

# CARDIOVASCULAR SYSTEM

SUBJECT : Anatomy

LEC NO. : Lecture 8

DONE BY : Gaith aAl-Shawabkah

وَقُلْ رَبِّ زِدْنِي عِلْمًا



SCAN ME!



CVS....

## Lecture (8)

### Blood vessels I – Arterial system

#### Arteries in the thorax, abdomen and pelvis regions

*Dr. Amany Allam*

Assistant professor of Anatomy & Embryology

# 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.

Type your text

## Begining:

- It begins **as a continuation of the arch of the aorta.**  
النقطة الي راح تنتهي فيها ال arch aorta هي نفس لنقطة الي راح تبلش فيها  
ال descending aorta وهاي التقطة هي ال left side of T4

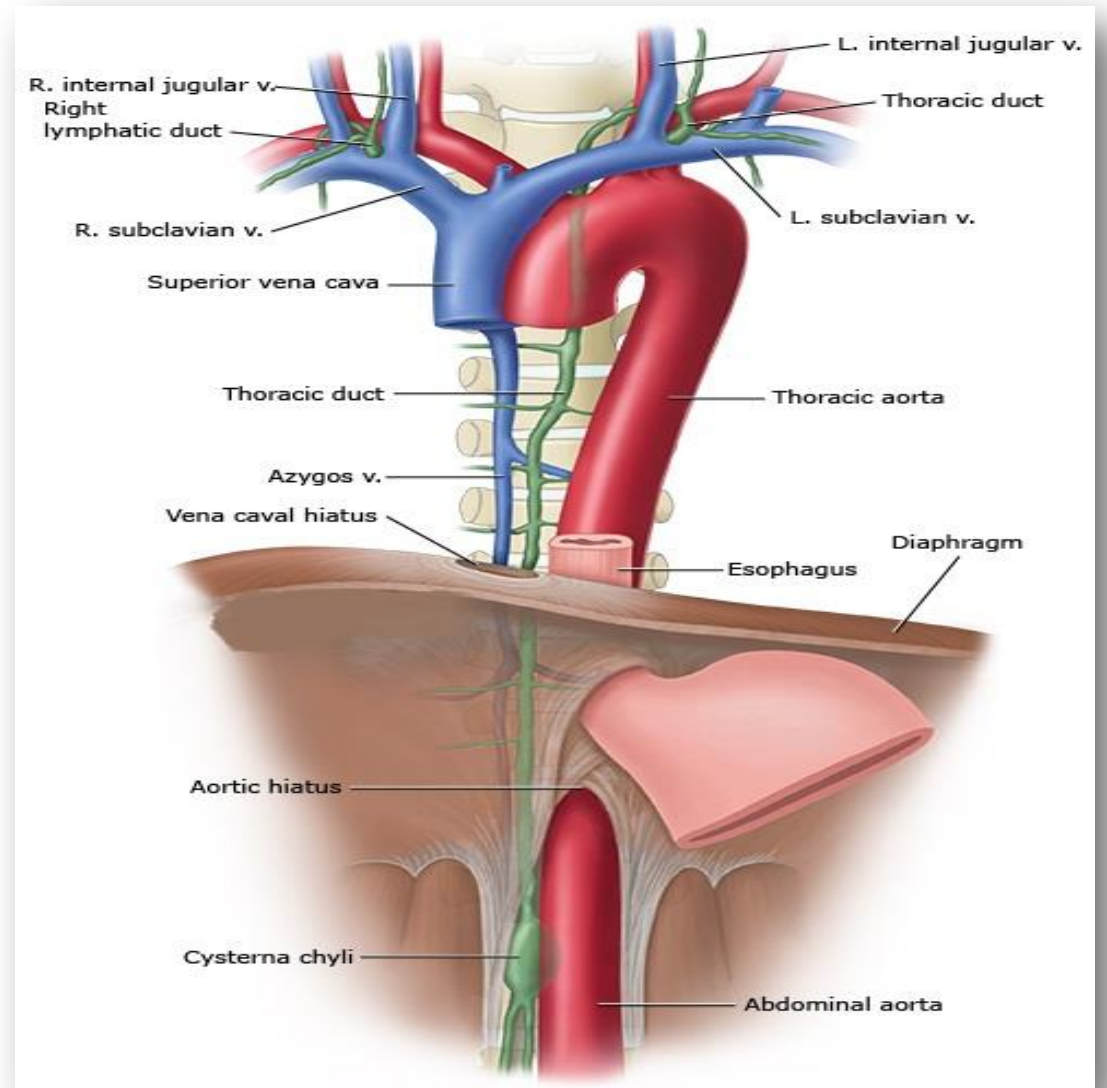
## Course:

