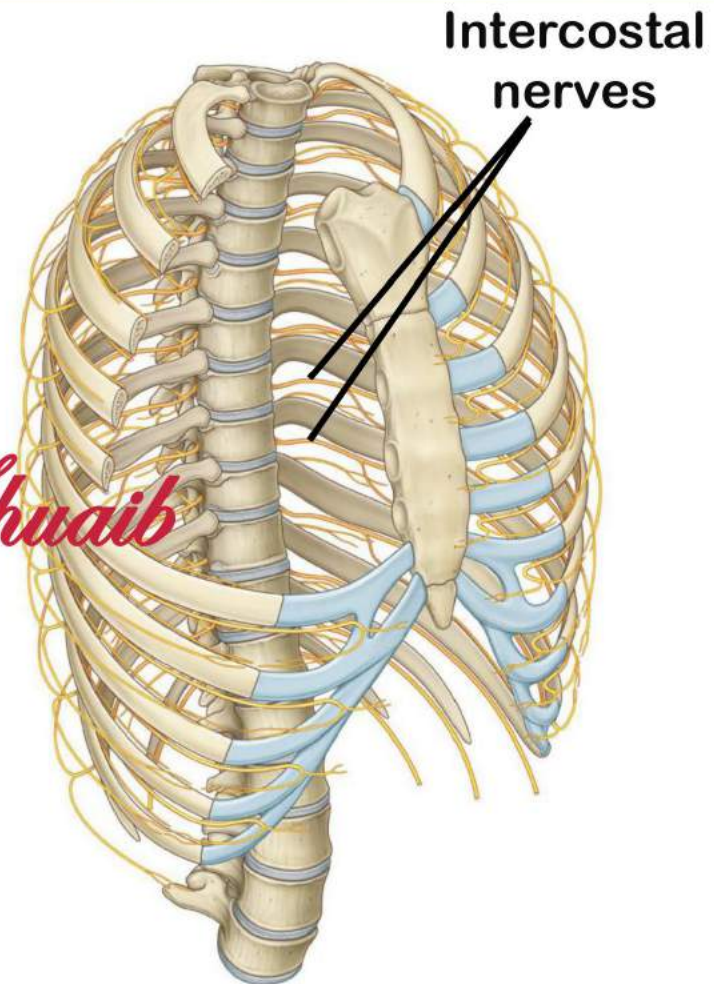
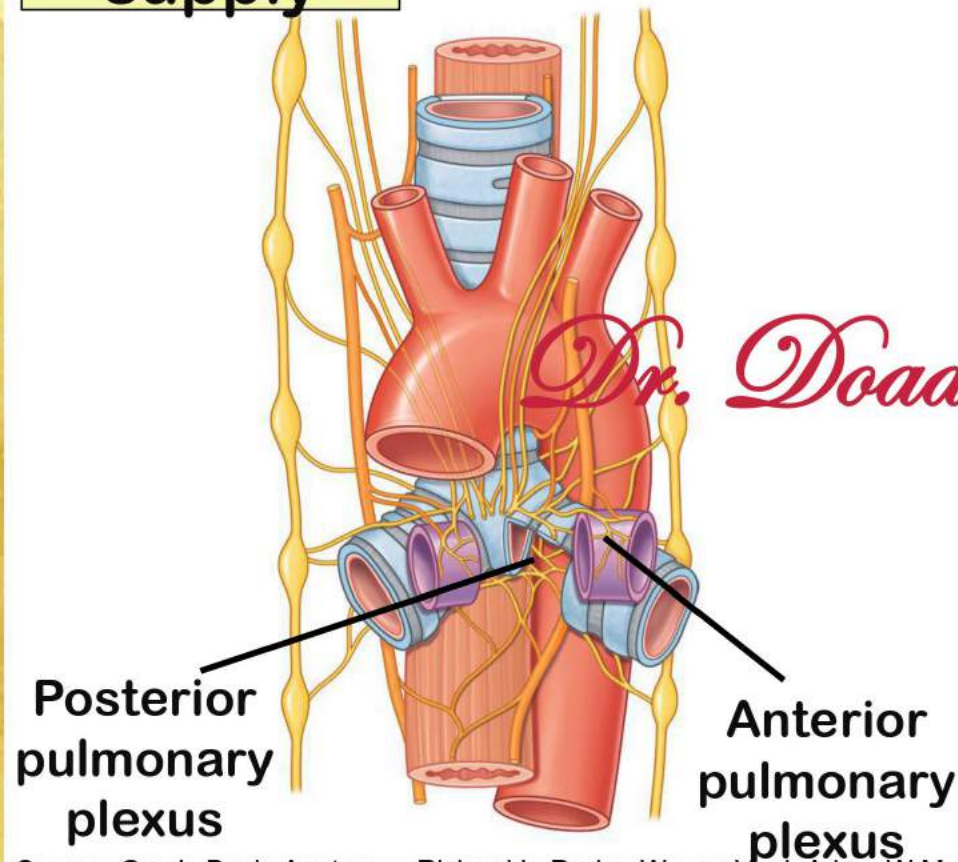
4- Posterior border

