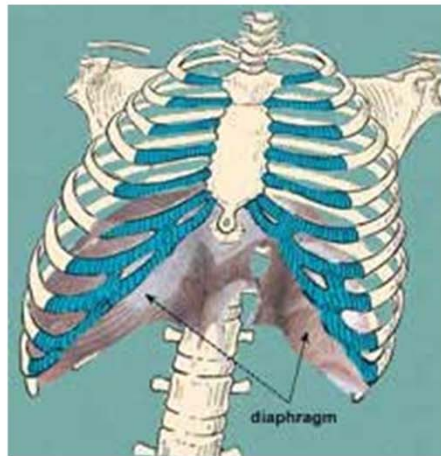


DIAPHRAGM

- Thin fibro muscular partition between abdomen and thorax
- Important muscle of respiration

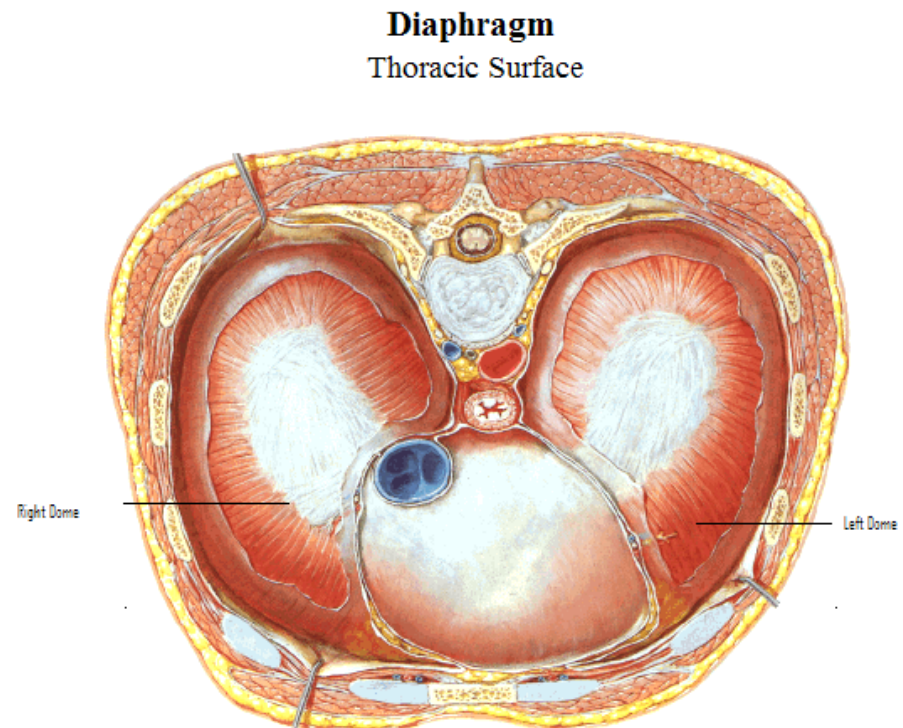
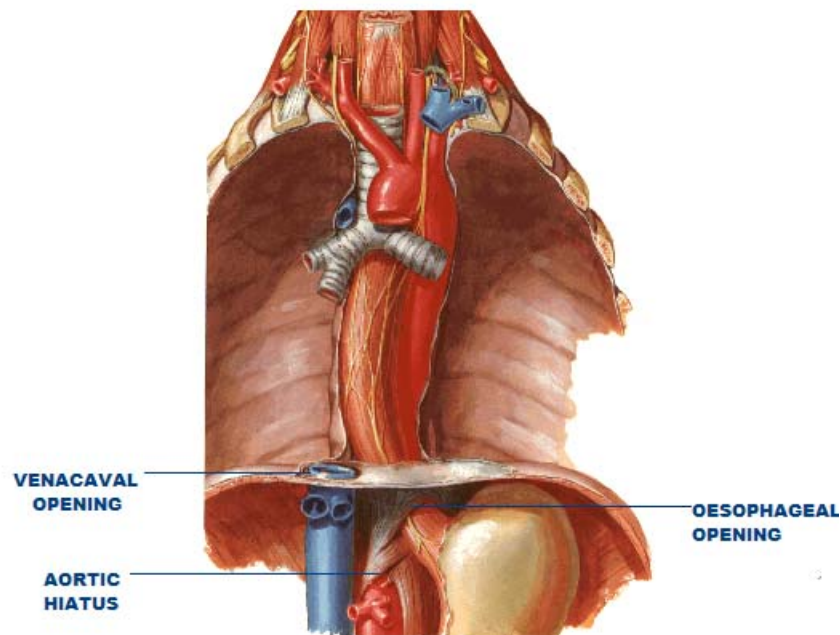