- It **runs downward** in the posterior mediastinum, **inclining medially** as it descends.  
ال descending aorta راح تكون موجودة في ال inferior of mediastinum  
خصوصا في ناحية ال posterior وبعدها ينزل في جهة ال medial line in  
front of thoracic vertebrae

## 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 12<sup>th</sup> thoracic vertebra.**

او بكون موجود at level of thoracolumbar interverteblar disc



## Relations of the descending thoracic aorta:

### Posteriorly:

- Thoracic vertebrae.

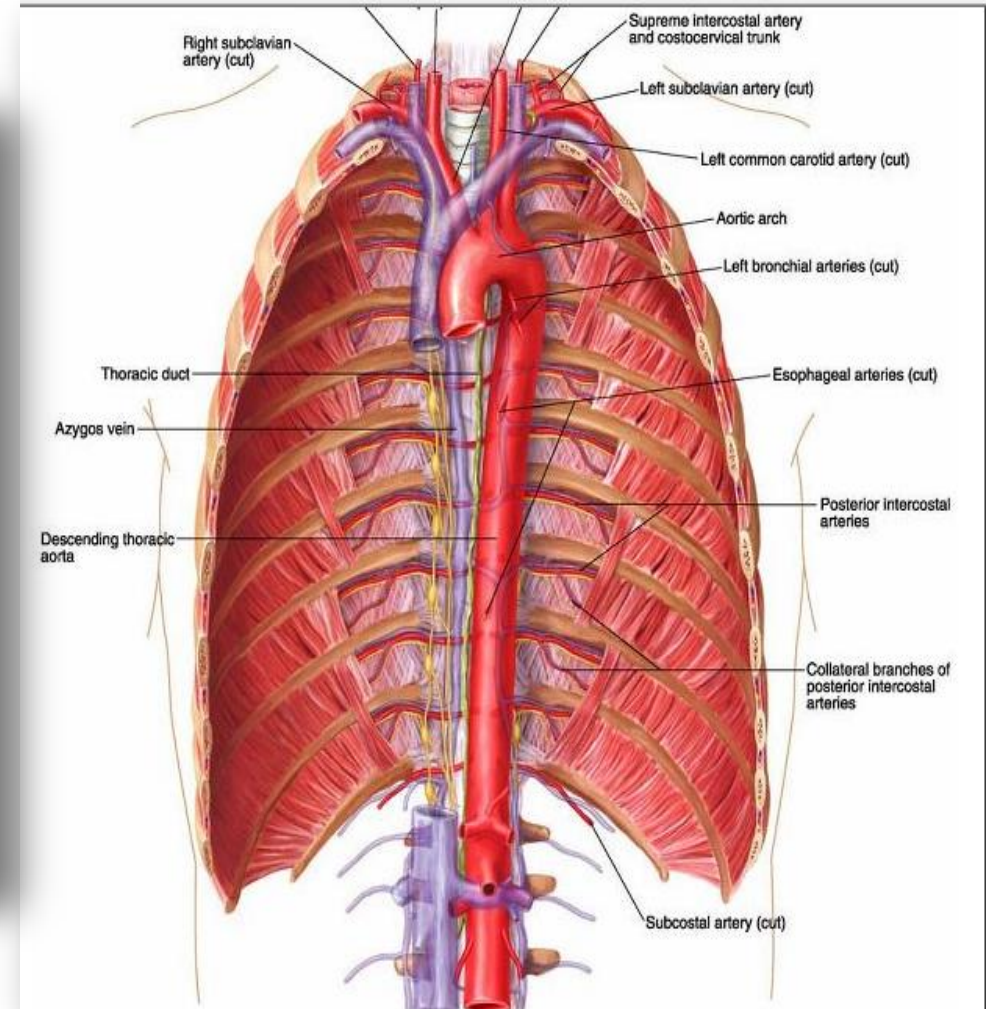
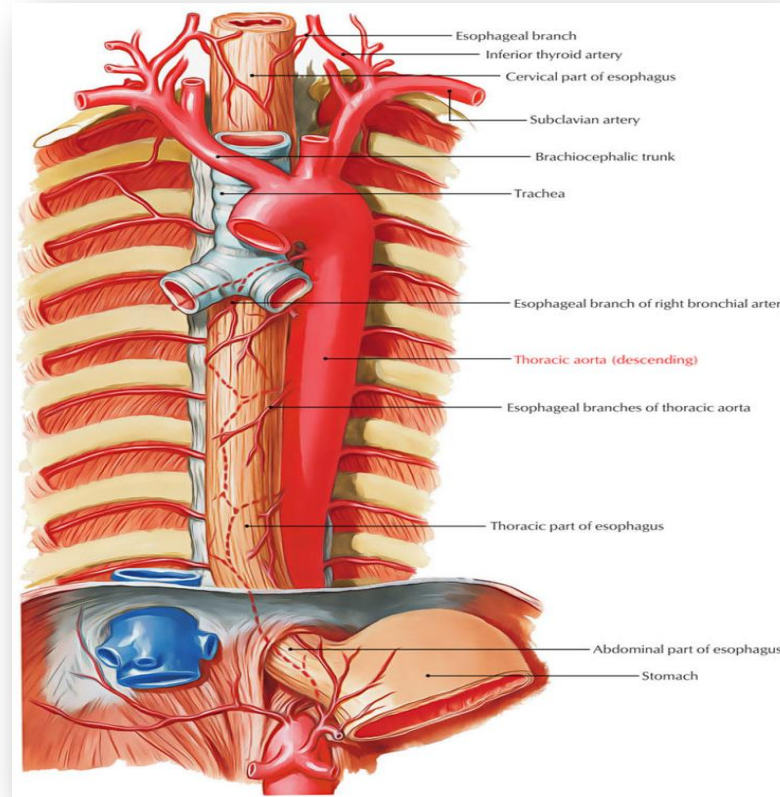
### Right lateral relations:

- Azygos vein.
- Oesophagus.

Thoracic duct

### Left lateral relations:

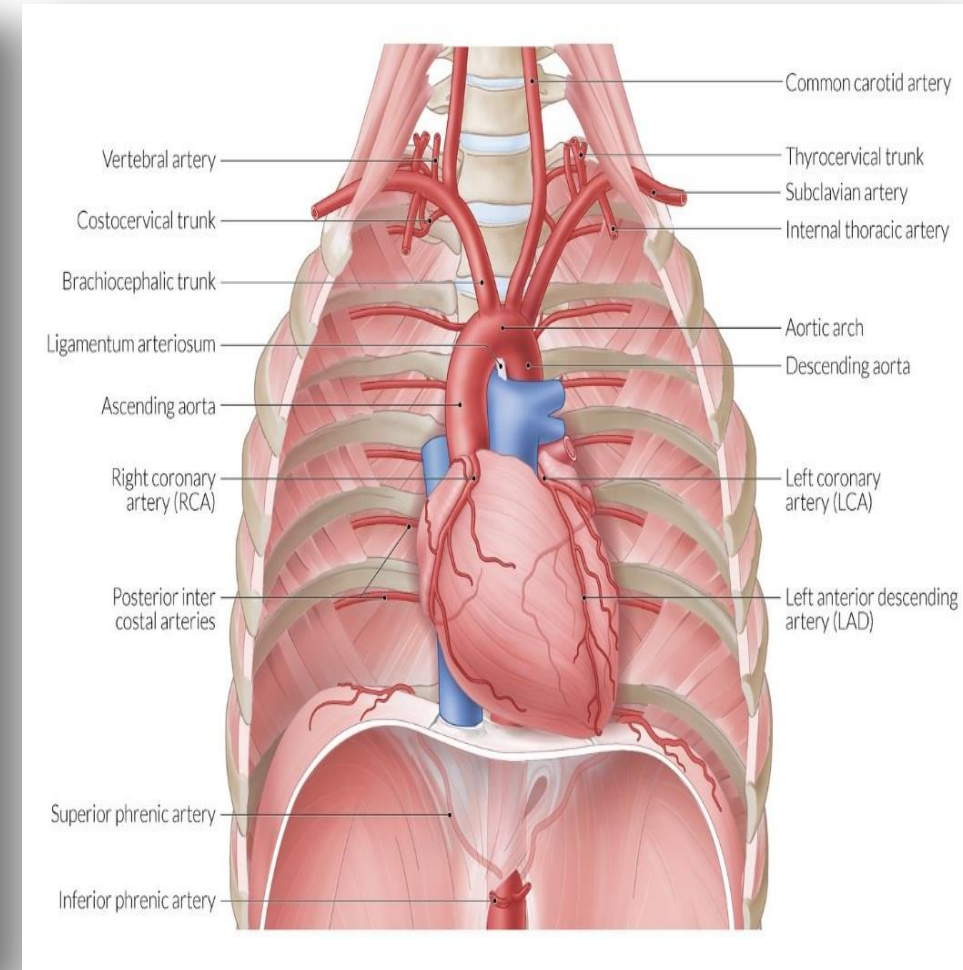
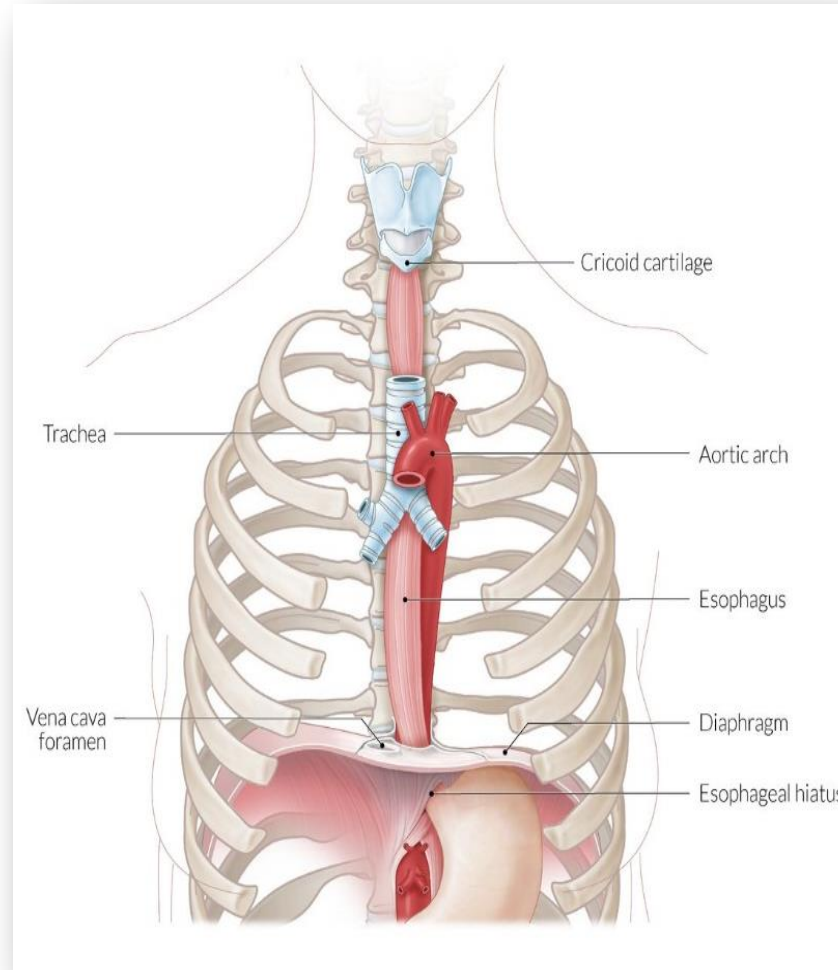
- Left pleura and lung.



