



CVS....

Lecture (8)

Blood vessels I – Arterial system

Arteries in the thorax, abdomen and pelvis regions

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ILOs

1. To describe the course, relation and branches of the descending thoracic aorta.
2. To describe the course, relations and branches of the descending abdominal aorta.
3. To describe the course, relations and branches of the common iliac artery.
4. To describe the course, relations and branches of the internal iliac artery.
5. To describe the course, relations and branches of the external iliac artery.

Descending Thoracic Aorta.

Beginning:

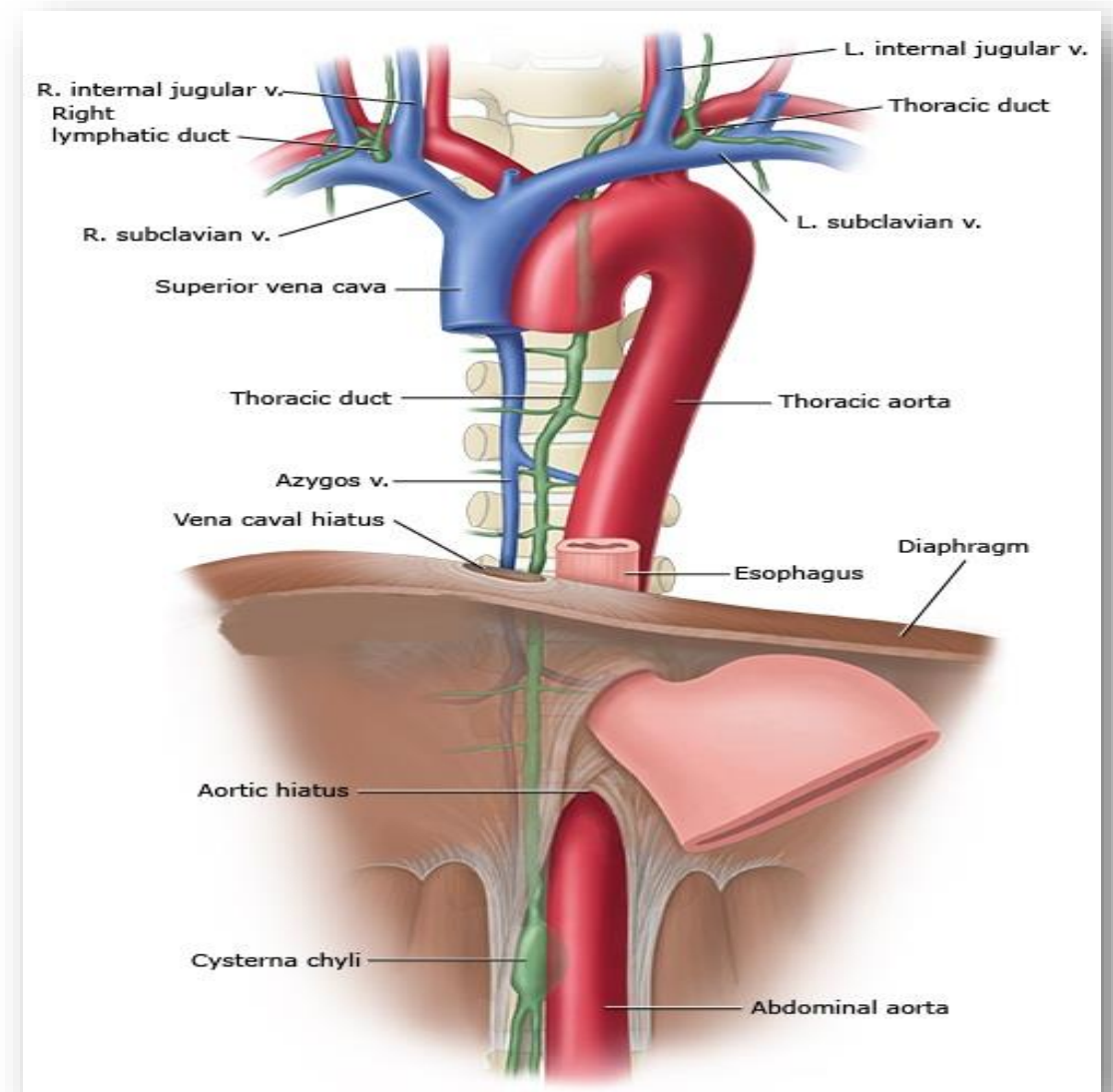
- It begins as a continuation of the arch of the aorta.

Course:

- It runs downward in the posterior mediastinum, inclining medially as it descends.

End:

- It passes through diaphragmatic aortic aperture in the midline to be continuous with the abdominal aorta, at the level of the lower border of 12th thoracic vertebra.



Relations of the descending thoracic aorta:

Posteriorly:

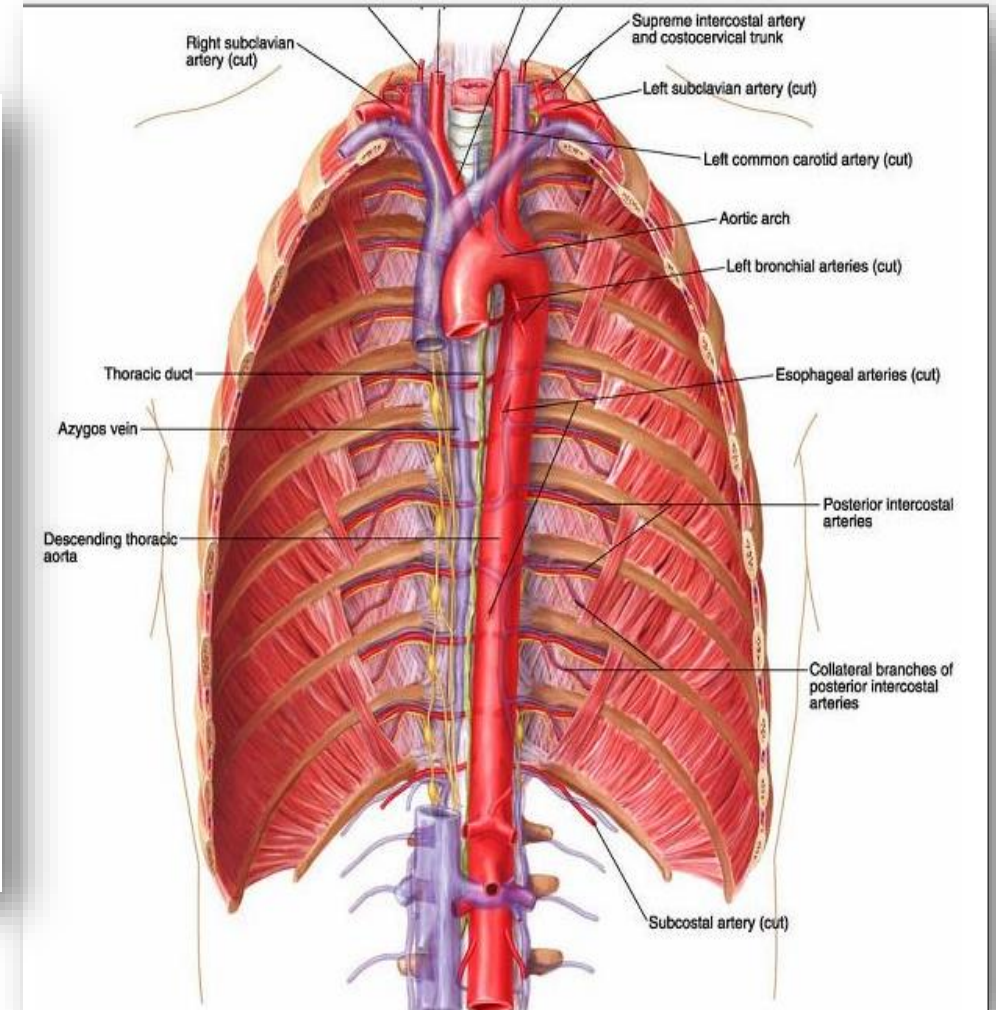
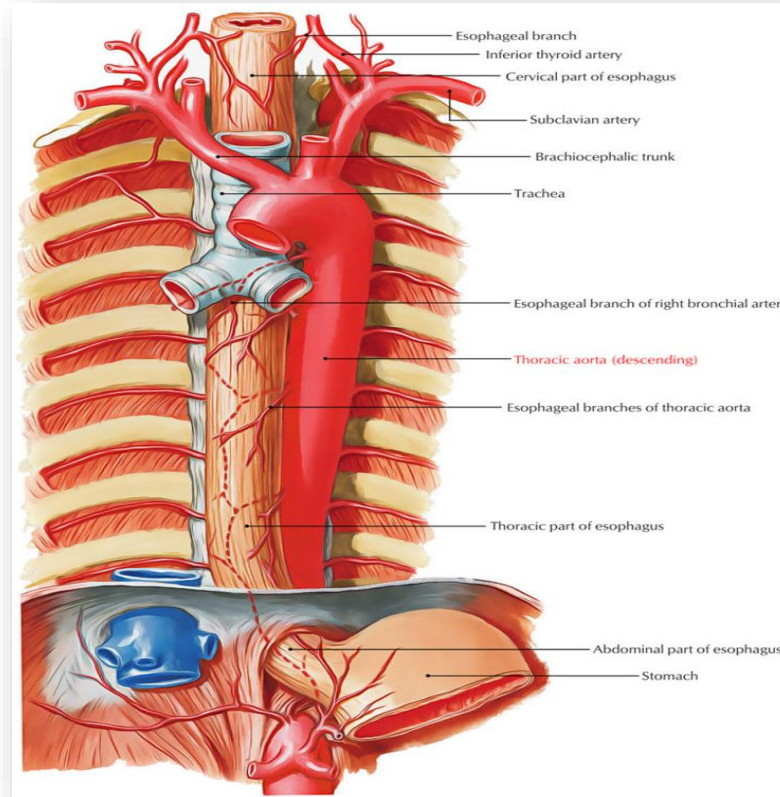
- Thoracic vertebrae.

Right lateral relations:

- Azygos vein.
- Oesophagus.

Left lateral relations:

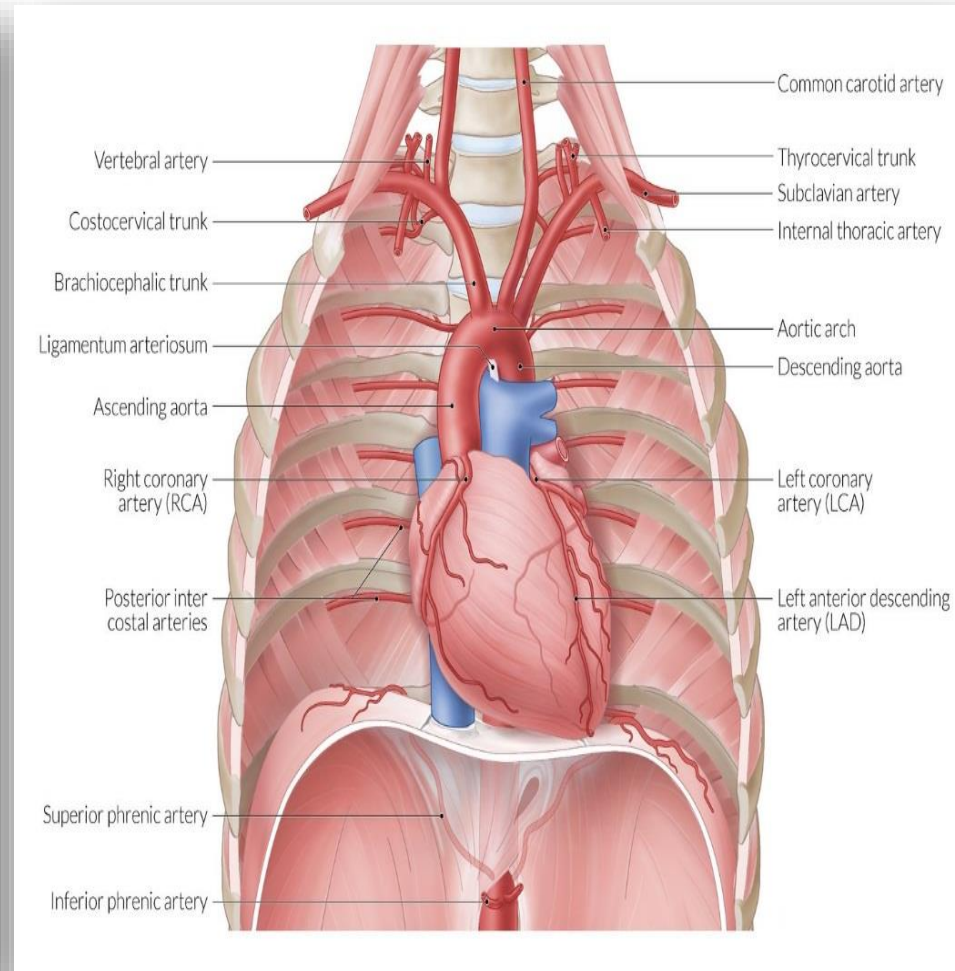
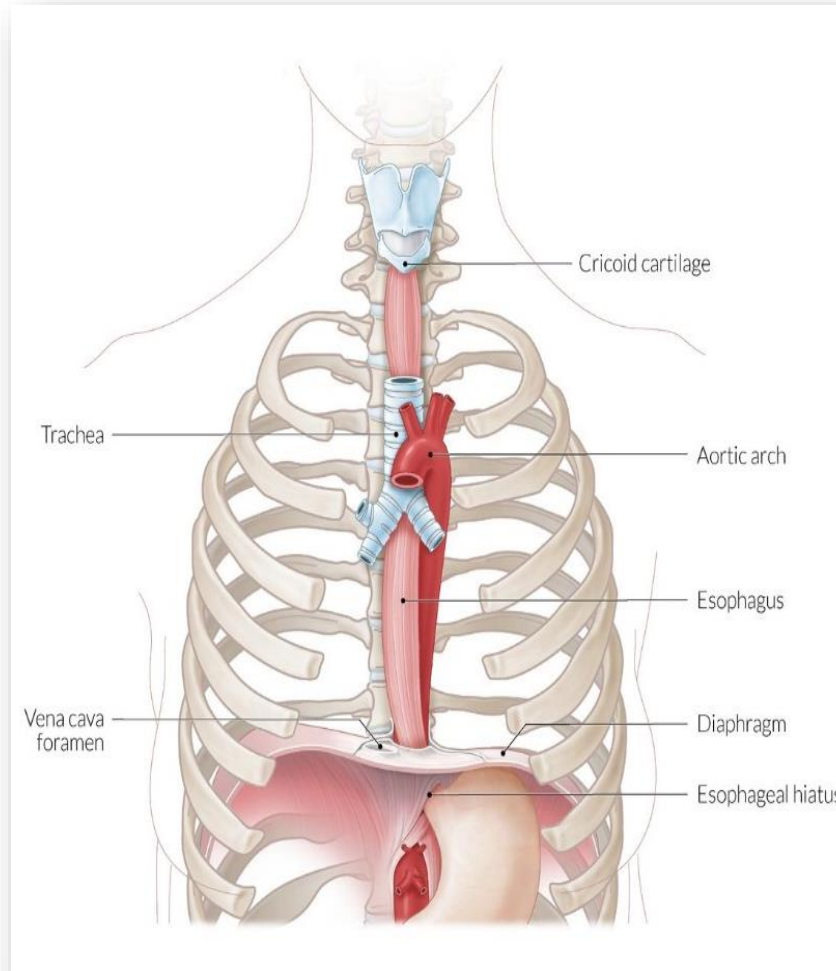
- Left pleura and lung.