- Extent

| | Normal Breathing | Full Expiration |
|-------|-----------------------|---------------------|
| Right | At level of nipple | 4 th Rib |
| Left | One rib lower | 5 th rib |

FEATURES

- Has fibrous central tendon
- Depressed in centre
- Raised on right and left side as domes or cupola



ATTACHMENT

Origin :

- Sternal part – Inner surface of xiphoid
- Costal part – Lower 6 costal cartilages
- Vertebral – By

crura

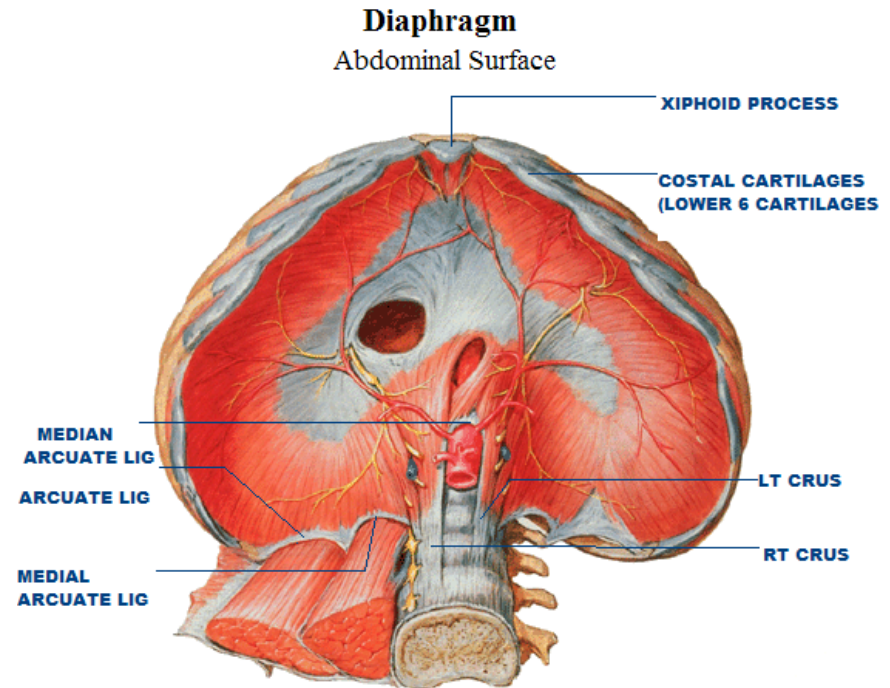
- right
- left

Arcuate ligame

- Medial
- Lateral
- Median

Insertion:

- Central Tendon



OPENINGS IN DIAPHRAGM

- **Venacaval** – 8th thoracic vertebra

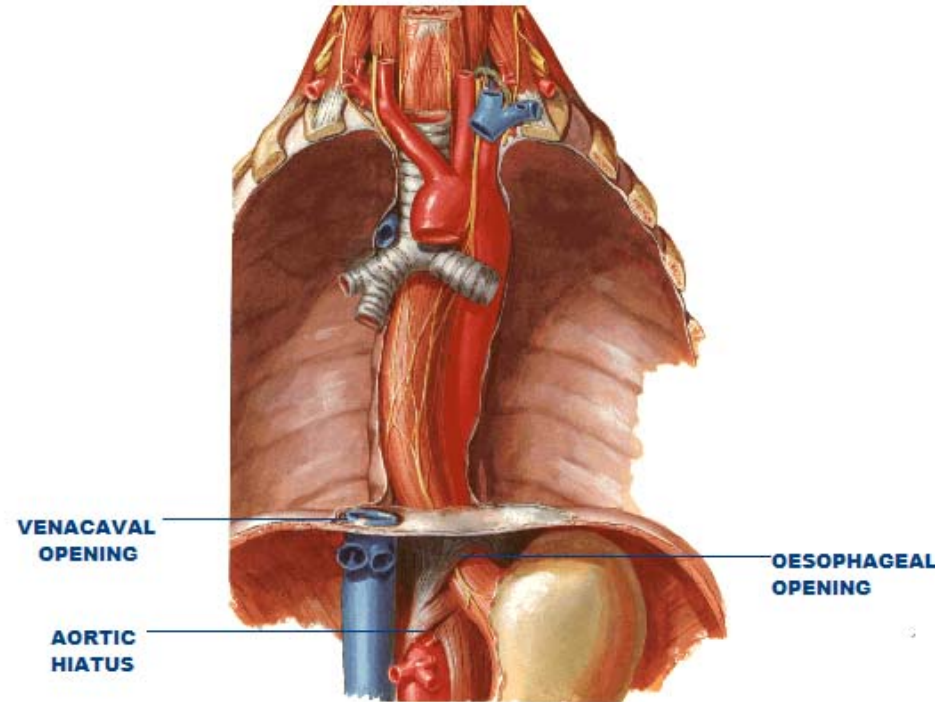
- inf venacava ,
- right phrenic nerve

- **Oesophageal** – 10th thoracic vertebra

- oesophagus,
- right & left vagal trunks,
- oesophageal branches of Lt gastric vs
- lymphatics