- The same on both sides
- Represented by a vertical line which starts close to the 12th thoracic spine and extends upwards to the 1st thoracic spine.

The background is a textured, golden-yellow color. In the center, there are several concentric, light-colored circles that create a ripple effect. In the top-left and bottom-right corners, there are stylized, light-green floral motifs with multiple pointed petals.

Nerve supply of pleura

Nerve supply



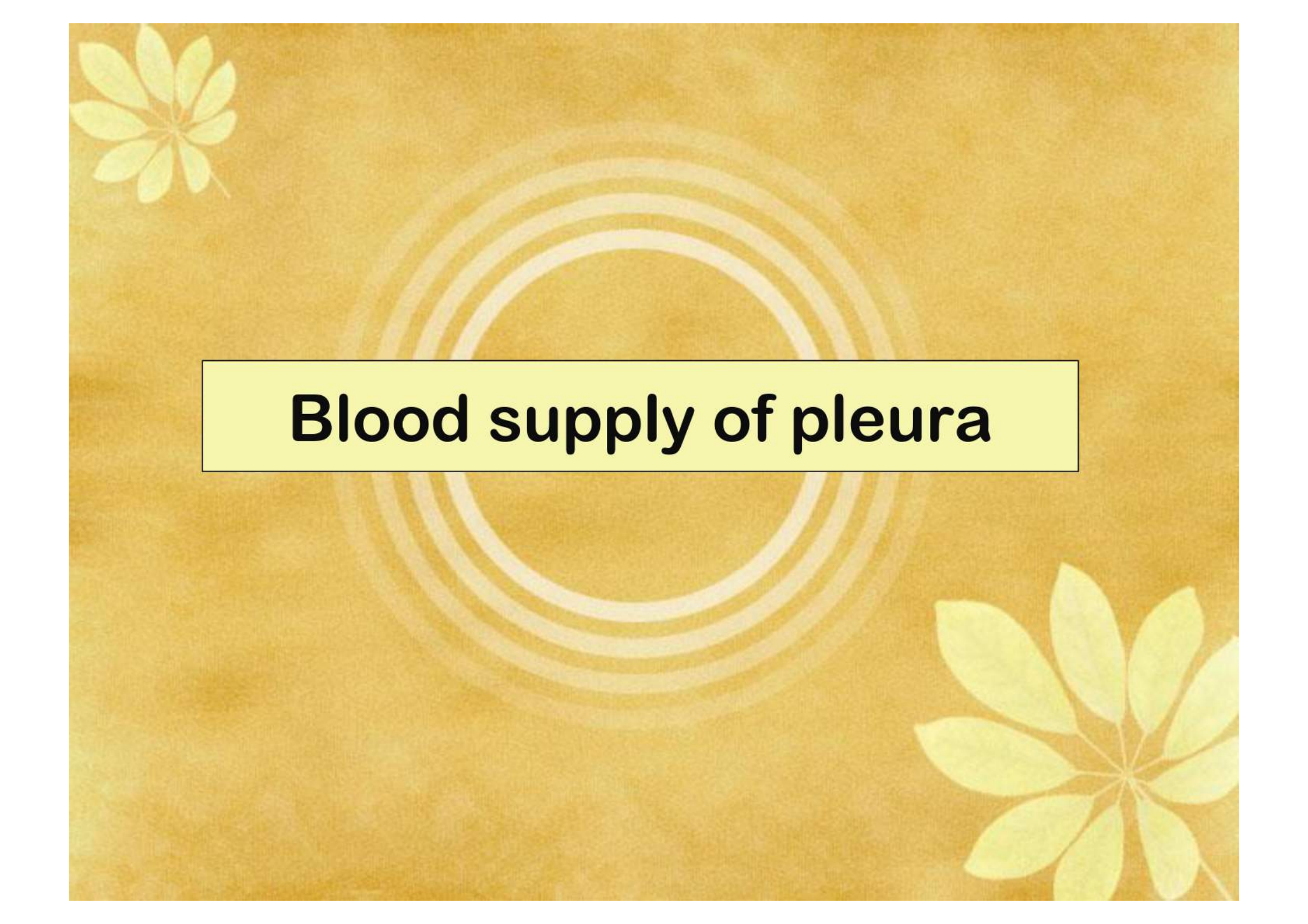
Source: Gray's Basic Anatomy - Richard L. Drake, Wayne Vogl, Adam W.M. Mitchell