Anterior relation to the descending thoracic aorta:

from above downward;

- Root of the left lung.
- Pericardium separating it from the left atrium.
- Oesophagus.
- Diaphragm.

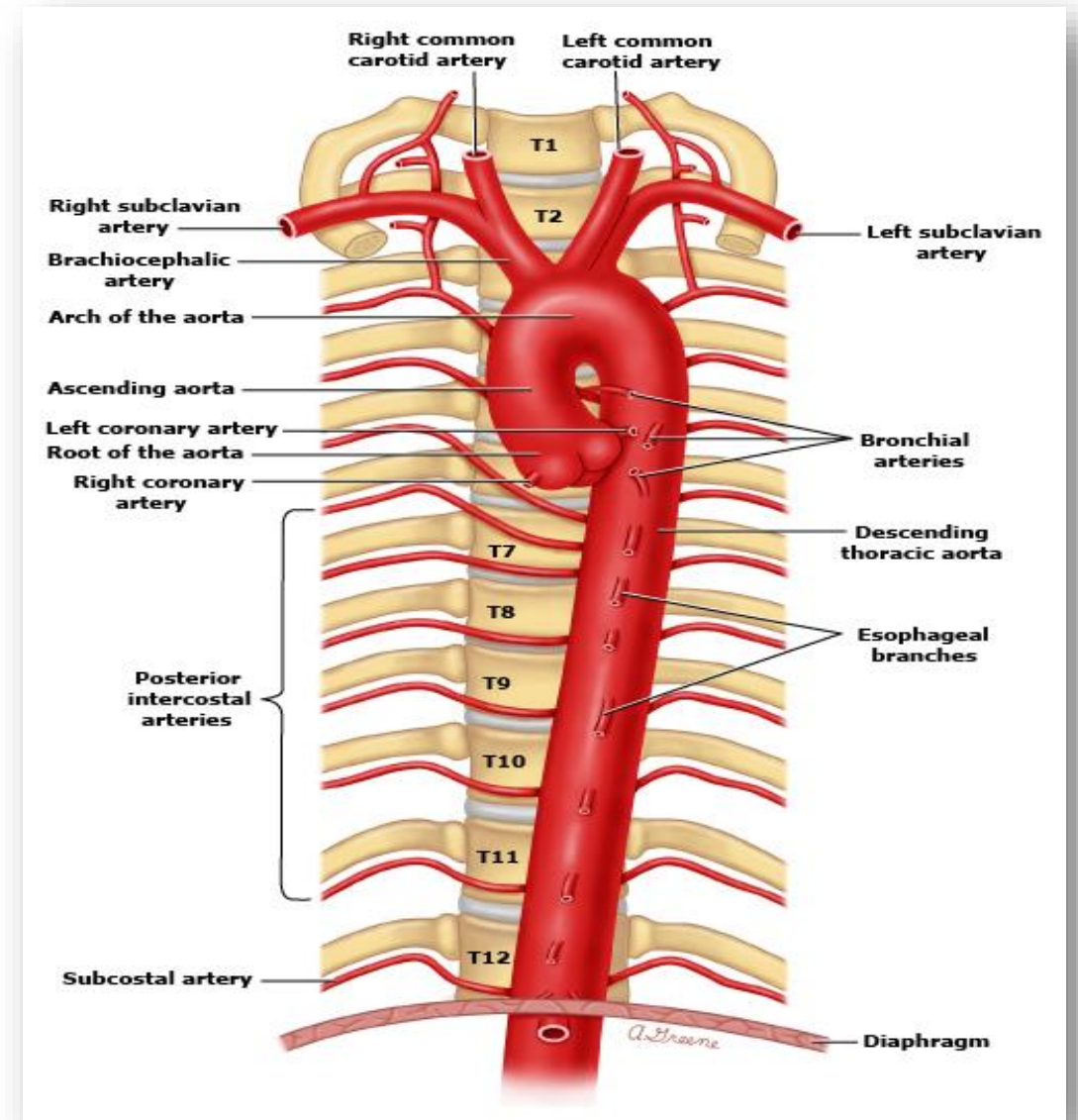


Branches of the descending thoracic aorta:

- **Parietal branches** supply the thoracic wall.
- **Visceral branches** supply the pericardium, bronchi and oesophagus.

1-Posterior intercostal arteries:

- There are **nine** pairs.
- They are **distributed to** the lower nine intercostal spaces.
- **Each artery** anastomosing with the anterior intercostal artery.
- **They supply** the chest wall, parietal pleura.



2- Subcostal arteries:

- They are the last paired branches of the thoracic aorta.
- They run along the lower border of the 12th rib & enter the abdominal wall.

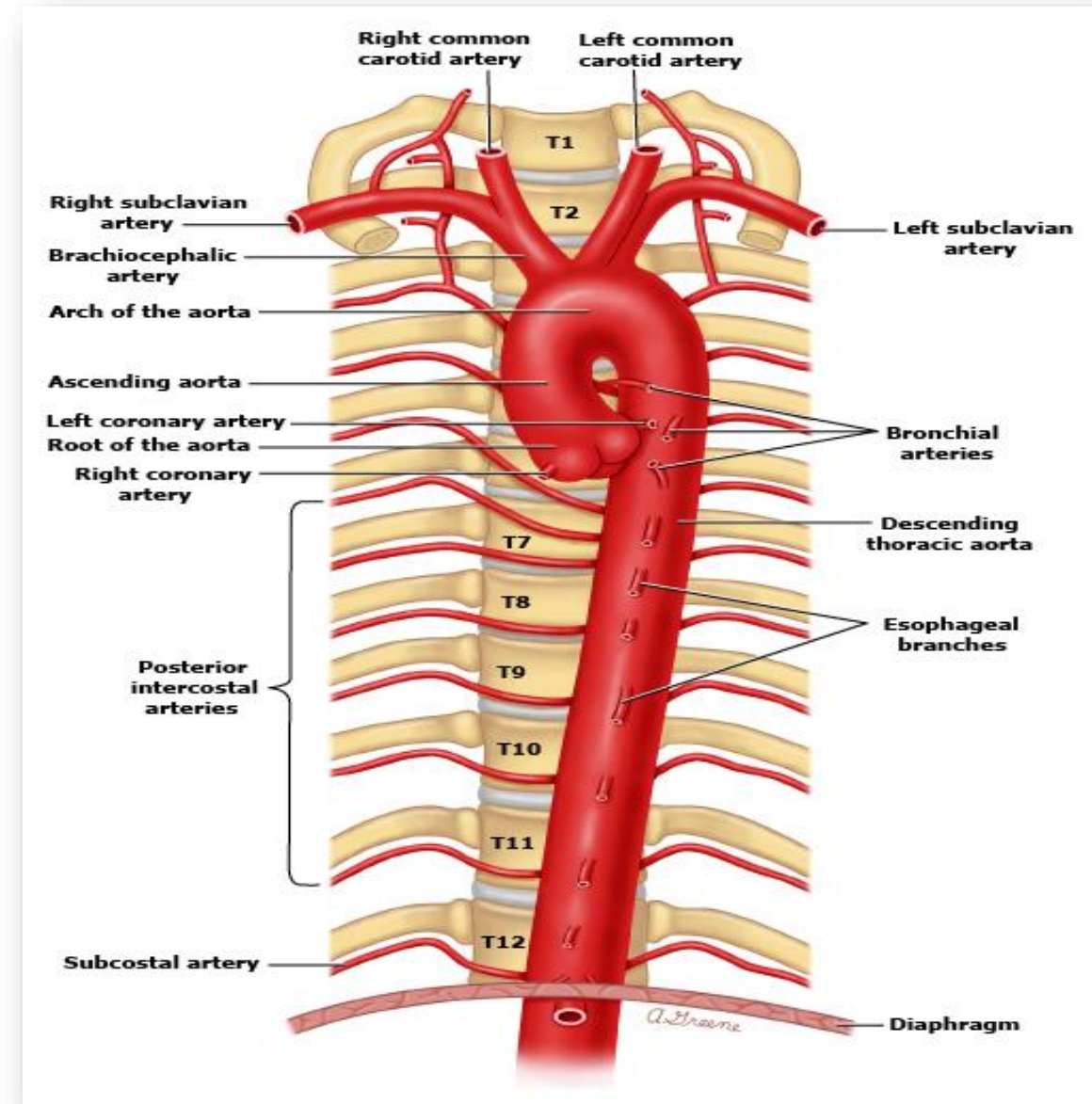
3-Superior phrenic branches:

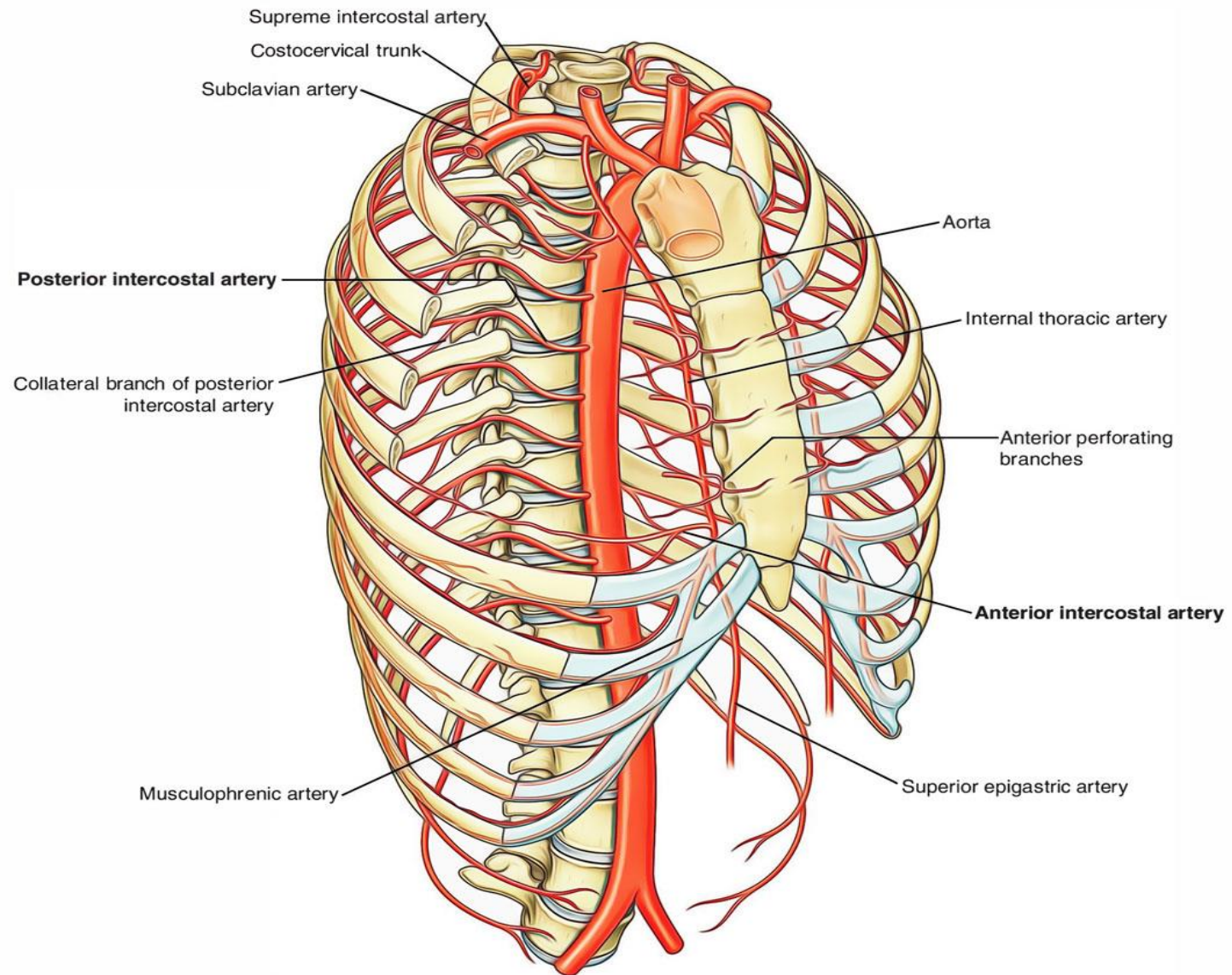
- Supply the superior diaphragmatic surface.

