AZYGOS SYSTEM OF VEINS, PLEURA

SUPRAPLEURAL MEMBRANE (SE)

it is also known as **Sibson's fascia**

dome shaped **musculo fascial expansion** which covers the apices of lungs.

Muscular part – derived from scalenus minimus

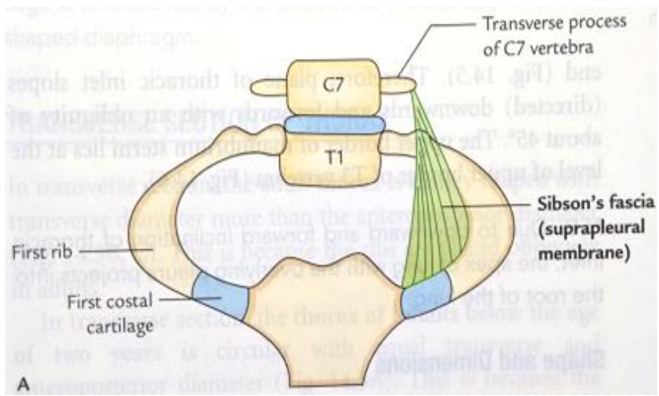
Fascial part – derived from endothoracic fascia

Attachments :

Behind – tip of transverse process of 7th cervical vertebra

Front – inner border of first rib

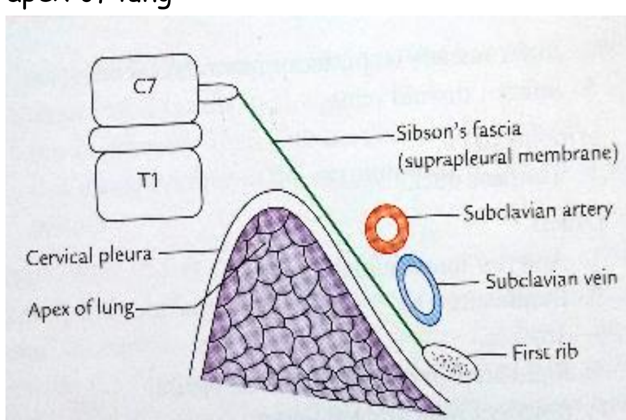
Medially – continuous with pretracheal fascia



Relations:

Superiorly- subclavian vessels

Inferiorly – cervical pleura, apex of lung



Functions:

Protects the underlying cervical pleura, apex of lung

Resists intrathoracic pressure during respiration.

PLEURA (SE)

It is a **closed serous sac** into which corresponding lung invaginates from medial side & reduces it into potential space.

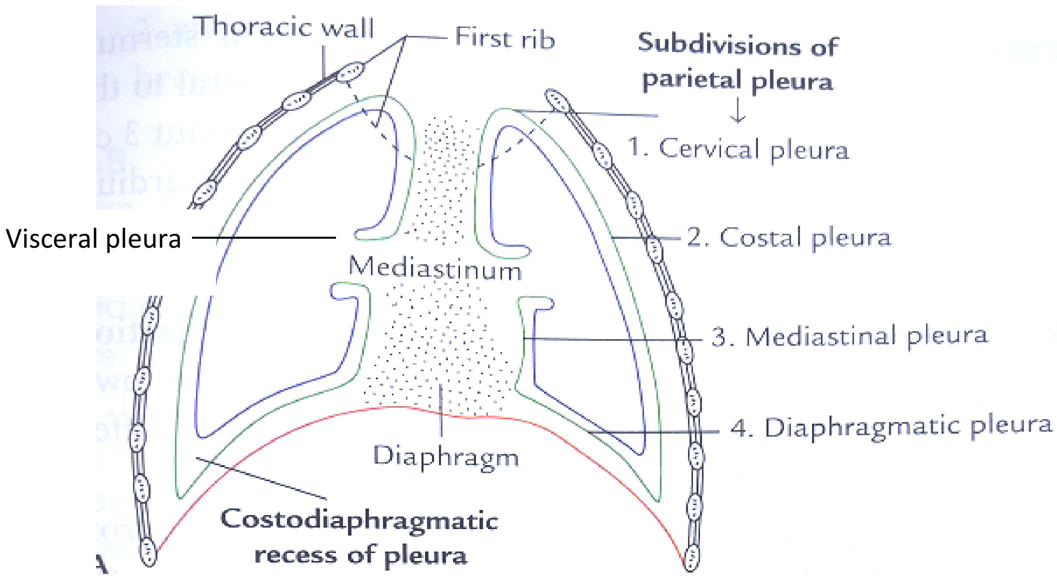
Layers of pleura:

Pleura consists of 2 layers

Inner layer -**Visceral pleura / pulmonary pleura**

Outer layer - **Parietal pleura**

The two layers are continuous with each other around hilum of lung. The space between them is called pleural cavity