Visceral pleura

- It is supplied by the same autonomic innervation of the lung via the anterior and posterior pulmonary plexuses.
- It is not sensitive to somatic stimuli such as pain and temperature

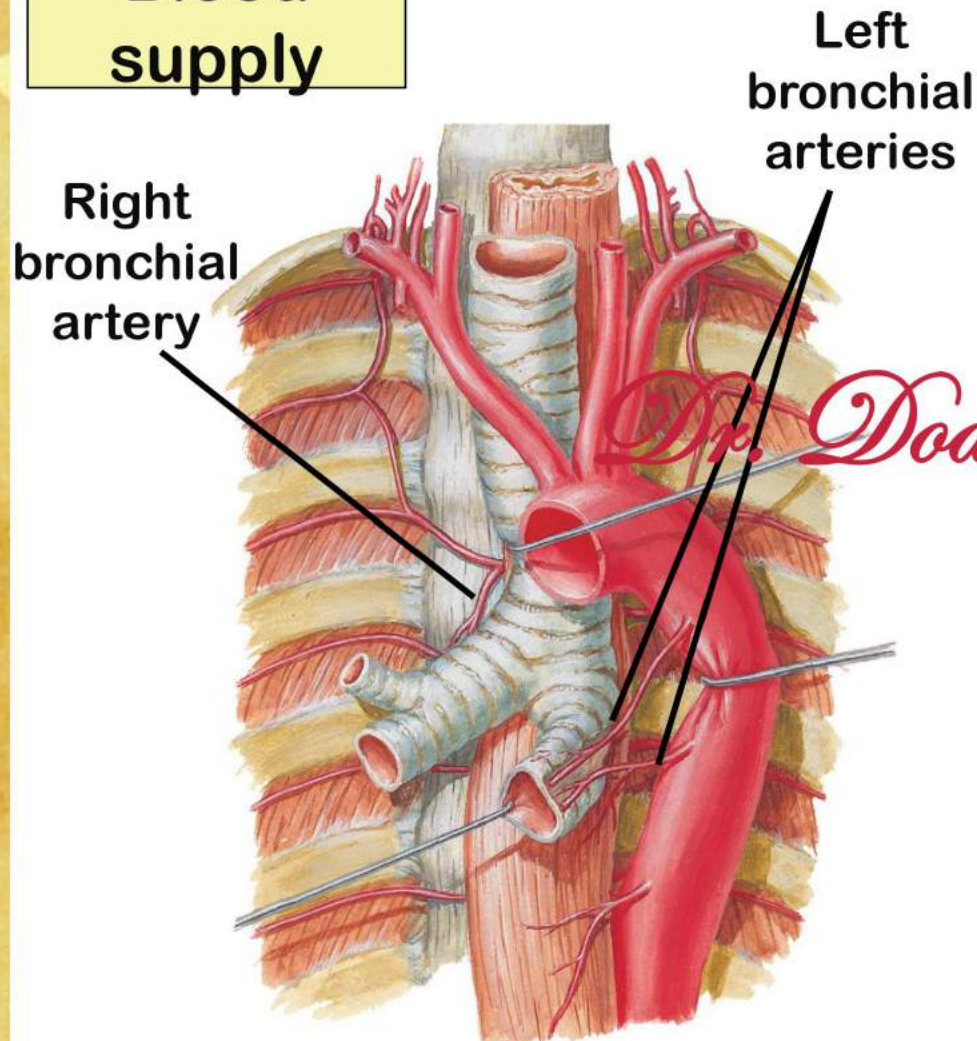
Parietal pleura

- a- **Cervical pleura:** by the 1st intercostal nerve.
- b- **Costal pleura,** segmentally by the corresponding intercostal nerve.