- **Aortic (Aortic hiatus)** – 12th thoracic vertebra

- abdominal aorta,
- thoracic duct,
- azygos vein



OTHER OPENINGS

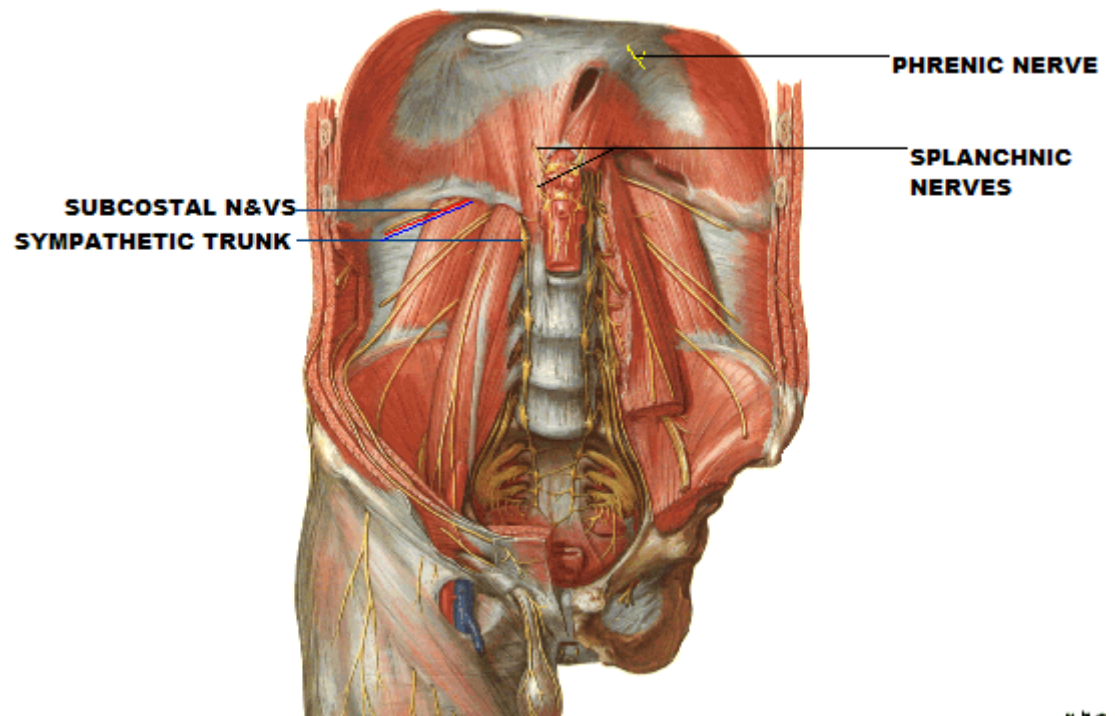
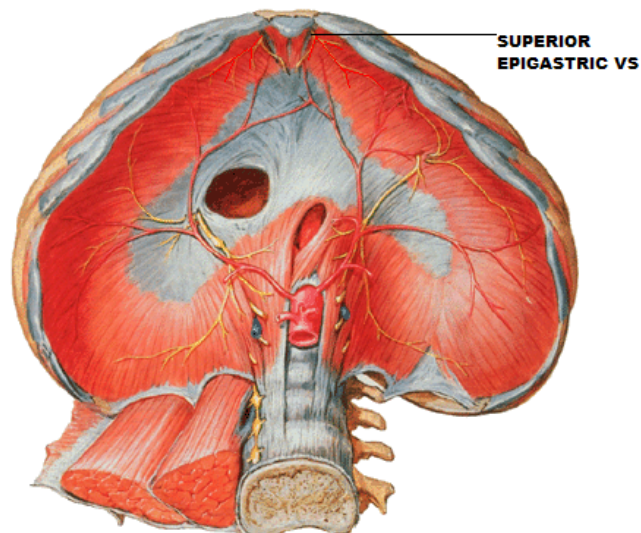
Superior epigastric vessels – sternal and costal origin