Visceral pleura

completely cover surfaces, fissures of lung except hilum and along the attachment of pulmonary ligament

firmly adherent to lung, cannot be separated from it

Parietal pleura:

is thicker than visceral pleura and is subdivided into

Costal pleura

Diaphragmatic pleura

Mediastinal pleura

Cervical pleura

Costal pleura:

- lines inner surface of thoracic wall (ribs, costal cartilages, intercostal spaces)
- it is separated from these structures by endothoracic fascia

Diaphragmatic pleura:

- covers superior surface of diaphragm
- laterally – it is continuous with costal pleura
- medially – it is continuous with mediastinal pleura

Mediastinal pleura:

forms the lateral boundary of mediatinum

it is reflected over the root of lung and becomes continuous with visceral pleura around hilum

Cervical pleura:

extends from inner border of 1st rib, covers the apex of lung, medially it is continuous with mediastinal pleura

Nerve supply:

Visceral pleura-

Is supplied by autonomic nerves and is insensitive to pain

Parietal pleura-

Is supplied by Intercostal nerves, Phrenic nerves and is sensitive to pain

Applied anatomy:

Inflammation of parietal pleura is known as Pleurisy

Collection of fluid in pleural cavity – pleural effusion

Collection of air in pleural cavity – pneumothorax

PARIETAL PLEURA (SE)

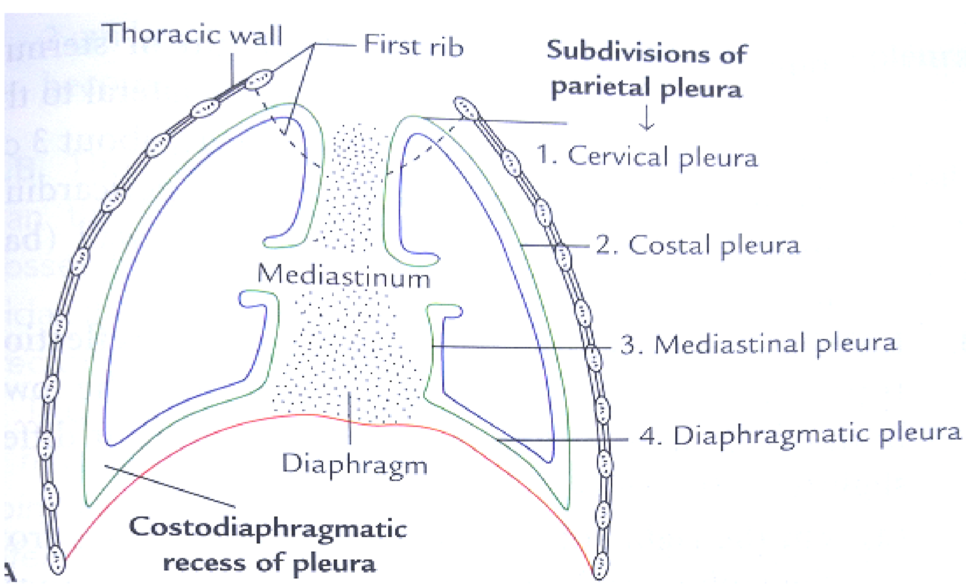
It is the serous membrane which lines thoracic wall, diaphragm, mediastinum, apex of lung. It is thicker than visceral pleura. Based on the structure it lines it is subdivided into

Costal pleura

Diaphragmatic pleura

Mediastinal pleura

Cervical pleura



Costal pleura:

lines inner surface of thoracic wall(ribs, costal cartilages, intercostals spaces)

it is separated from these structures by endothoracic fascia
Diaphragmatic pleura:
covers superior surface of diaphragm
laterally – it is continuous with costal pleura
medially – it is continuous with mediastinal pleura
Mediastinal pleura:
forms the lateral boundary of mediatinum
it is reflected over the root of lung and becomes continuous with visceral pleura around hilum
Cervical pleura:
-extends from inner border of 1st rib, covers the apex of lung, medially it is continuous with mediastinal pleura
- the summit of cervical pleura is about 2.5 cm above medial end of clavicle, 5cm above 1st costal
Cartilage Development:
fromsomatopleuric layer of lateral plate mesoderm
Nerve supply:
Intercostal nerves – supply costal pleura, lateral part of diaphragmatic pleura
Phrenic nerves – supply mediastinal pleura, medial part of diaphragmatic pleura
Parietal pleura is **pain sensitive**
Blood supply:
Arterial supply - Intercostal , internal thoracic, musculophrenic arteries
Venous drainage -azygos, internal thoracic veins
Applied anatomy:
Inflammation of parietal pleura is known as Pleurisy, which may be dry or associated with pleural effusion
Irritation of costal & peripheral part of diaphragmatic pleura- referred pain in thoracic or abdominal wall
Irritation of mediastinal & medial part of diaphragmatic pleura – referred pain in tip of shoulder region