**Anterior relation to the descending thoracic aorta:**

**from above downward;**

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



هناك descending thoracic aorta يعمل supply to thoracic wall ويغذي الأعضاء الموجودة في thoracic cavity بس الأعضاء المهمة زي القلب والرئة  
 باخذوا special supply مثلا ال ascending aorta that originate from heart take supply from coronary artery ، وال lung take blood supply from pulmonary trunk that originate from right ventricle

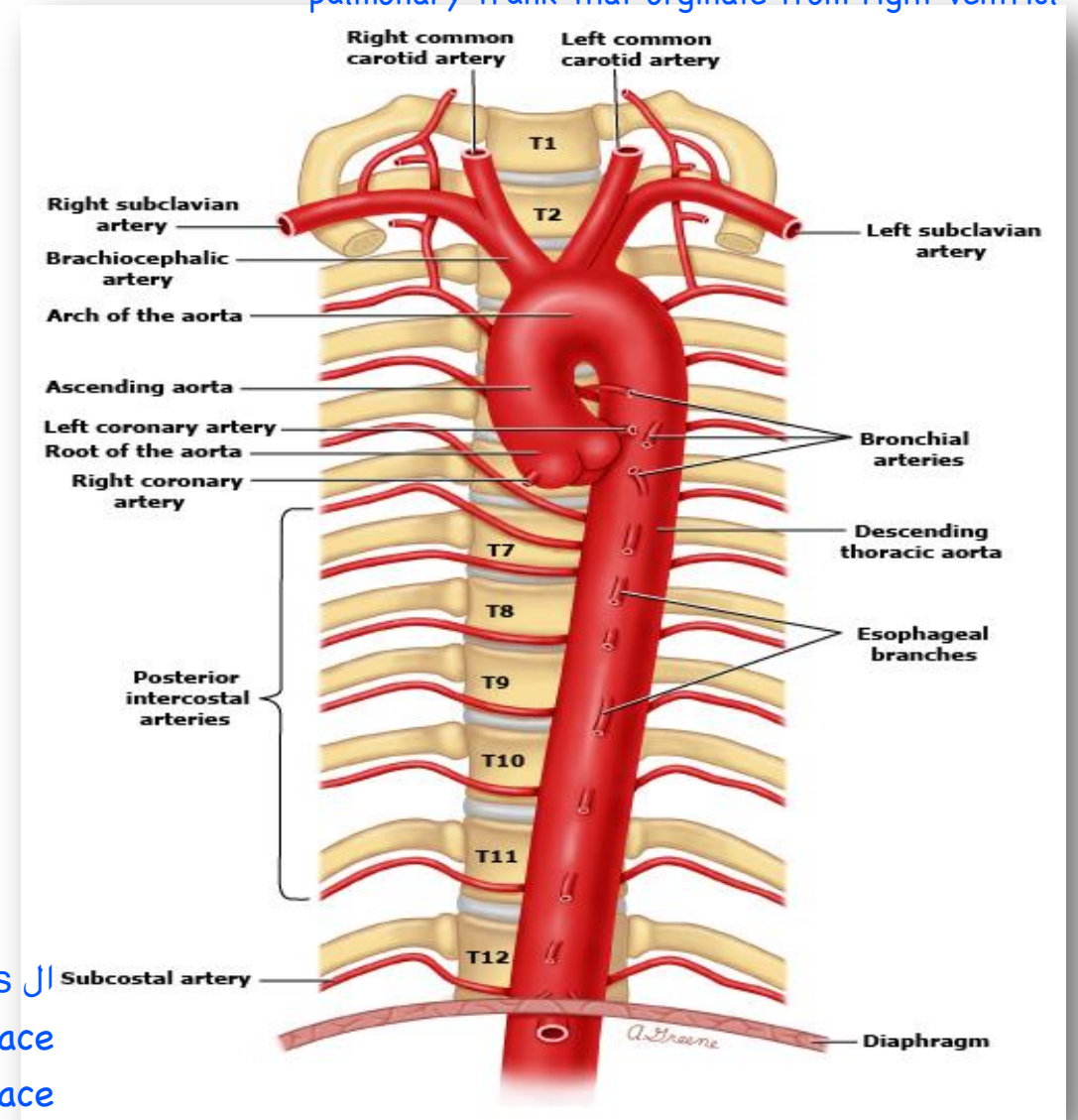
## Branches of the descending thoracic aorta:

- **Parietal branches** supply the thoracic wall.
- **Visceral branches** supply the pericardium, bronchi and oesophagus. هي الأعضاء التي تغذيها ال descending aorta

### 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.

11 ال posterior intercostal arteries يكونوا موجودين في ال intercostal space واحنا عننا ال lower 9 intercostal space بس هما ما راح يخذوهم كلهم ، راح ياخذ بس ال first space ، طيب واول ثنتين مين هو ال supply تبعهم ؟ احنا قلنا انه راح يتم تغذيت ال first space من خلال ال 2intercostal space ال superior intercostal arteries of the costocervical trunk الي يكونوا موجودين في ال second part of subclavian arteries