- c- **Mediastinal and central part of diaphragmatic pleura:** by phrenic nerve.
- d- **Peripheral part of diaphragmatic pleura:** by lower intercostal nerves.

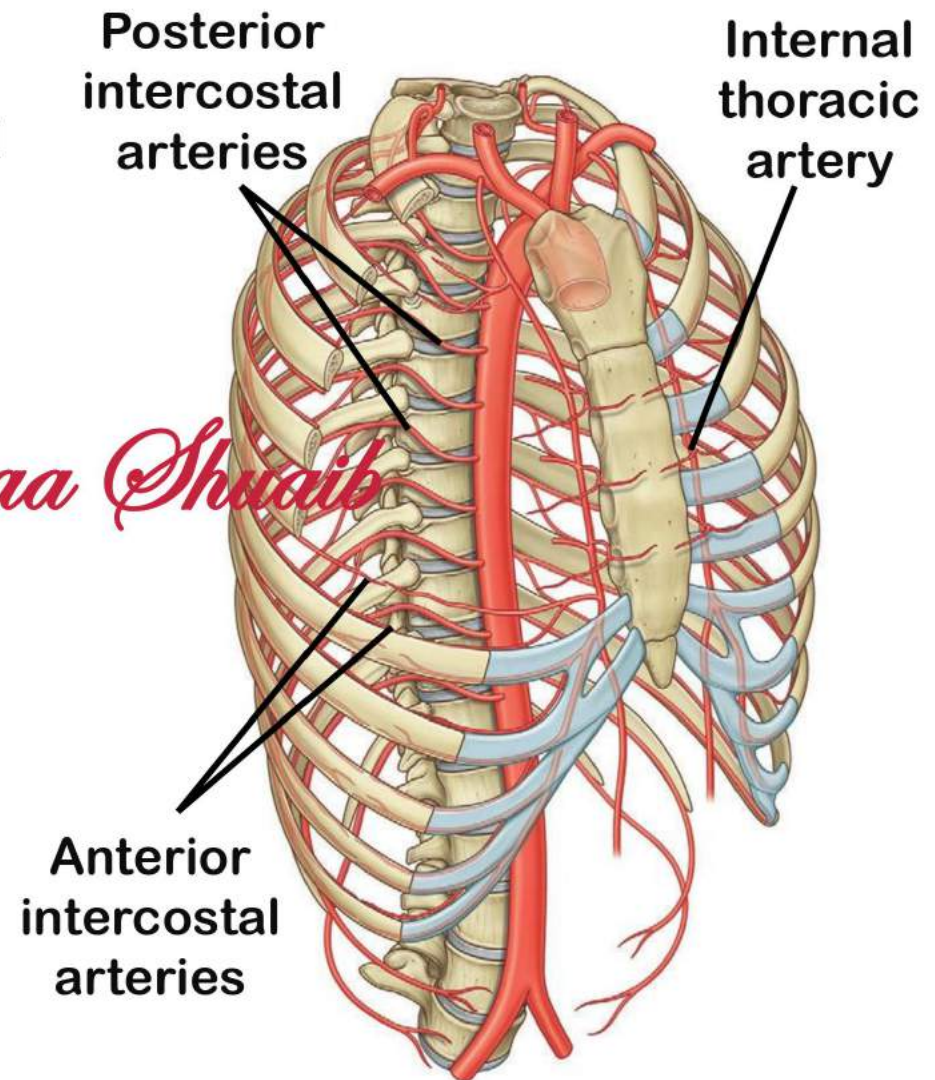
The background is a solid mustard yellow color. In the center, there are several concentric circles in a lighter, cream-colored shade. In the top-left and bottom-right corners, there are stylized floral motifs with multiple pointed petals in a pale yellow-green color.