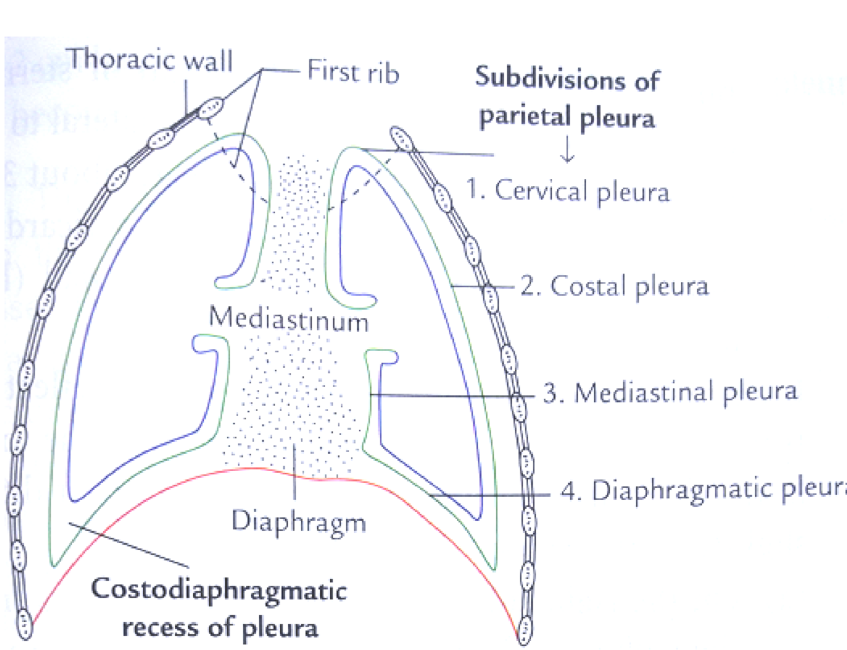
PLEURAL RECESSES – LOCATION, EVENTS OCCURING, CLINICAL IMPORTANCE (SE)

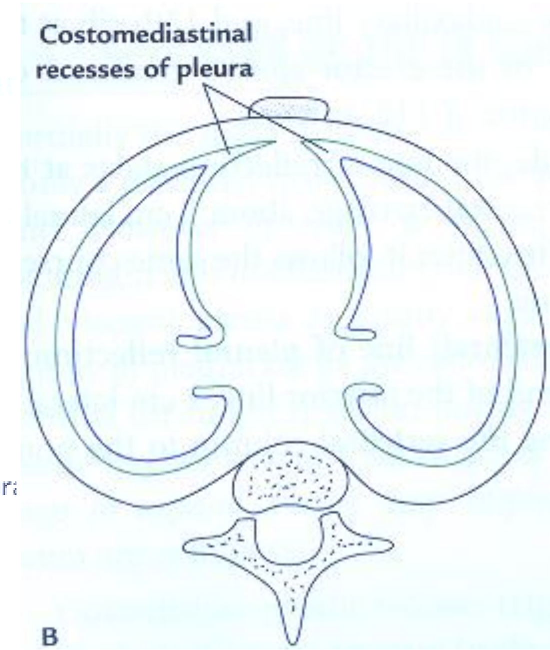
The space between parietal & visceral pleura is only a potential space which is filled with thin film of serous fluid.

But in areas of pleural reflection on to diaphragm & mediastinum, space between parietal & visceral pleura is expanded. These expanded region of pleural cavity are called pleural recesses

Pleural recesses acts as reserve spaces for lungs to expand during deep inspiration.

There are 2 pleural recesses on each side
Costodiaphragmatic recess/ Costophrenic recess
Costomediastinal recess





Costodiaphragmatic recess:

Location :

-lies inferiorly between costal & diaphragmatic pleura

-Here costal & diaphragmatic pleura are in apposition in quiet inspiration separated by capillary layer of fluid

-vertically it measures about 5 cm extending from 8^{th} to 10^{th} ribs in midaxillary line

Events occurring:

-inferior border of lung will occupy costodiaphragmatic recess during forced inspiration

Clinical importance:

-it is the most dependent part of pleural sac.

-In case of pleural effusion ,fluid collects first in the costodiaphragmatic recess.