## 2- Subcostal arteries:

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

آخر وحدة من ال parietal barnches لأنها بتعمل supply لل thoracic wall

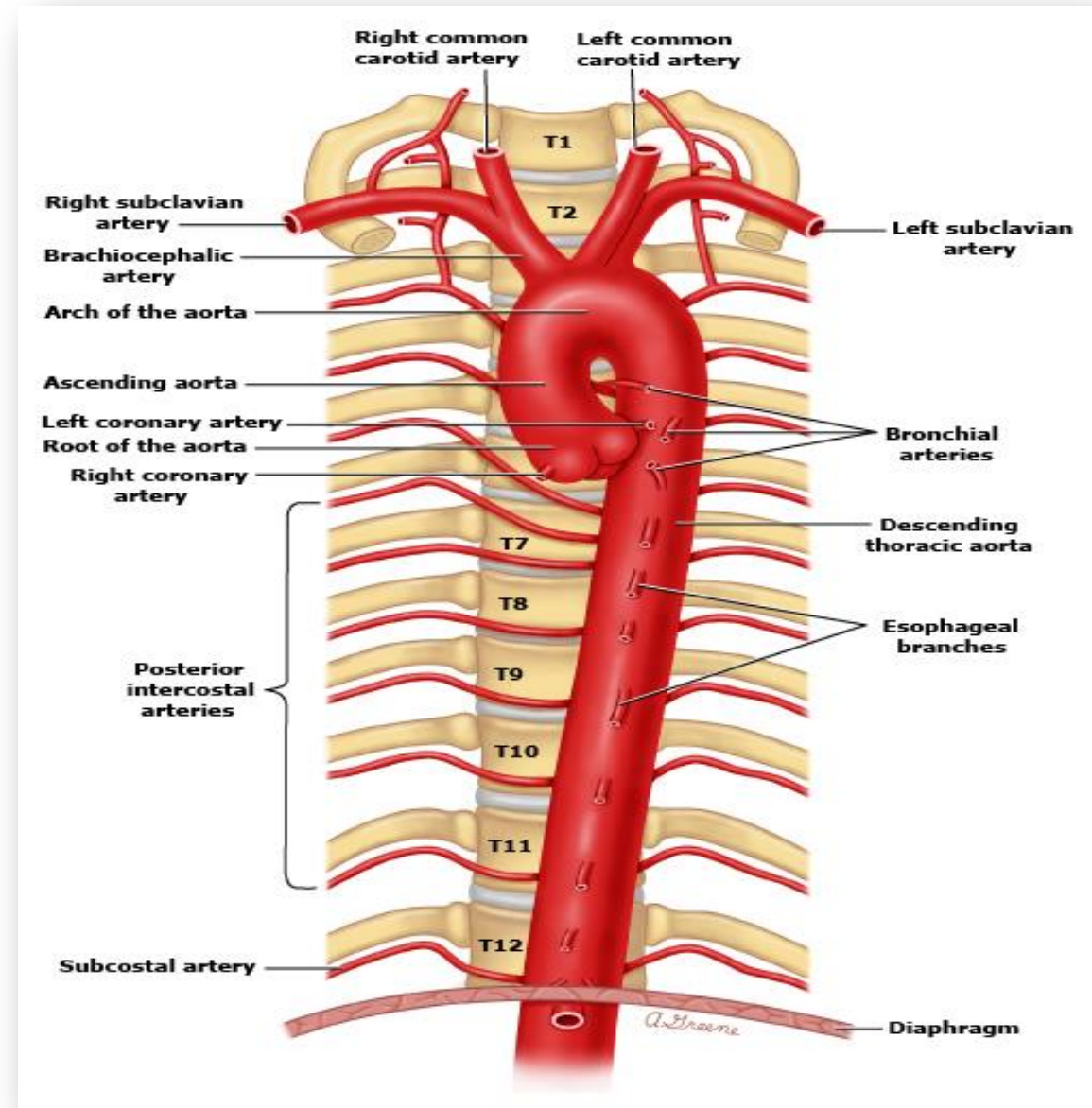
## 3-Superior phrenic branches:

- Supply the superior diaphragmatic surface.