Blood supply of pleura

Blood supply



Source: Atlas of Human Anatomy, Sixth Edition- Frank H. Netter, M.D



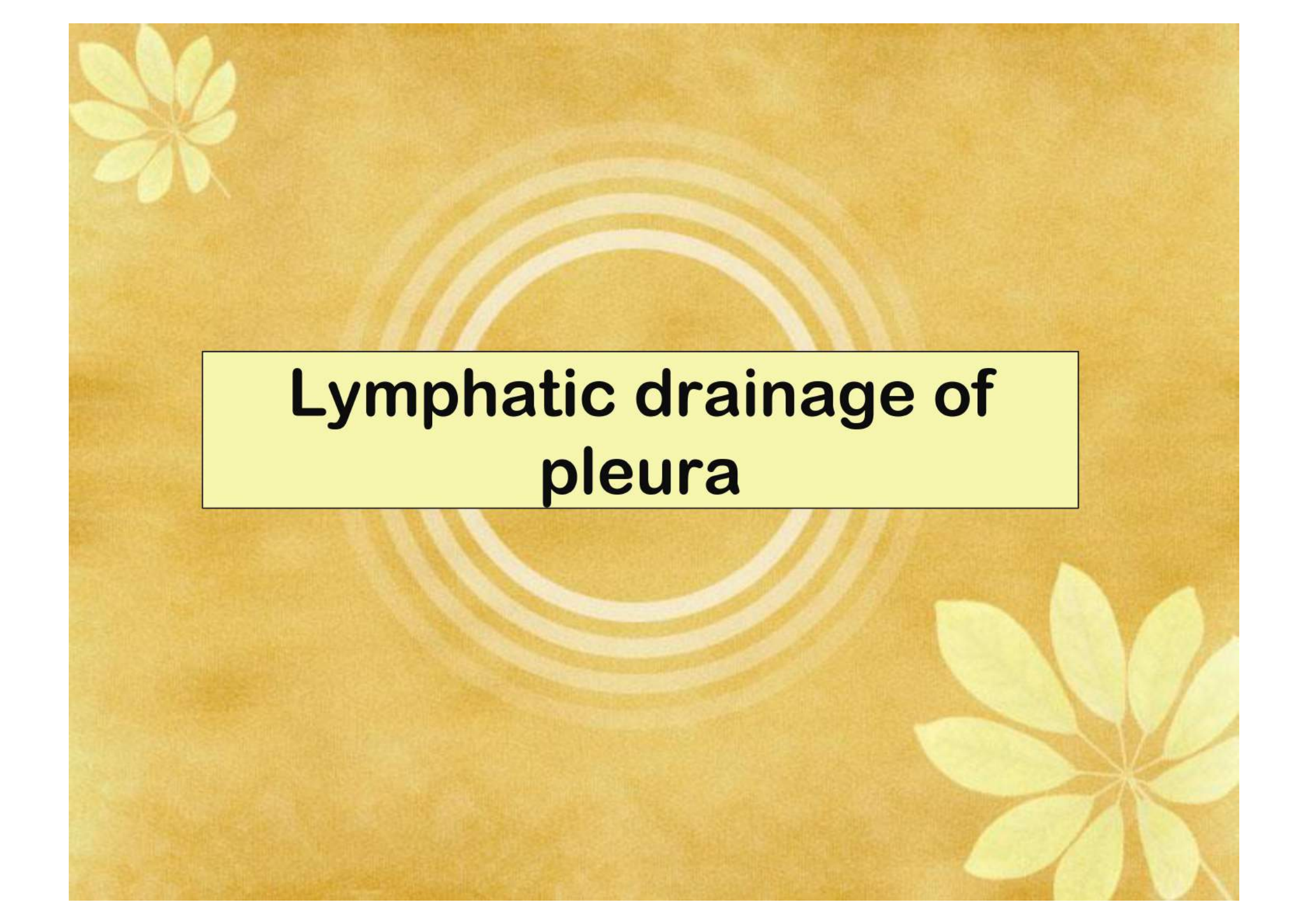
Source: Gray's Basic Anatomy - Richard L. Drake, Wayne Vogl, Adam W.M. Mitchell