Costomediastinal recess:

Location :

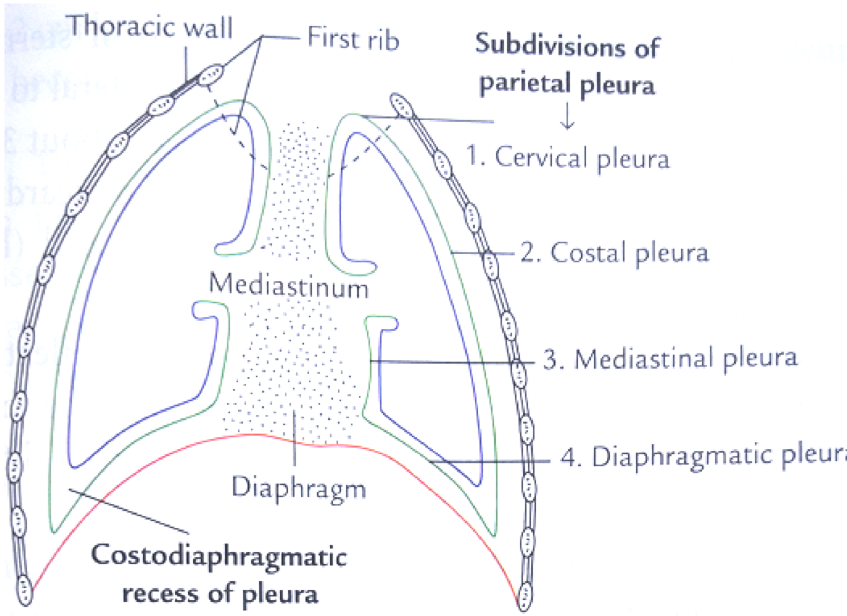
-lies anteriorly behind sternum & costal cartilages, between costal & mediastinal pleura

-is large on the left side due to presence of cardiac notch

Events occurring:

-anterior border of lung will occupy costomediastinal recess even during quiet inspiration

COSTODIAPHRAGMATIC RECESS (SE)



Location :

-lies inferiorly between costal & diaphragmatic pleura

-Here costal & diaphragmatic pleura are in apposition in quiet inspiration separated by capillary layer of Fluid

-vertically it measures about 5 cm extending from 8^{th} to 10^{th} ribs in midaxillary line

Function:

-acts as **reserve spaces for lungs to expand** during deep inspiration

Relations of recess below diaphragm:

Right side –

right lobe of liver, upper part of posterior surface of right kidney

Left side –

spleen, fundus of stomach, upper part of posterior surface of left kidney

Clinical importance:

Pleural effusion:

in case of pleural effusion, -it is the most dependent part of pleural sac, so fluid collects first in the costodiaphragmatic recess.

Pleural tap/ paracentesis:

-aspiration of fluid from pleural cavity

-is done in the midaxillary line at 1/ more intercostals space below fluid level (but not below 9^{th} intercostal space).

-aspiration needle is passed through lower part of intercostal space to avoid injury to neurovascular bundle

SIBSON'S FASCIA (SA)

-dome shaped **musculo fascial expansion** which protects apex of lung

-Muscular part – derived from scalenusminimus

-Fascial part – derived from endothoracic fascia

Attachments:

Behind – tip of transverse process of 7^{th} cervical vertebra

Front – inner border of first rib

Medially – continuous with pretracheal fascia

Functions:

Protects the underlying cervical pleura, apex of lung

SUPRAPLEURAL MEMBRANE – ATTACHMENTS (SA)

dome shaped **musculo fascial expansion** which protects apex of lung

Attachments:

Behind – tip of transverse process of 7^{th} cervical vertebra

Front – inner border of first rib

Medially – continuous with pretracheal fascia

PULMONARY LIGAMENT AND ITS FUNCTION (SA)

The parietal pleura surrounding the root of lung extends downwards beyond the root, forms a fold called pulmonary ligament.

Contents:

Loose areolar tissue

Few lymphatics

Accessory bronchial artery

Function:

Acts as dead space into which inferior pulmonary vein expands during increased venous return

PLEURAL RECESS AND ITS ROLE (SA)

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But in areas of pleural reflection on to diaphragm & mediastinum, space between parietal & visceral pleura is expanded. These expanded region of pleural cavity are called pleural recesses.

There are 2 pleural recesses on each side

Costodiaphragmatic recess/ Costophrenic recess

Costomediastinal recess

Function:

acts as reserve spaces for lungs to expand during deep inspiration

PLEURAL RECESSESON RIGHT SIDE (SA)

There are 2 pleural recesses on right side

Right Costodiaphragmatic recess/ Costophrenic recess

RightCostomediastinal recess

both acts as reserve spaces for lungs to expand during deep inspiration

Right Costodiaphragmatic recess:

Location :

lies inferiorly between right side costal & diaphragmatic pleura

Clinical importance:

it is the most dependent part of pleural sac.

In case of pleural effusion , fluid collects first in the costodiaphragmatic recess.

Pleural tapping shouldnot be done below 9^{th} intercostal space to avoid damage to liver.

Right costomediastinal recess:

Location :

lies anteriorly behind sternum & costal cartilages, between right side costal & mediastinal pleura