4-Pericardial, esophageal, and bronchial arteries.

5- Mediastinal branches:

- Numerous small vessels supply mediastinal lymph nodes...





Descending Abdominal Aorta

Beginnin:

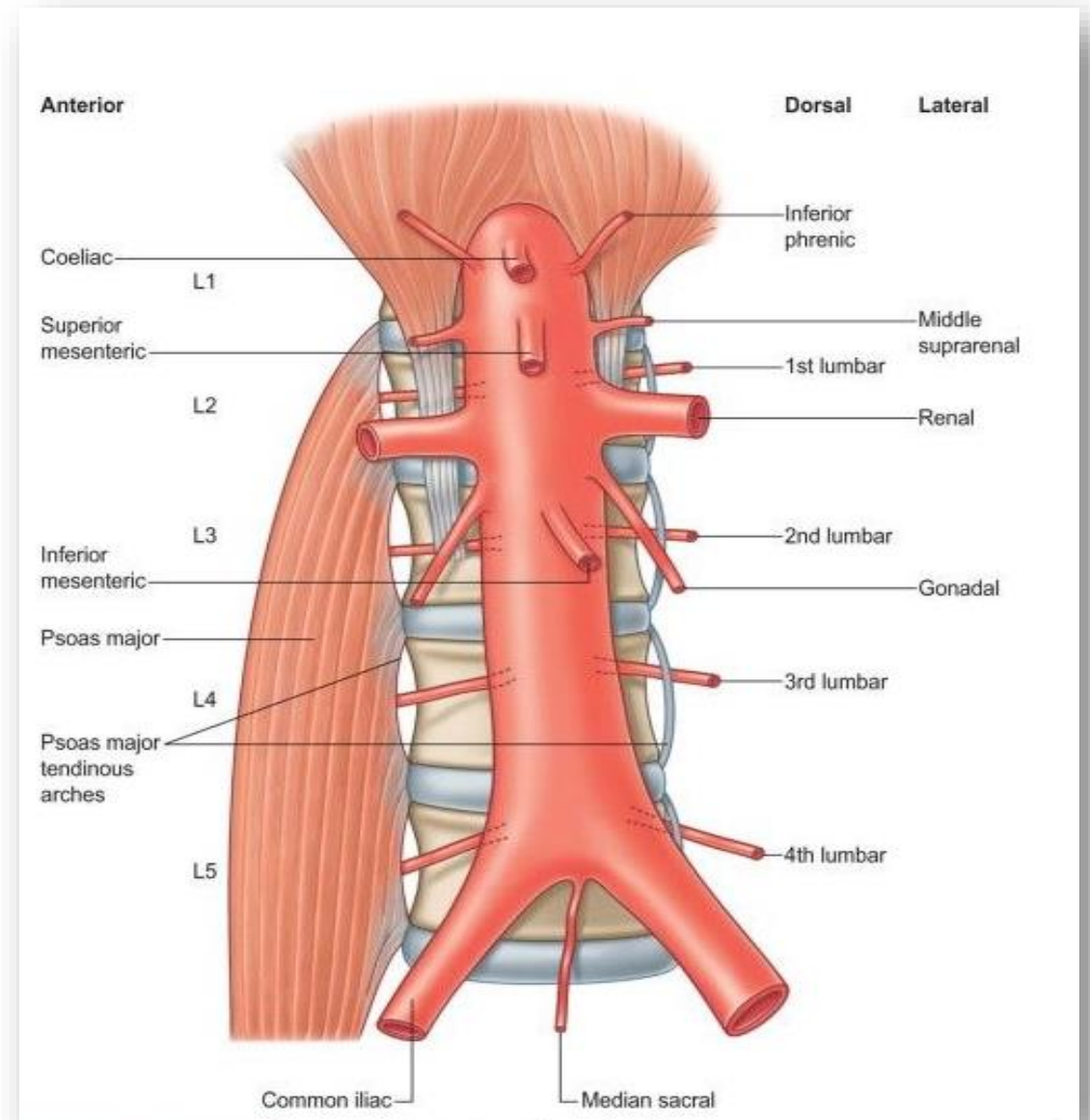
- It begins at aortic aperture of the diaphragm, anterior to the lower border of the **12th thoracic vertebra** at the midline.

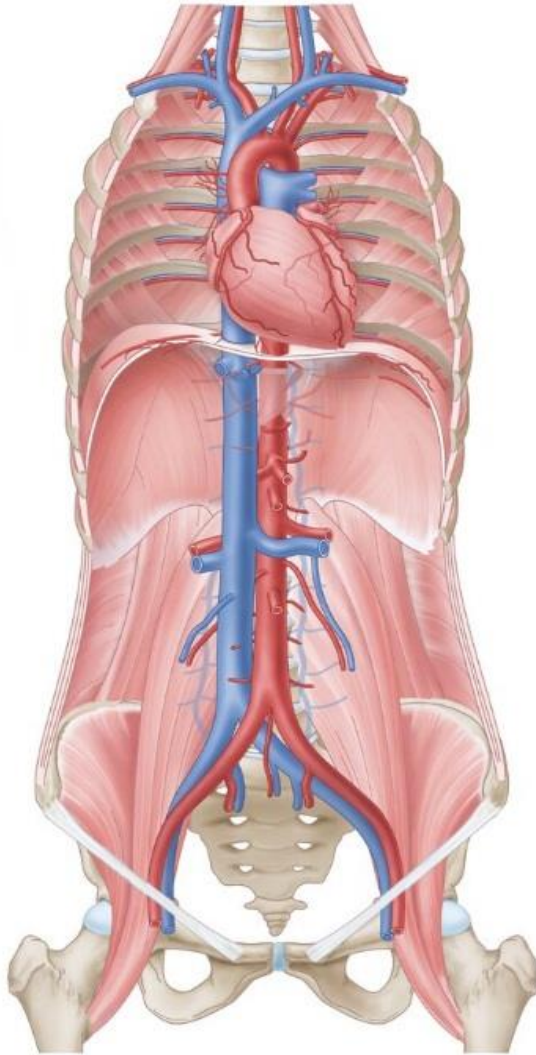
Course:

- It descends anterior to the lumbar vertebrae.

End:

- It ends in front of the lower border of the **4th lumbar vertebra** by dividing into two common iliac arteries.





- | | |
|--|---|
| Right common carotid artery | Left common carotid artery |
| Right subclavian artery | Left subclavian artery |
| Brachiocephalic artery | Aortic arch |
| Ascending aorta | Thoracic aorta |
| Inferior phrenic arteries | Celiac trunk |
| Right renal artery | Superior mesenteric artery |
| Right ovarian artery/
testicular artery | Left renal artery |
| Right common iliac artery | Inferior mesenteric artery |
| Right internal iliac artery | Left ovarian artery/
testicular artery |
| Right external iliac artery | Lumbar arteries |
| | Left common iliac artery |
| | Left internal iliac artery |
| | Left external iliac artery |
| | Median sacral artery |

Relations of the descending abdominal aorta:

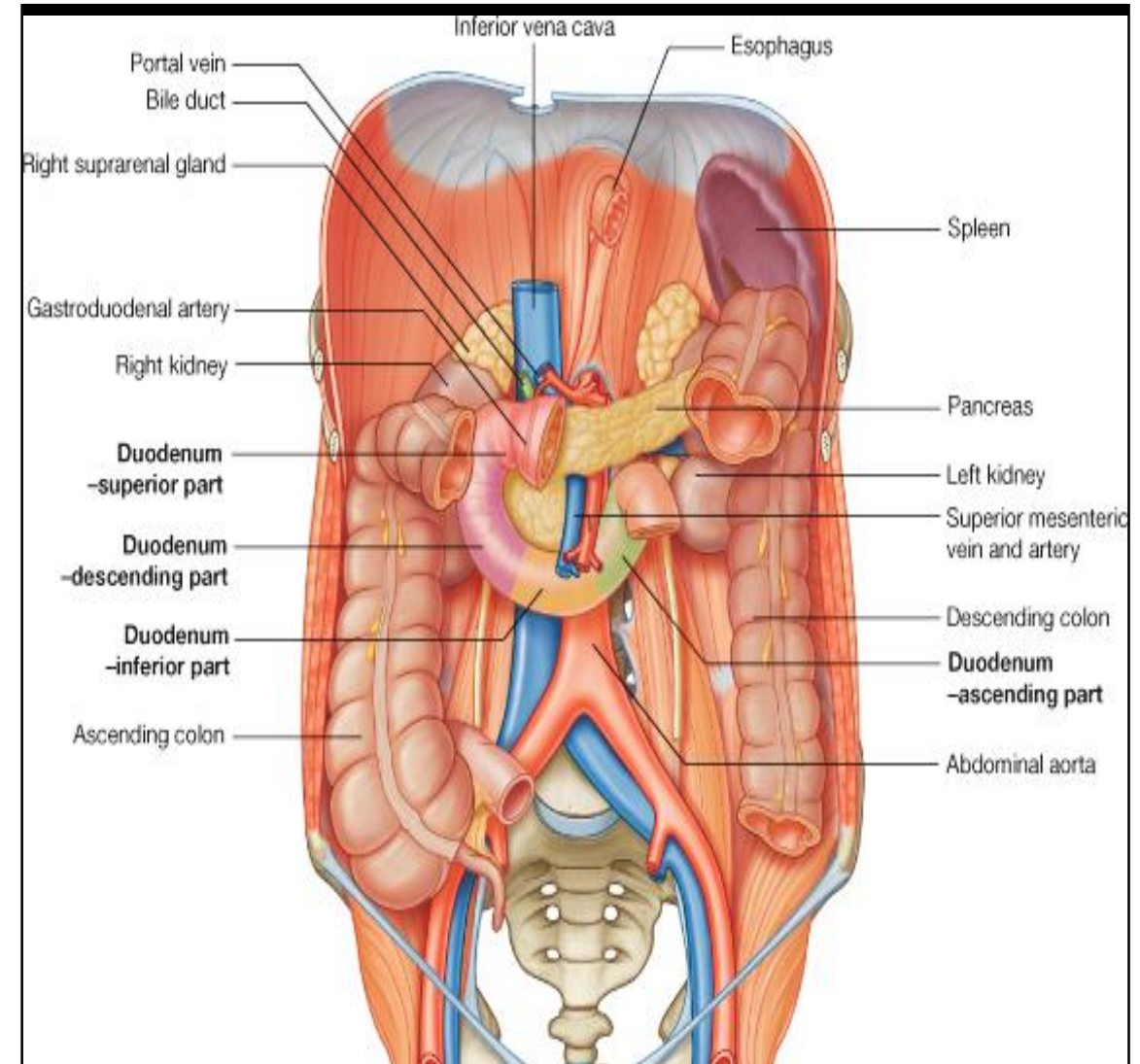
On its right side:

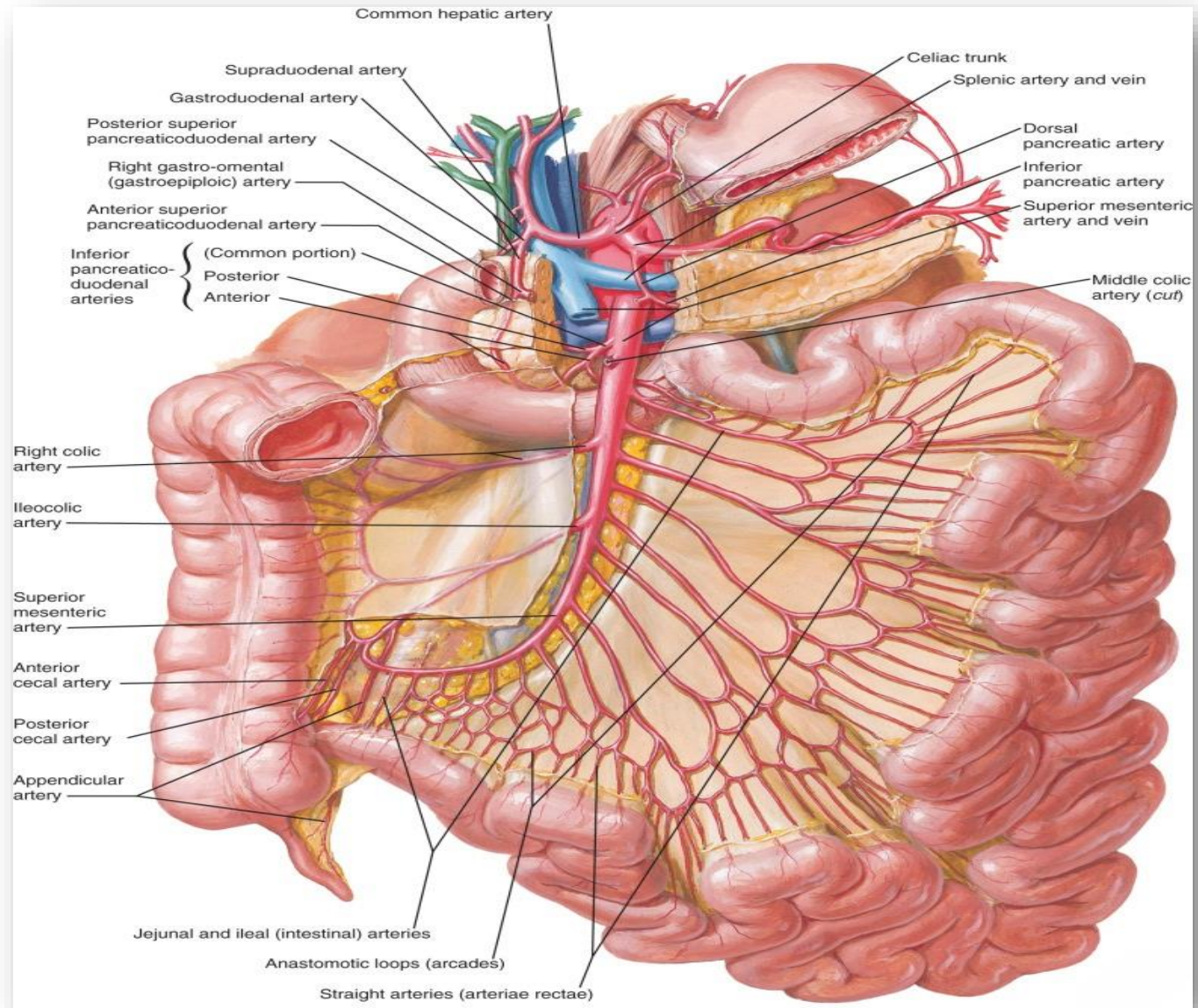
- Inferior vena cava.

Anterior relations:

Related anteriorly from above downwards to:

- Coeliac trunk and its branches.
- Pancreas & superior mesenteric artery.
- Horizontal part of duodenum & inferior mesenteric artery.
- Mesentery of the small intestine.



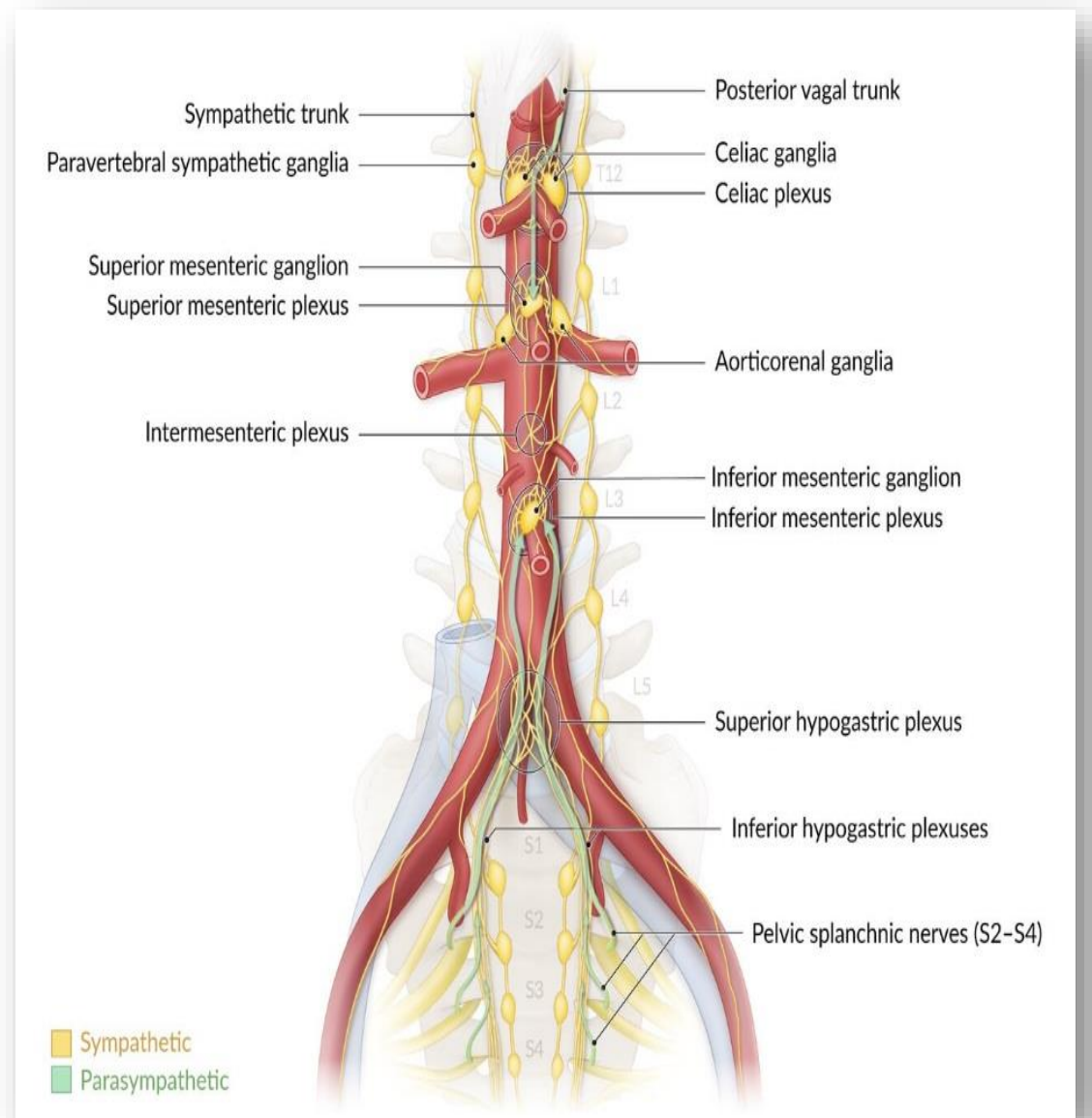


On its left side:

- Left sympathetic trunk.

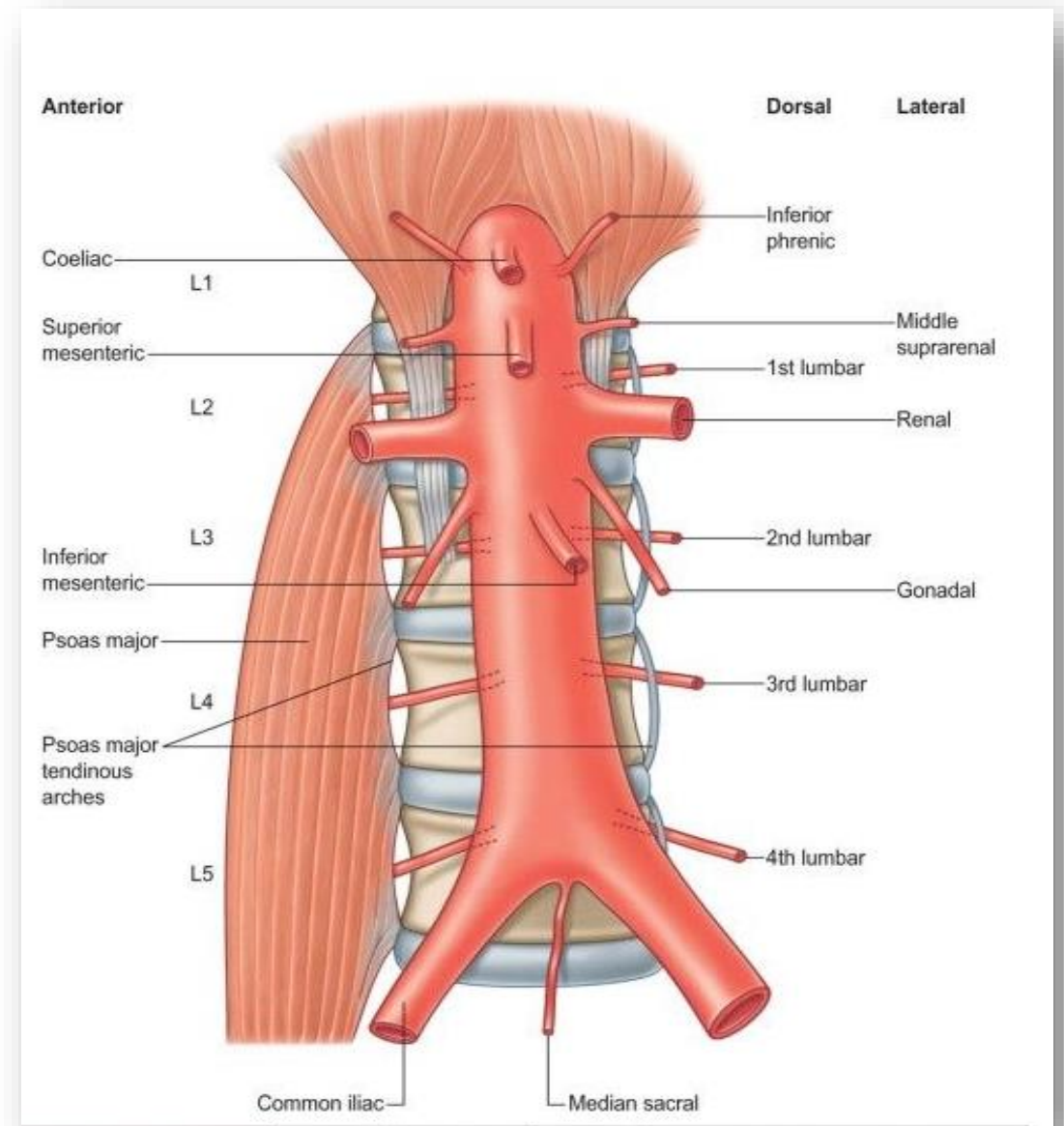
Posterior relations:

- Thoracolumbar intervertebral discs.
- Upper four lumbar vertebrae.



Branches of the descending abdominal aorta:

- **Anterior branches (single):** Coeliac artery, Superior mesenteric artery, and Inferior mesenteric artery.
- **Lateral branches (paired):** Inferior phrenic artery, Middle suprarenal artery, Renal artery, and Gonadal artery.
- **Dorsal branches (dorsolateral aspect) (paired):** Four lumbar arteries.
- **Single dorsal branch:** Median sacral artery.
- **Terminal branches:** Two common iliac arteries.

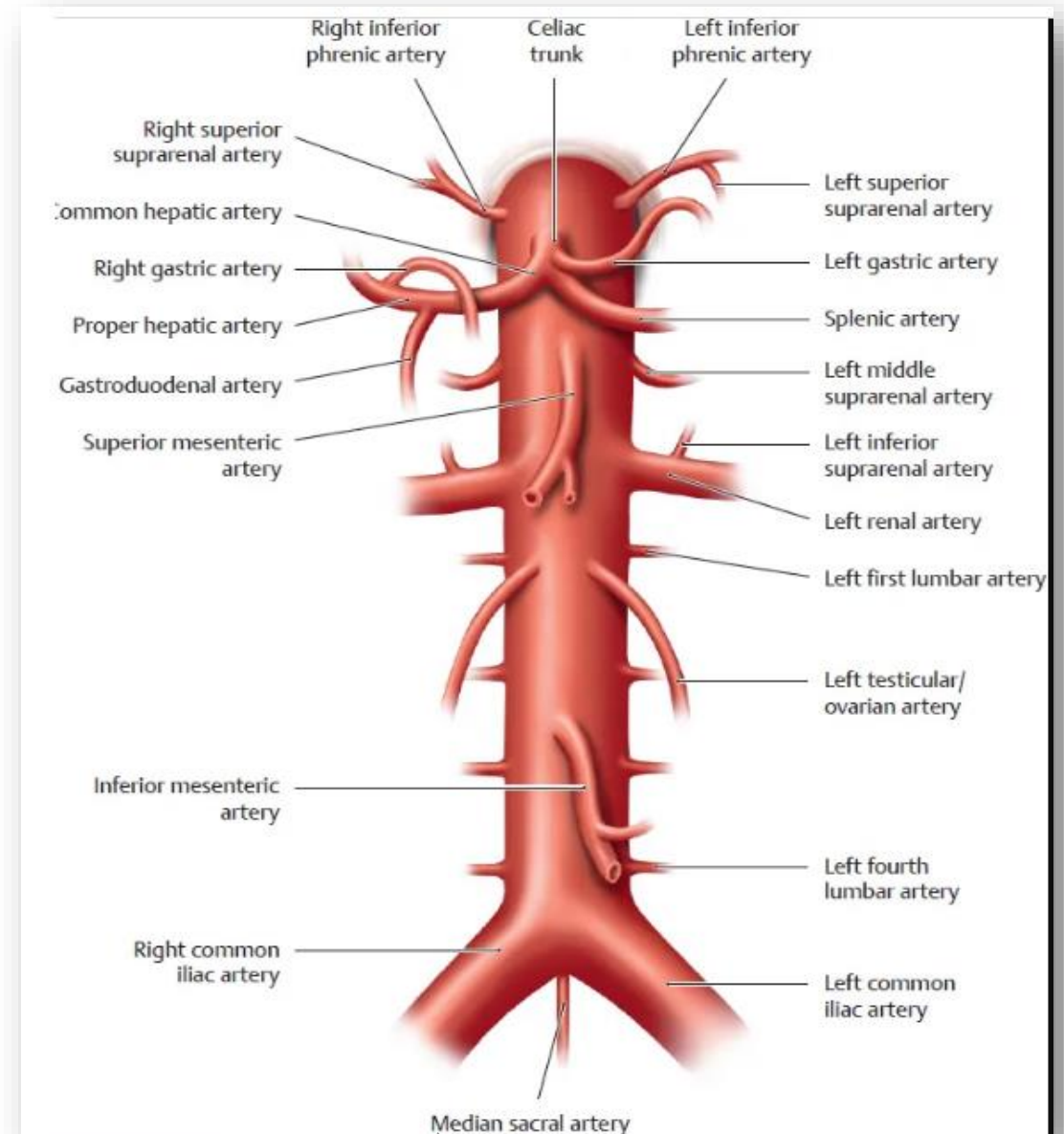


Coeliac trunk:

- It **arises** just below the aortic aperture.
- It is a short trunk **passes** horizontally forwards above the pancreas.
- It divides into **three major branches; Left gastric, Splenic & Common hepatic arteries.**
- So it **supplies** gut tube from the lower part of esophagus to the 2nd part of duodenum, liver, pancreas, and spleen.

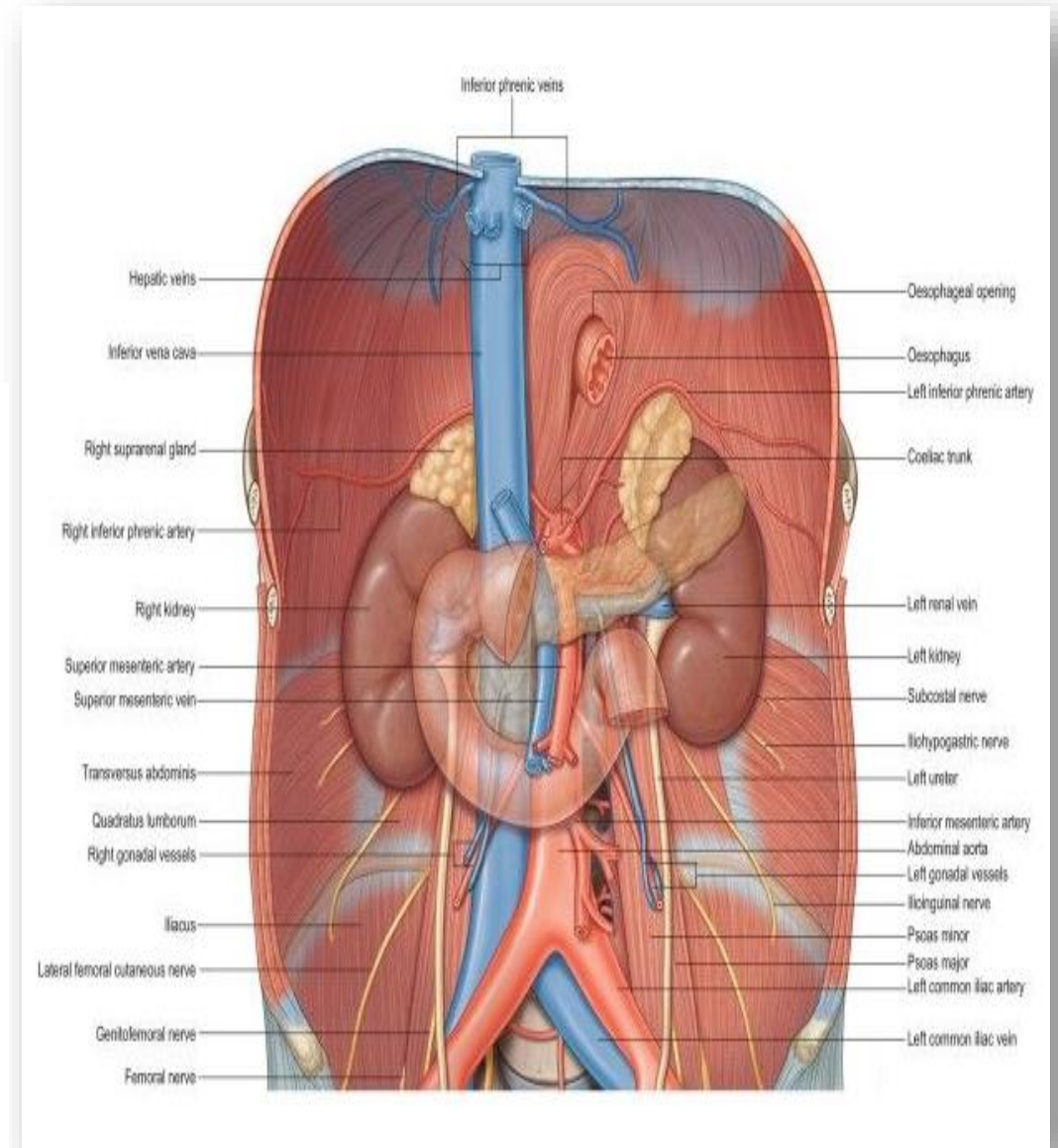
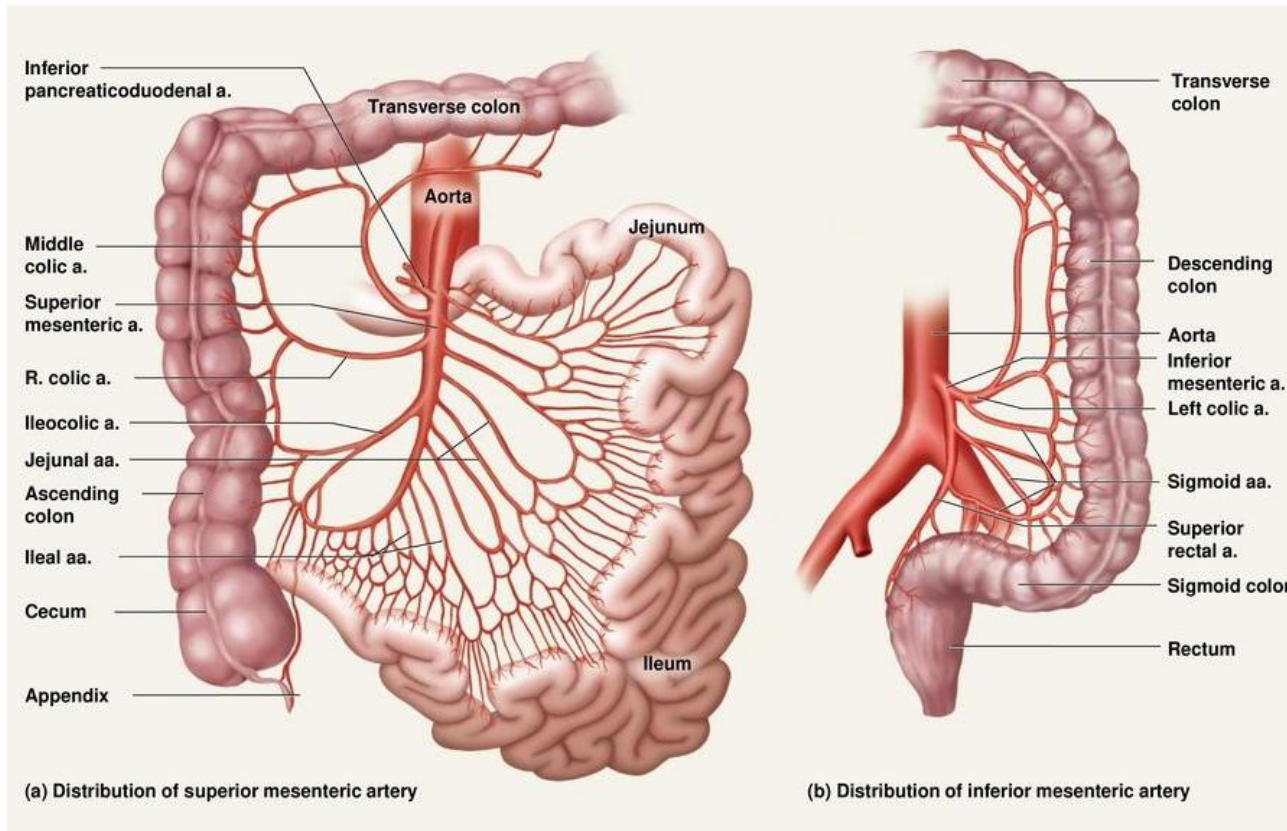
Superior mesenteric artery:

- It **originates** below the origin of the coeliac trunk, behind the body of the pancreas.
- It **runs** downward & to the right.
- **Supplies** most of the small intestine & part of the large intestine.



Inferior mesenteric artery:

- It **arises** behind the horizontal part of the duodenum.
- It **runs** downward & to the left.
- **Supplies** parts of the large intestine.

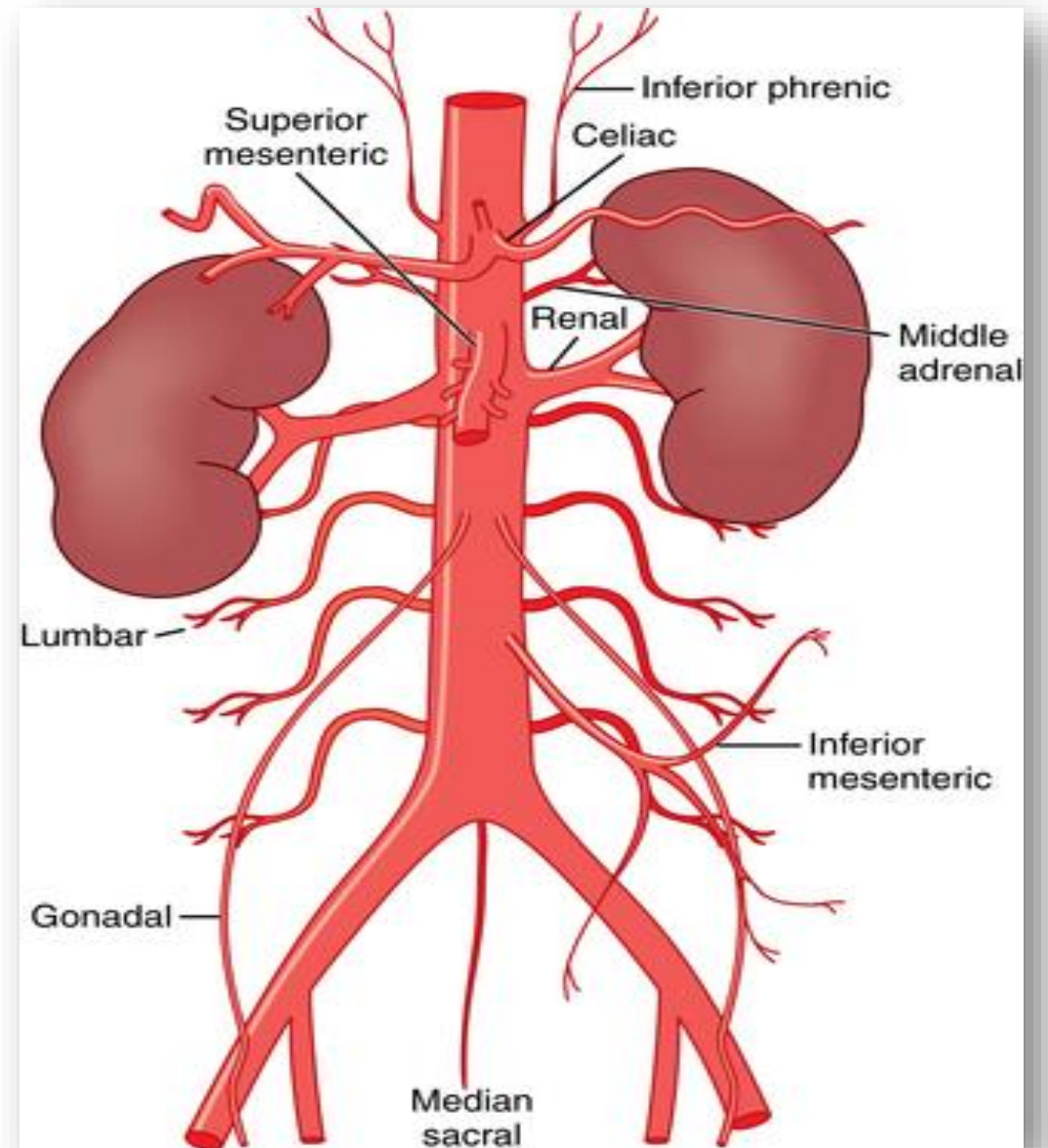


The inferior phrenic arteries:

- They arise just above the level of the coeliac trunk.
- Each artery ascends and runs laterally, supplies the inferior surface of diaphragm.