Visceral pleura

- Supplied by the same vessels which supply the lung i.e. the bronchial vessels

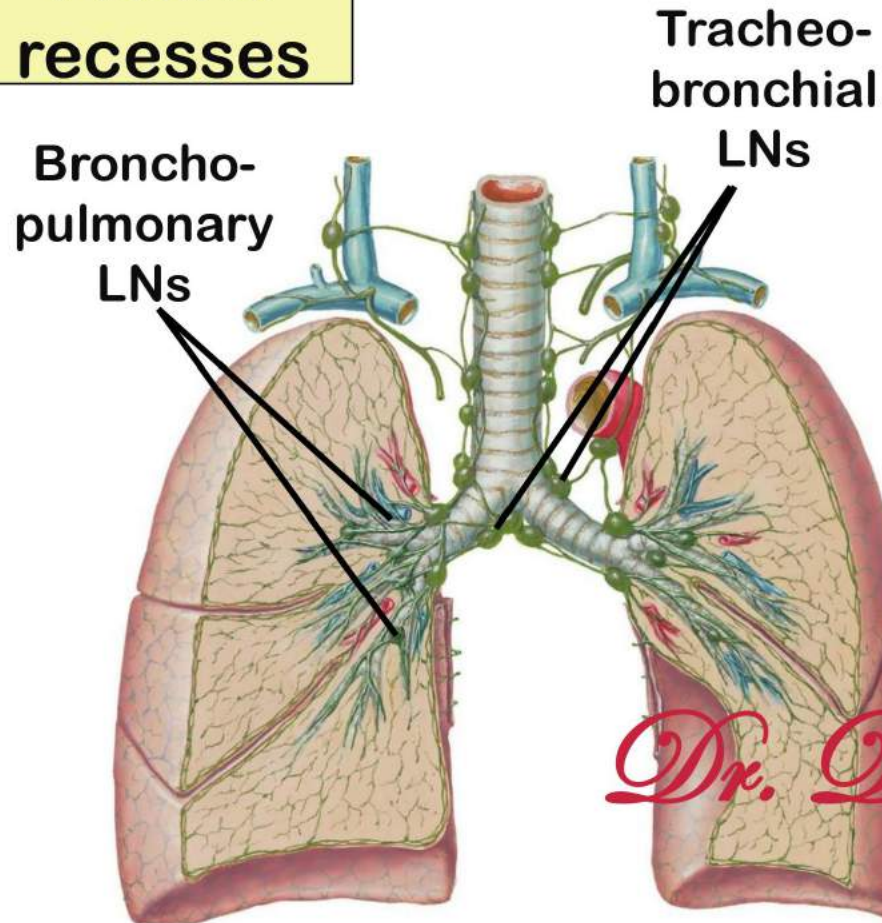
Parietal pleura

Supplied by the same vessels which supply the thoracic wall (internal thoracic and intercostal arteries)