Subcostal nerve & vessel – posterior to lateral arcuate lig

Sympathetic trunk – posterior to medial arcuate lig

Splanchnic nerves – pierce crura

Left phrenic n – pierce left dome



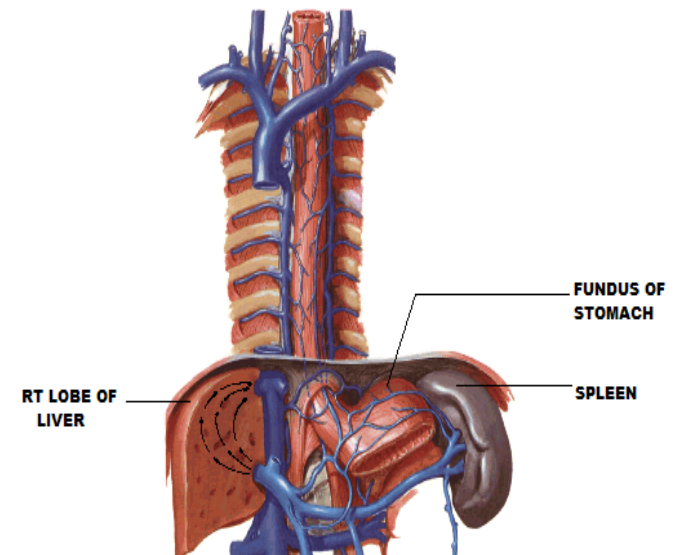
SUPERIOR

- Lung & pleura on dome
- Pericardium on central tendon

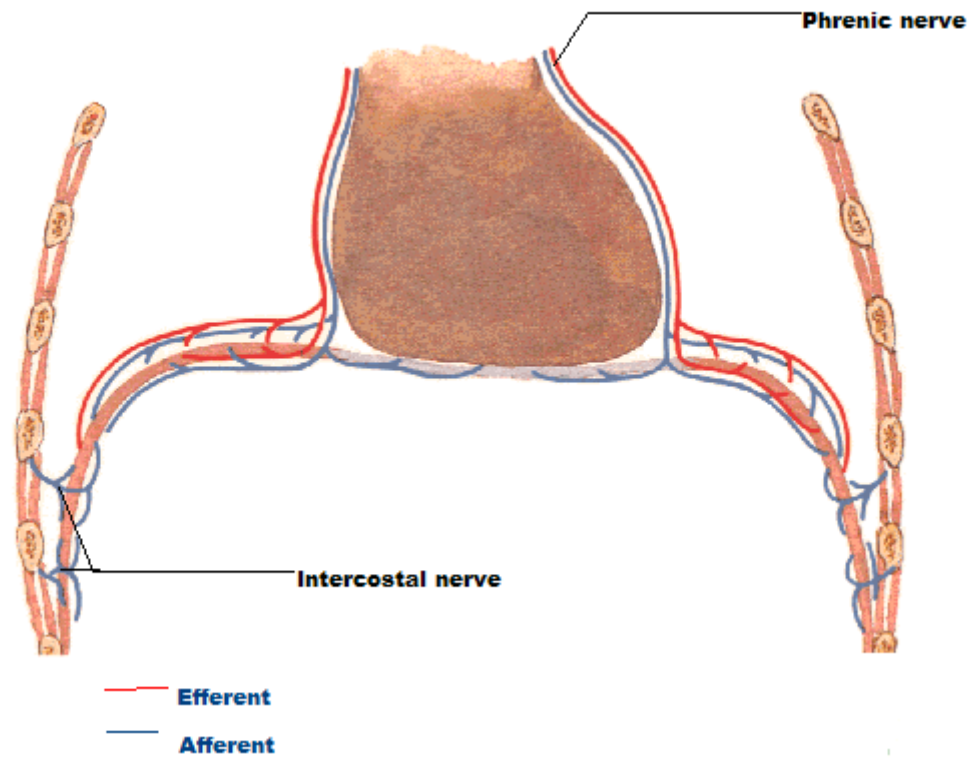
INFERIOR-lined by peritoneum

- Right – right lobe of liver,
right kidney,
right suprarenal
- Left- fundus of stomach,
spleen
left kidney,
left suprarenal