The middle suprarenal arteries:

- They ascend to the corresponding suprarenal gland.

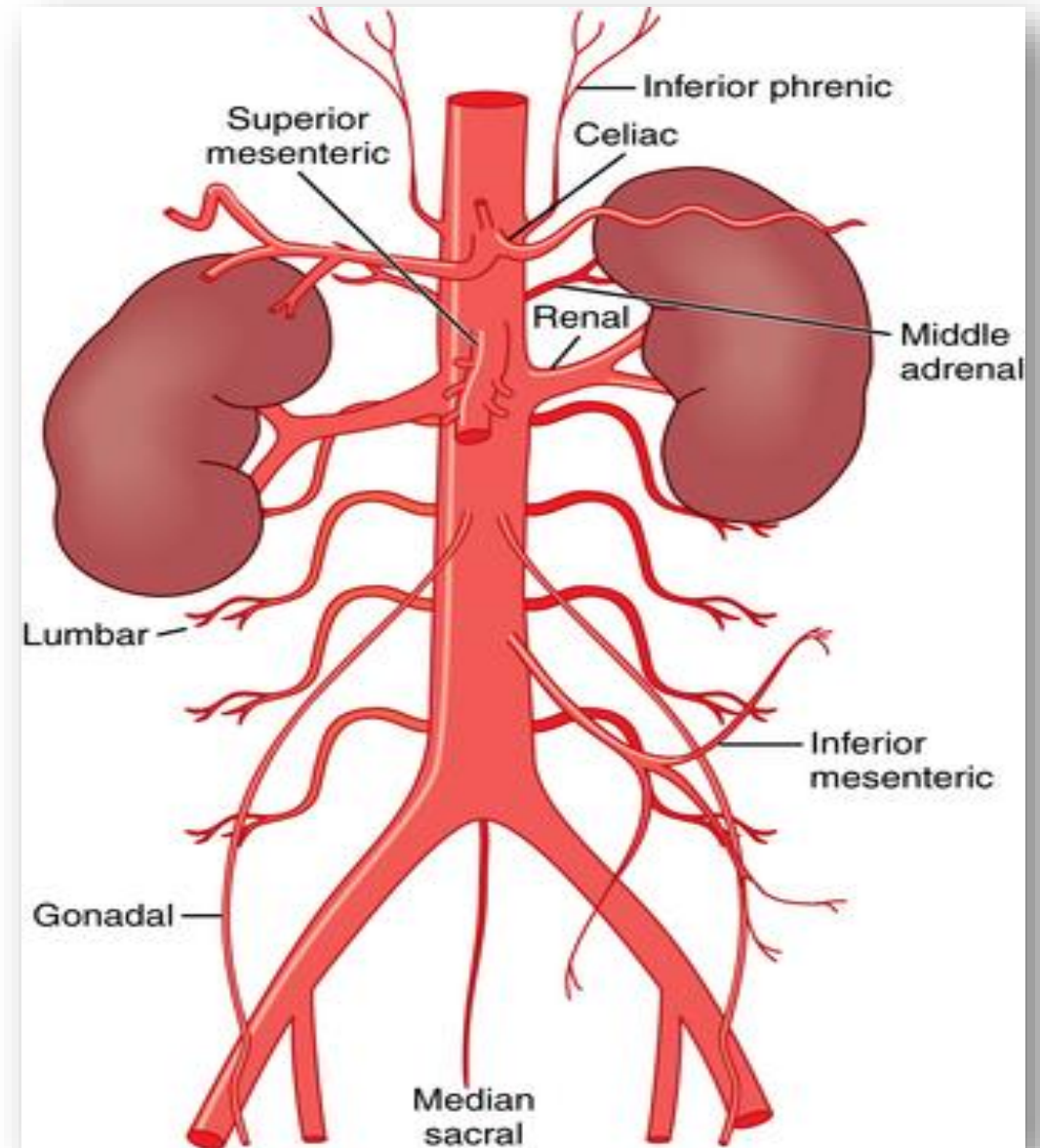


Renal arteries:

- They arise just below the origin of the superior mesenteric artery, level of L2 vertebra.
- Each courses laterally towards the hilum of the corresponding kidney.
- They provide the arterial supply of the kidneys.

Gonadal arteries:

- **Testicular artery in males.**
- **Ovarian artery in females.**
- They are long, slender vessels.
- Each passes inferolaterally.

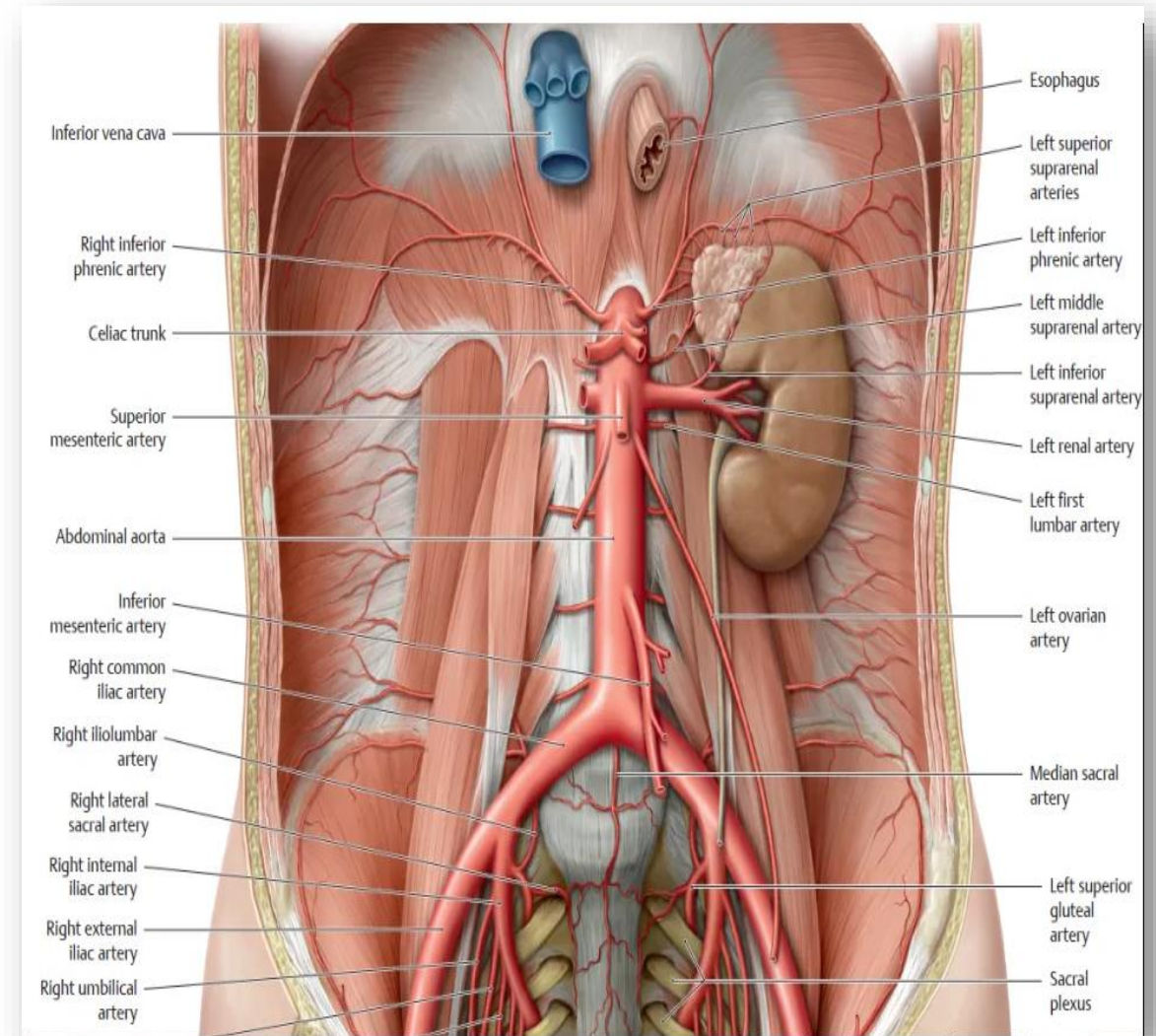


Lumbar arteries:

- They run laterally behind the psoas major, then continue into the anterolateral abdominal wall.
- Each lumbar artery has a dorsal branch, to supply the muscles and skin of the back.

Median sacral artery:

- It arises a little above the bifurcation of aorta.
- It descends in the midline.
- It supplies lumbar and sacral vertebra & coccyx.



Common Iliac Artery

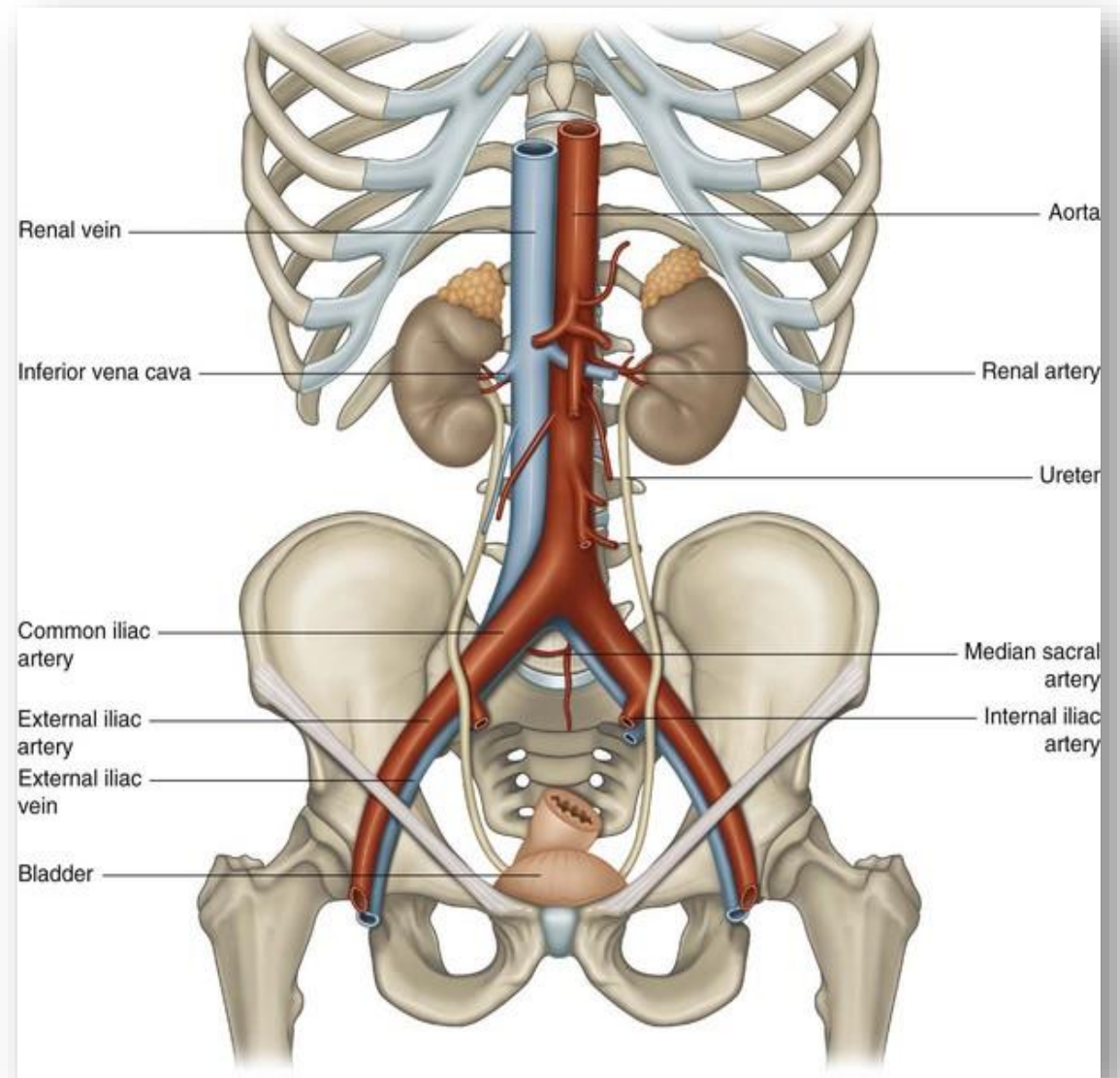
- The abdominal aorta **bifurcates into** the right and left common iliac arteries.

Course:

- They run downward and laterally & diverge as they descend.

End:

- Each artery **ends in front of** the corresponding sacroiliac joint by **dividing into** the **external and internal iliac arteries**.



Branches of anterior trunk of internal iliac artery:

1-Superior vesical artery:

- It runs anteroinferiorly.
- It supplies the ureter, urinary bladder, ductus deferens and seminal vesicles.