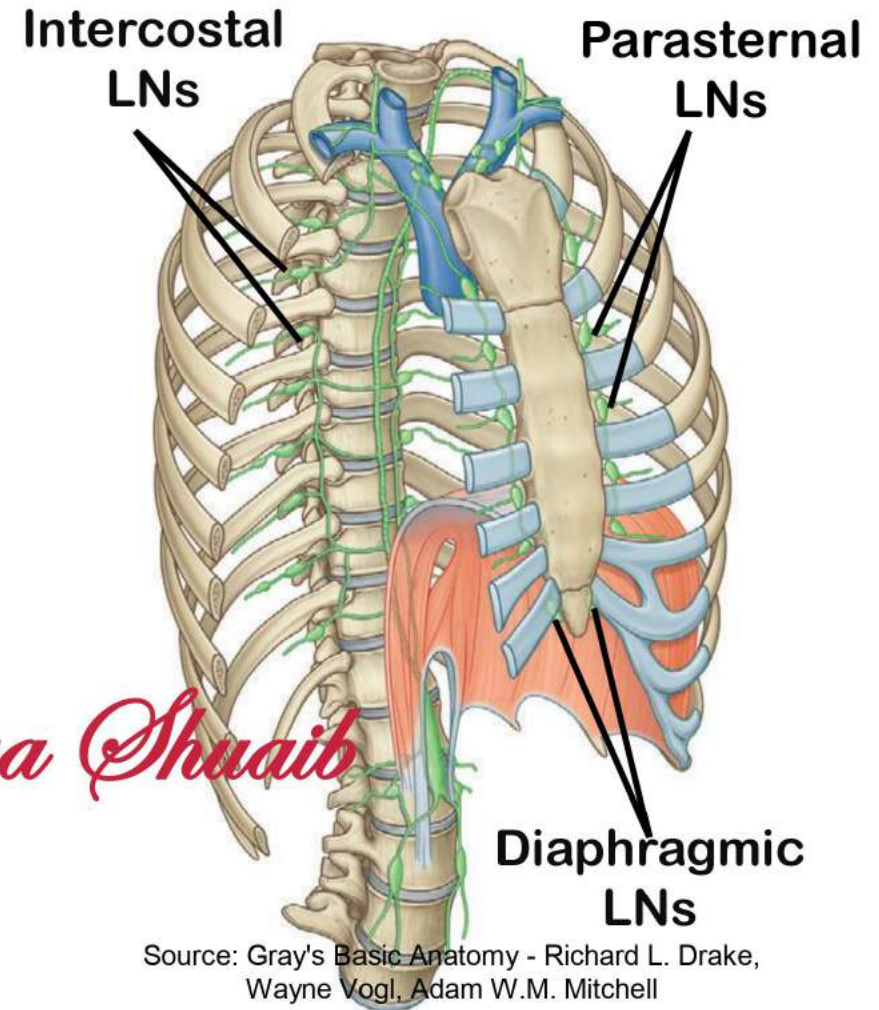


Lymphatic drainage of pleura

Pleural recesses



Source: Atlas of Human Anatomy, Sixth Edition- Frank H. Netter, M.D



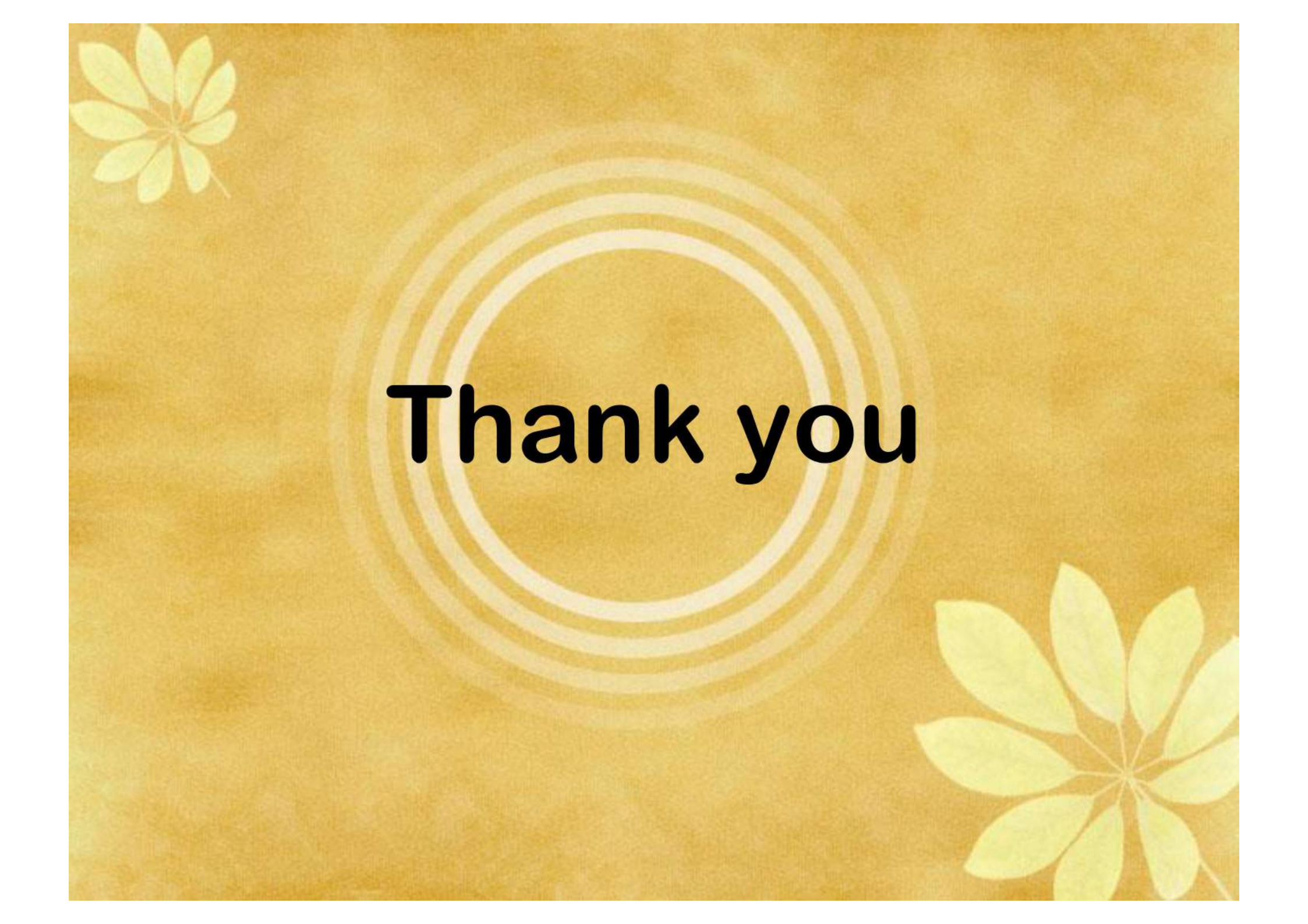
Source: Gray's Basic Anatomy - Richard L. Drake, Wayne Vogl, Adam W.M. Mitchell

Visceral pleura

Is drained into the lymph nodes which drain the lung i.e. the bronchopulmonary and tracheobronchial nodes.

Parietal pleura

Is drained into the lymph nodes which drain the thoracic wall, mediastinum and diaphragm i.e. parasternal, intercostal, posterior mediastinal and diaphragmatic nodes



Thank you