RELATIONS



Nerve supply



Blood supply

- Pericardiophrenic
- Musculophrenic
- Inf phrenic

ACTION

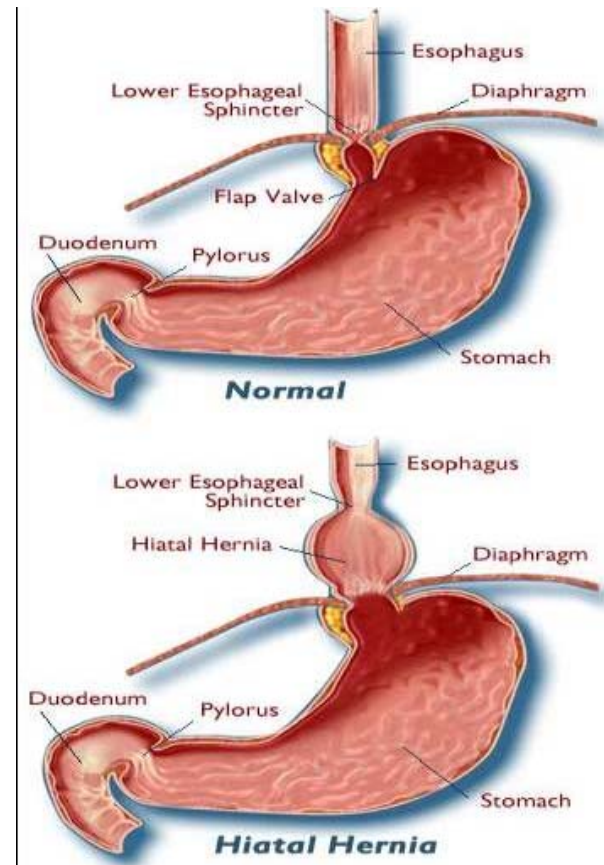
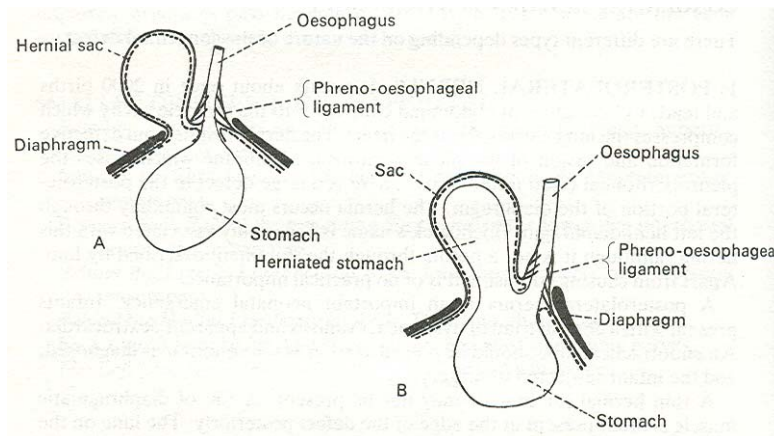
- Increases vertical diameter of thoracic cavity

FUNCTIONS

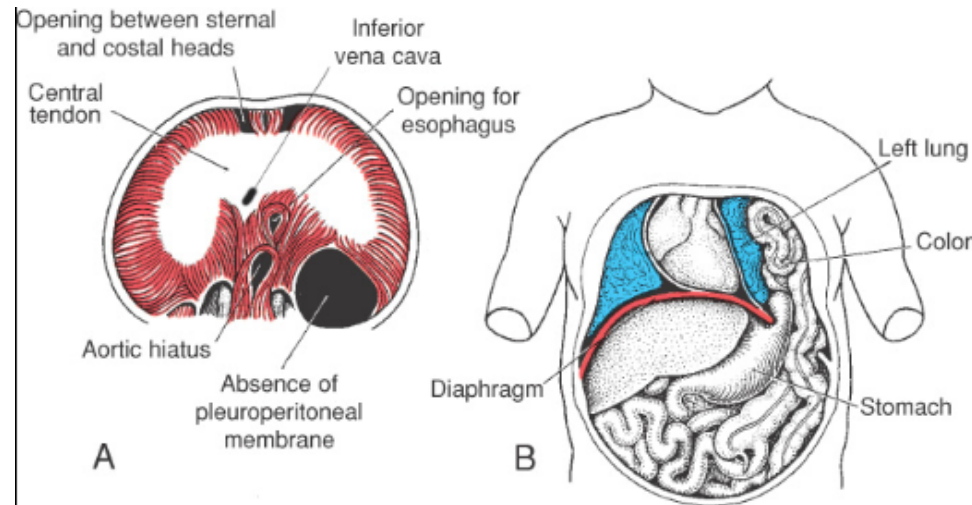
- Muscle of inspiration
- Muscle of abdominal straining
- Thoracoabdominal pump – forcing blood from IVC to rt. Atrium
- Weight- lifting muscle

CLINICAL APPLICATIONS

1. Diaphragmatic hernias
 - aquired



- **Congenital**
- Due to defect in development
- Bochdalek's hernia – lumbocostal gap
- Reterosternal hernia-through foamen of Morgagni



2. Paralysis of diaphragm

3. Hiccups

MECHANISM OF RESPIRATION

Increase in

- vertical diameter by diaphragmatic contraction
- Anteroposterior diameter by pump handle movement of sternum
- Transverse diameter by bucket handle movements of lower ribs