2-Obturator artery:

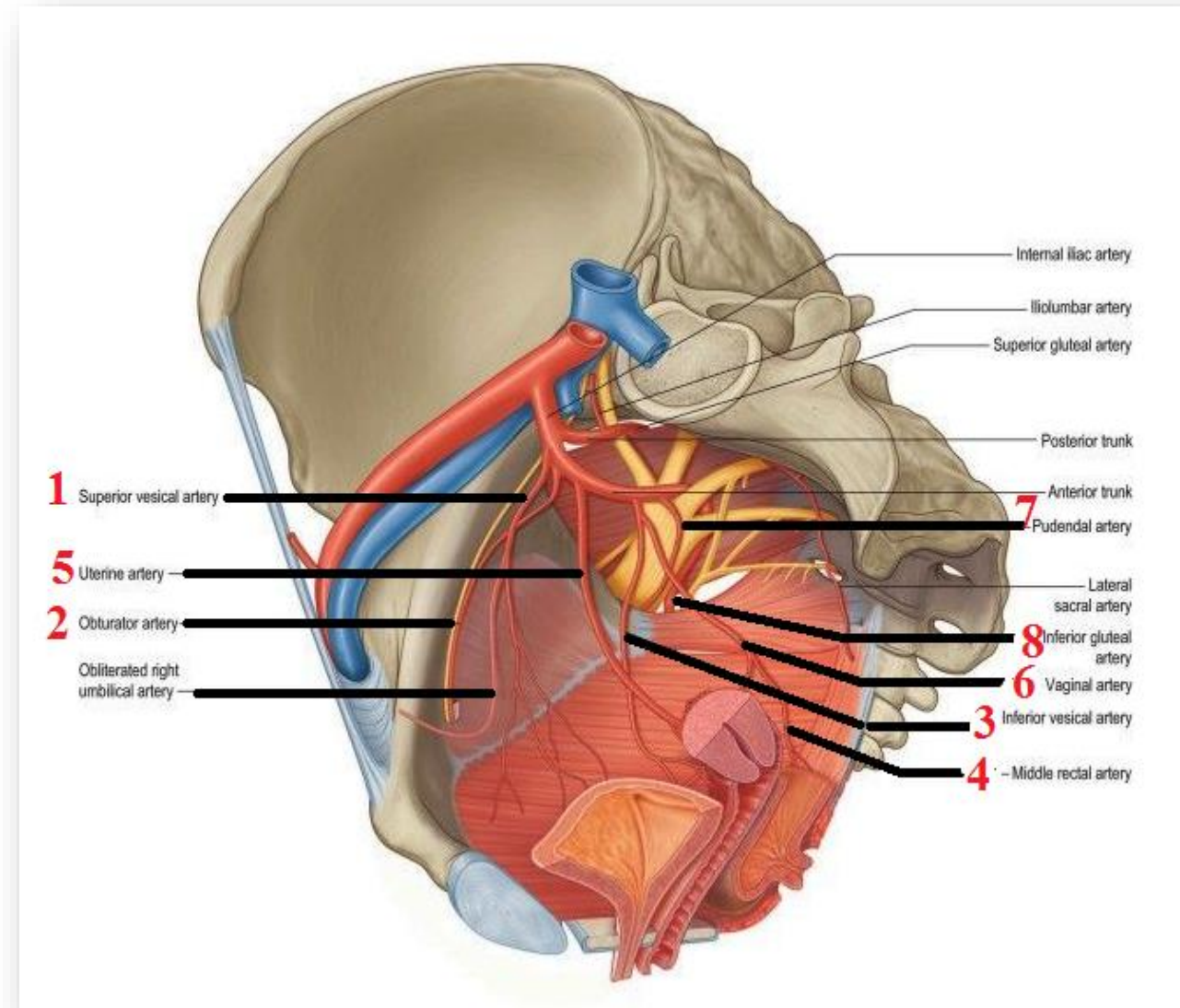
- It runs forward along the lateral wall of the pelvis and leaves the pelvis through the obturator canal.
- It supplies some structures of the lower limb.

3-Inferior vesical artery (in male):

- It supplies the urinary bladder and the prostate.

4-Middle rectal artery:

- It supplies the rectum.

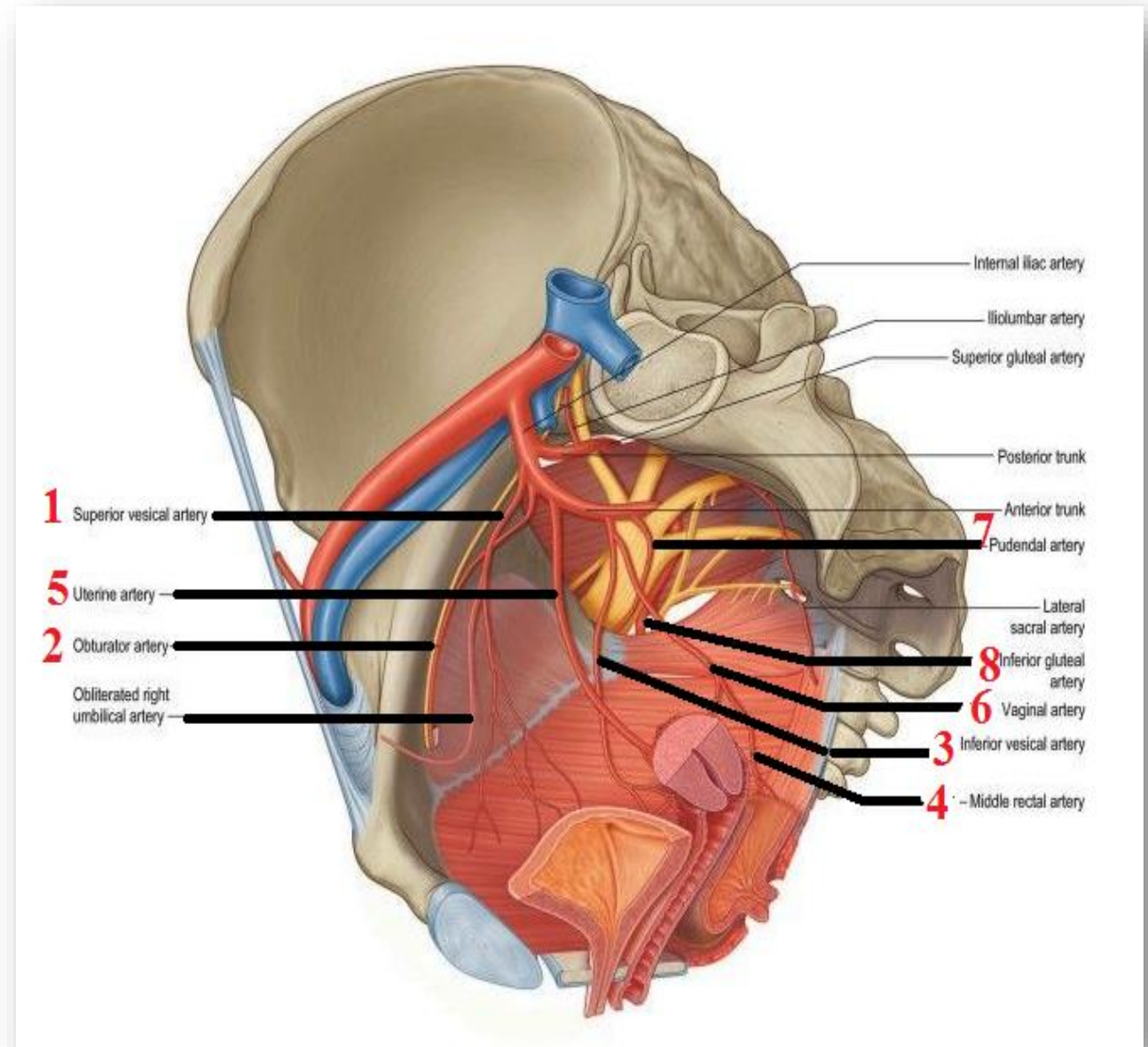
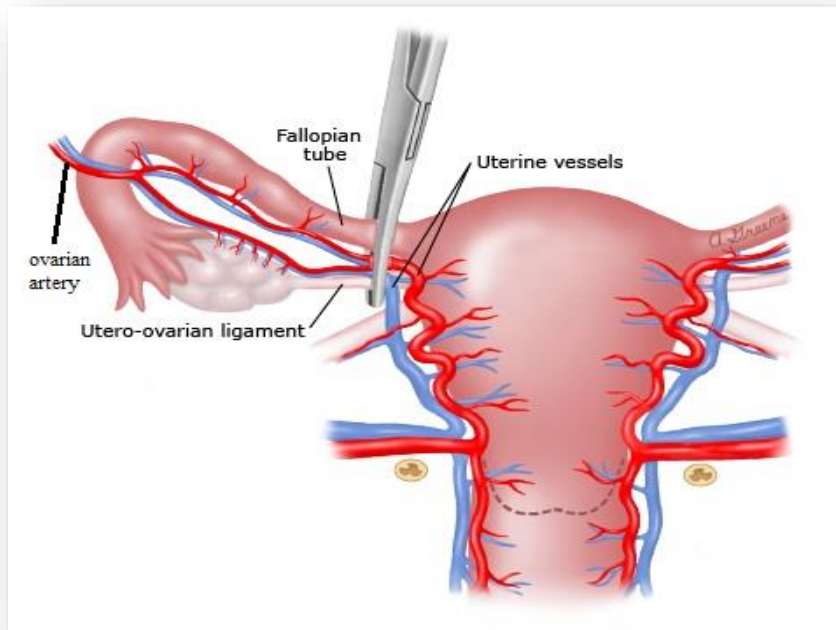


5- Uterine artery (in female):

- It runs medially on the floor of the pelvis to reach the uterus.
- It supplies uterus, vagina and uterine tube.

6-Vaginal artery (in female):

- It supplies the vagina and the urinary bladder.

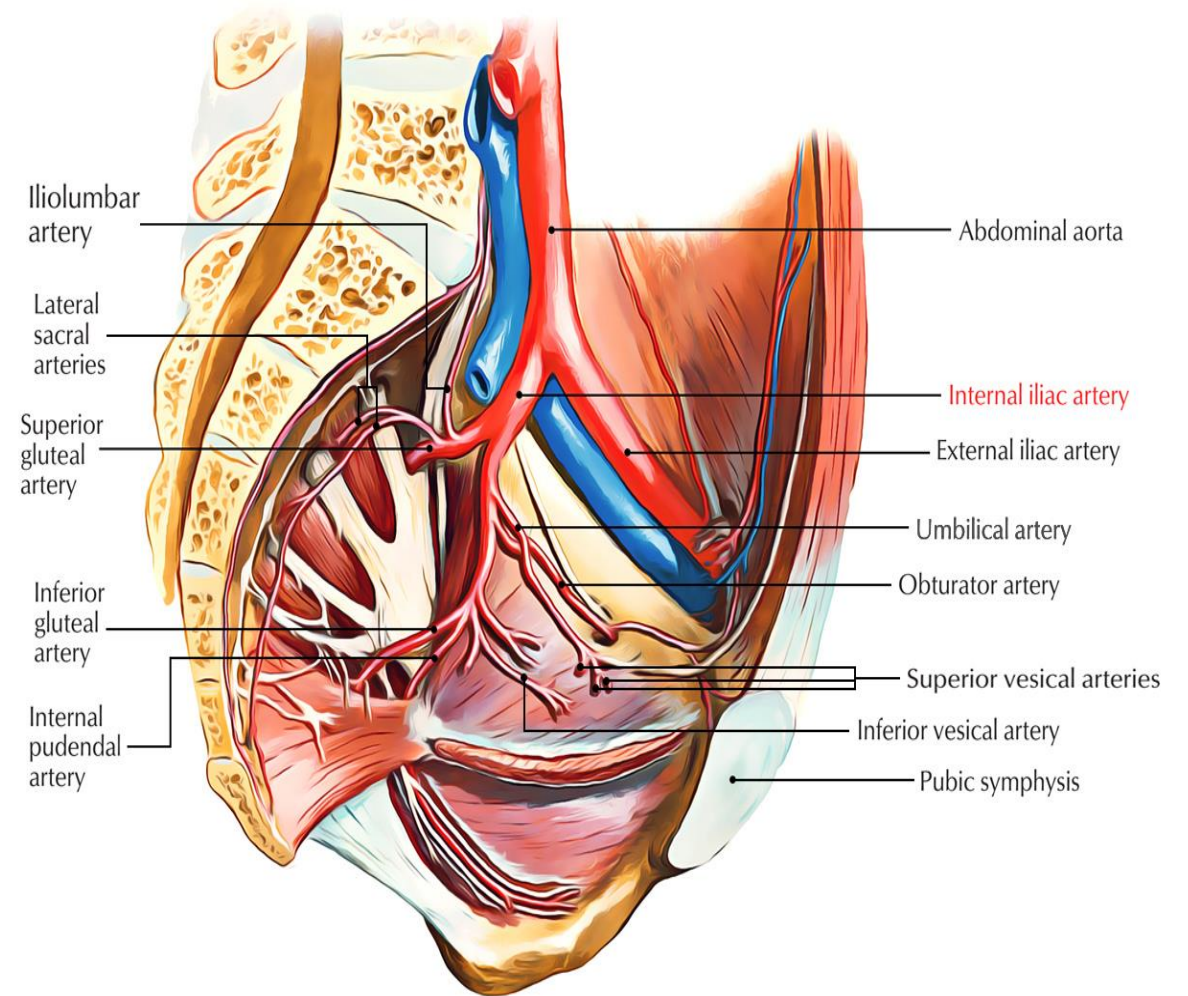


7-Internal pudendal artery

- It leaves the true pelvis through the greater sciatic foramen and enters the gluteal region.
- It then enters the perineum.
- It supplies perineum and external genital organs.

8-Inferior gluteal artery:

- It leaves the true pelvis through the greater sciatic foramen to reach the gluteal region.



Branches of the Posterior trunk (Division) of the internal iliac artery:

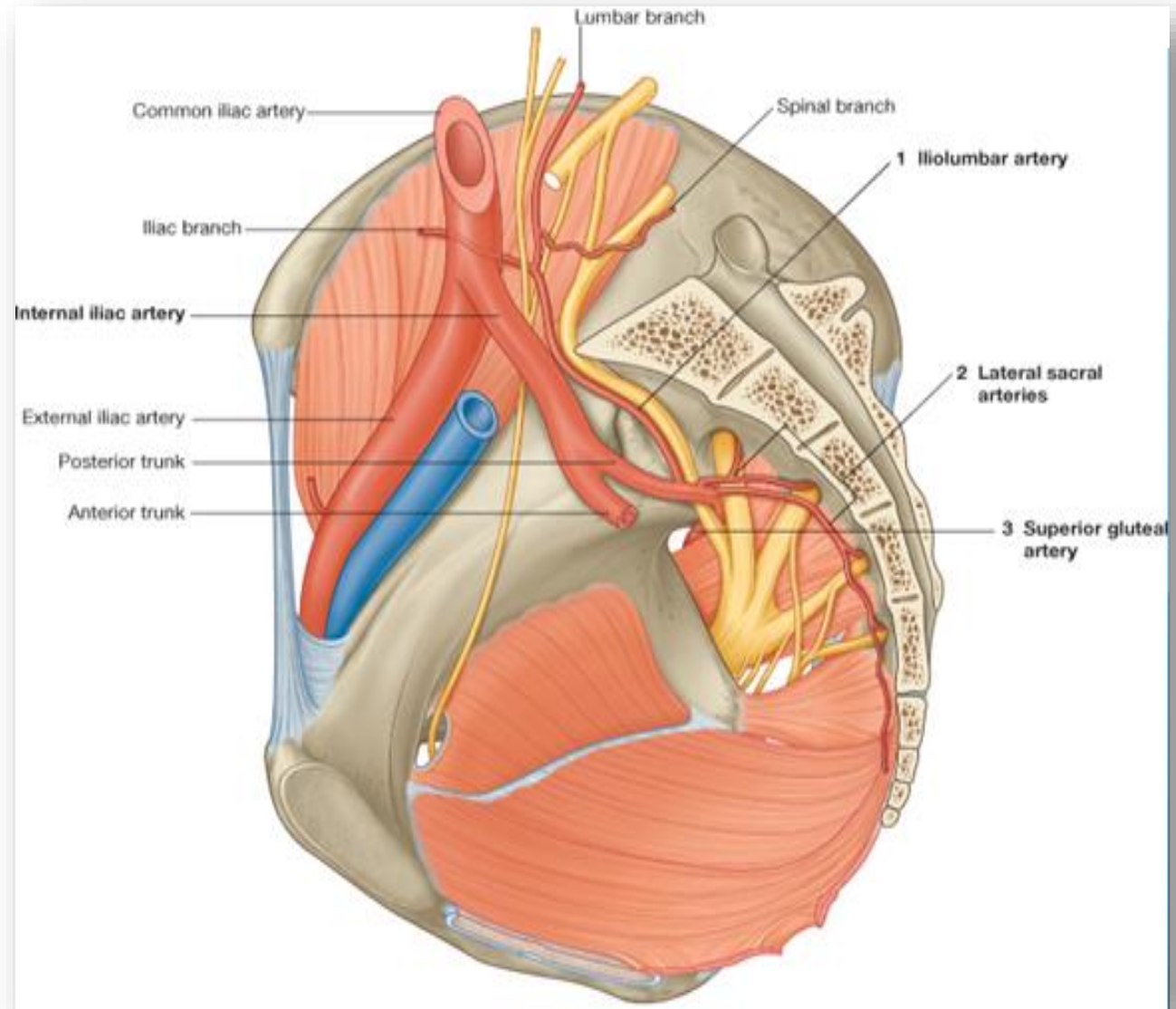
1-Iliolumbar artery.

2-Lateral sacral arteries:

- They **passes through** sacral foramina.
- **Supply** the sacral vertebrae and contents of the sacral canal.

3-Superior gluteal artery:

- It leaves the true pelvis through the greater sciatic foramen to reaches and supplies the gluteal region muscles.



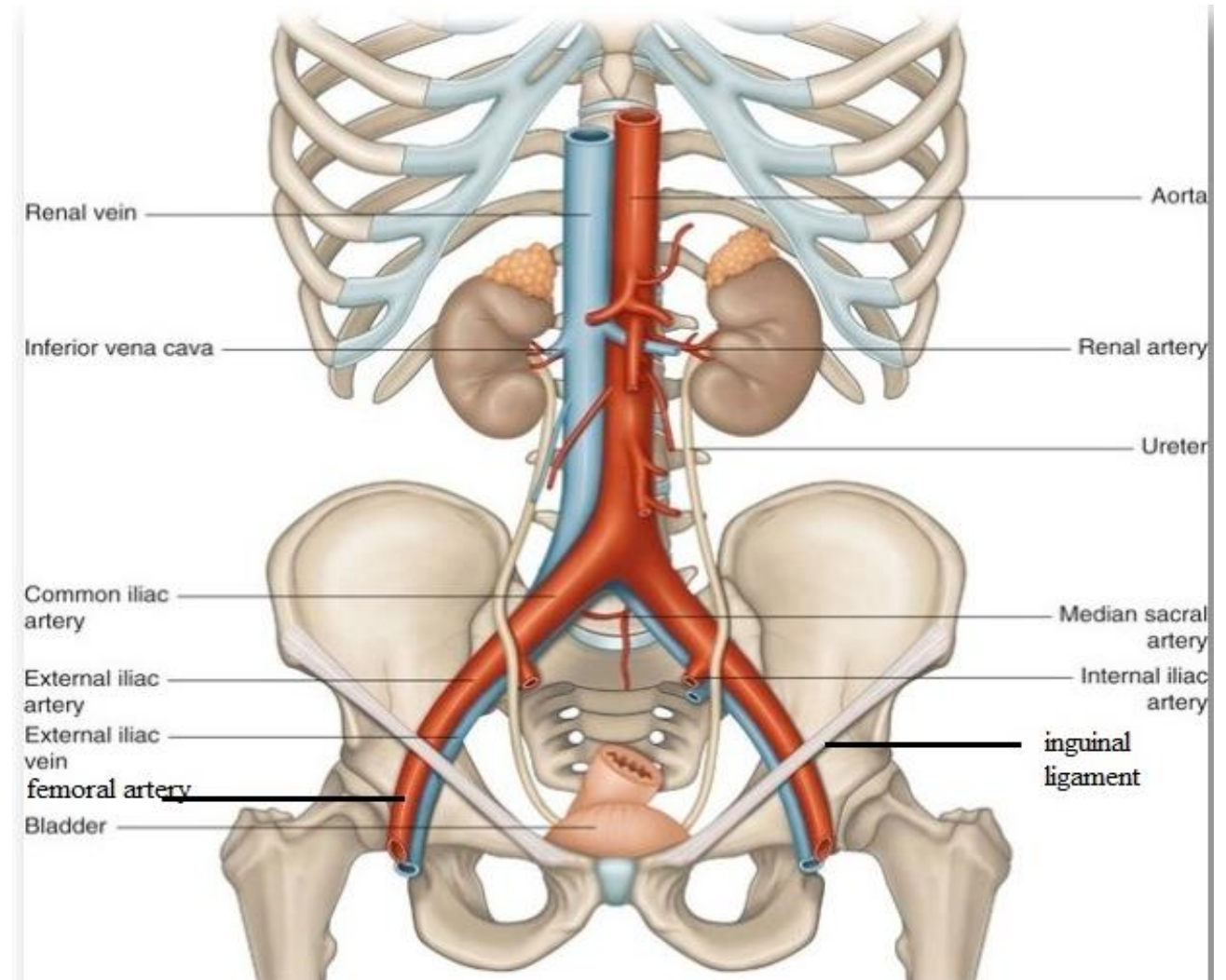
External Iliac Artery.

Course:

- It runs inferolateral along the pelvic brim.

End:

- It **ends** at a point midway between the anterior superior iliac spine and the symphysis pubis, **posterior to** the inguinal ligament, **to becomes** the femoral artery.

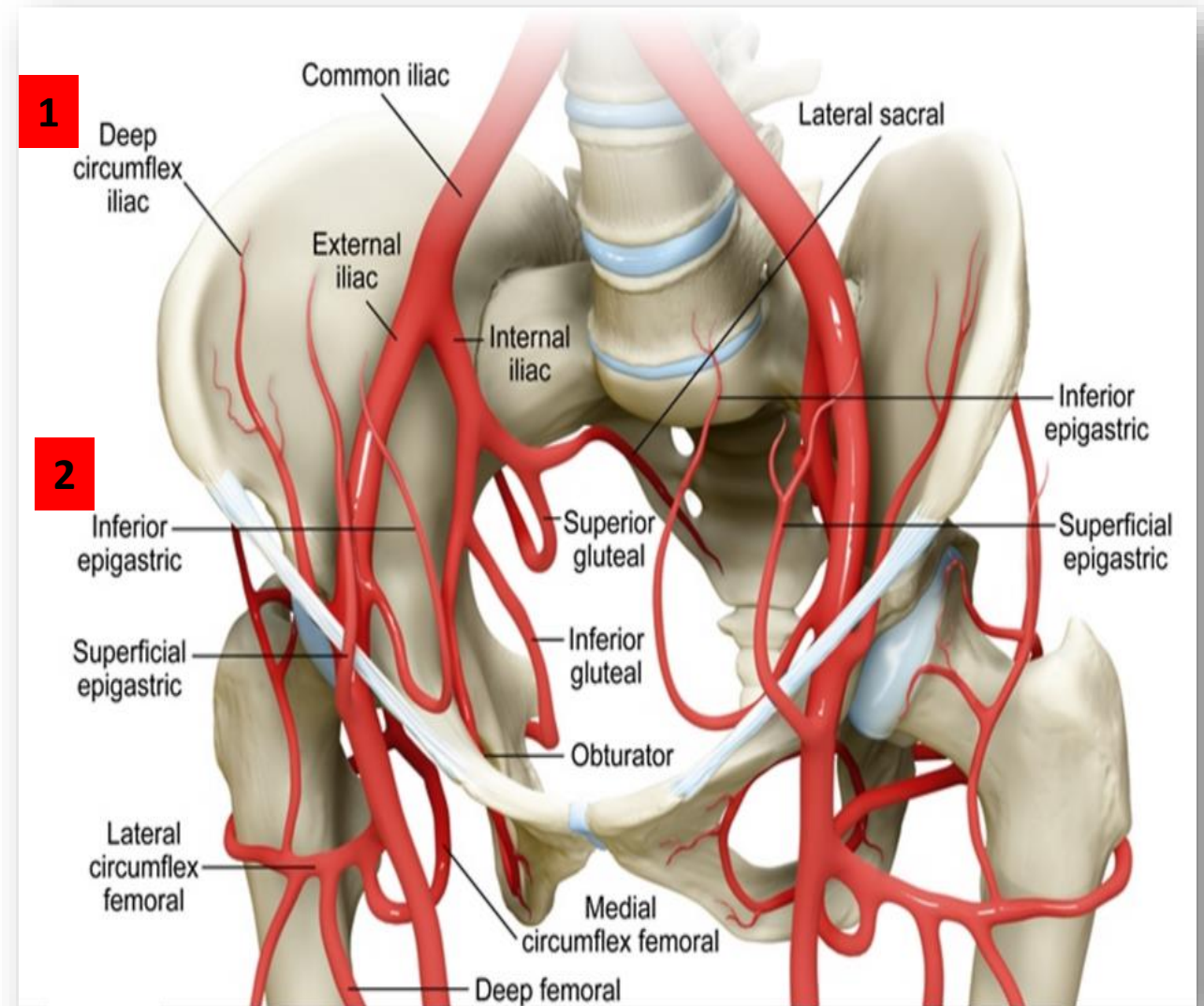


Branches of the external iliac artery:

1- The deep circumflex iliac artery.

2- The inferior epigastric artery:

- It passes upward as an artery of the anterior abdominal wall.



Quiz

Which of the following structures has its arterial supply from the anterior division of internal iliac artery?

- A) Prostate gland.
- B) Ovary.
- C) liver
- D) Small intestine
- E) Sacral vertebrae

Which of the following structure passes anterior to the abdominal aorta.

- a) Horizontal part of duodenum.
- b) Thoracolumbar intervertebral discs.
- c) Left kidney.
- d) Urinary bladder.
- e) Rectum.

*Thank
you*