## 4-Pericardial, esophageal, and bronchial arteries.

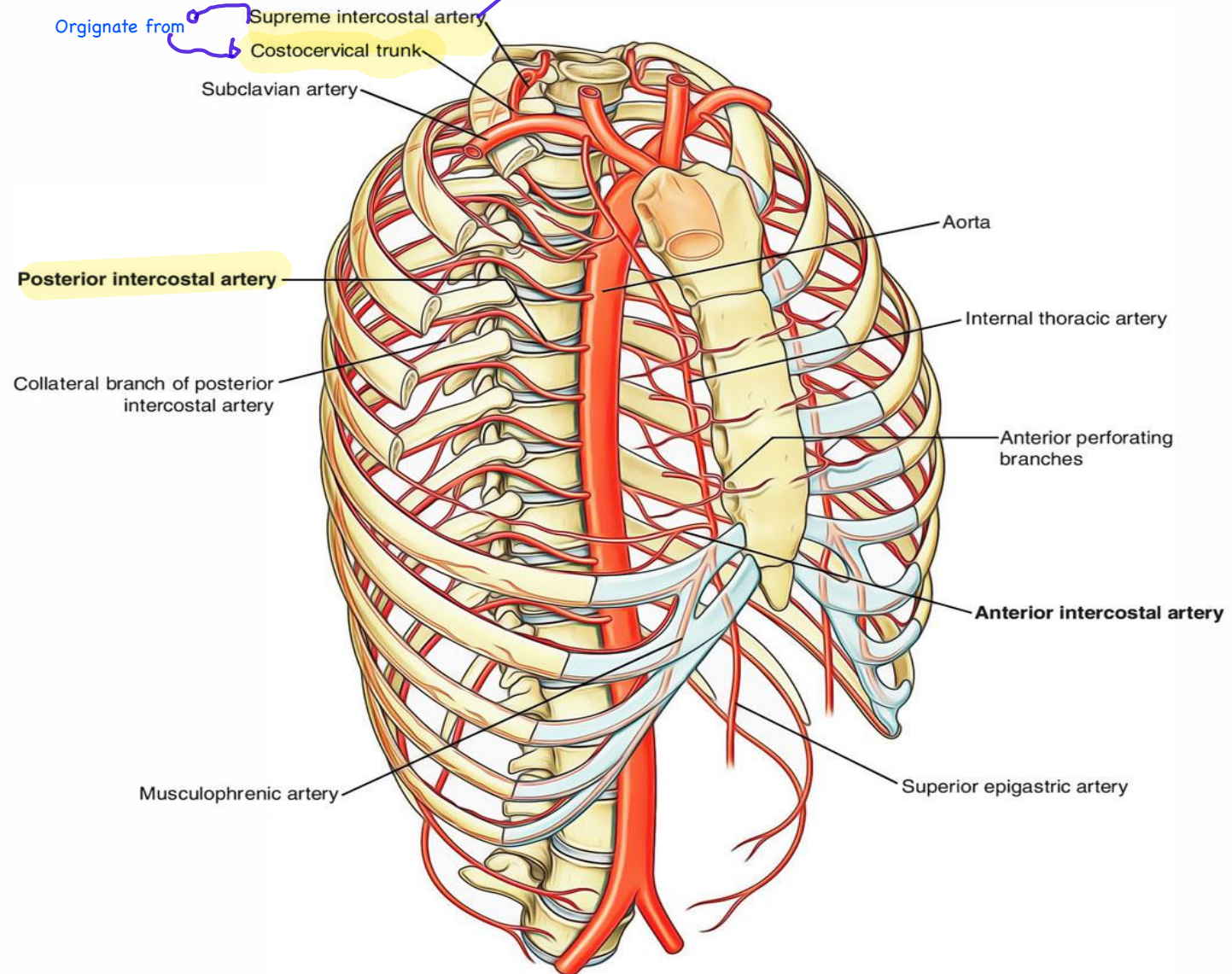
## 5- Mediastinal branches:

- Numerous small vessels supply mediastinal lymph nodes...





supply for the first 2 intercostal **بيعمل**  
space



# Descending Abdominal Aorta

↗ continuous with descending thoracic aorta يكون

## Beginnin:

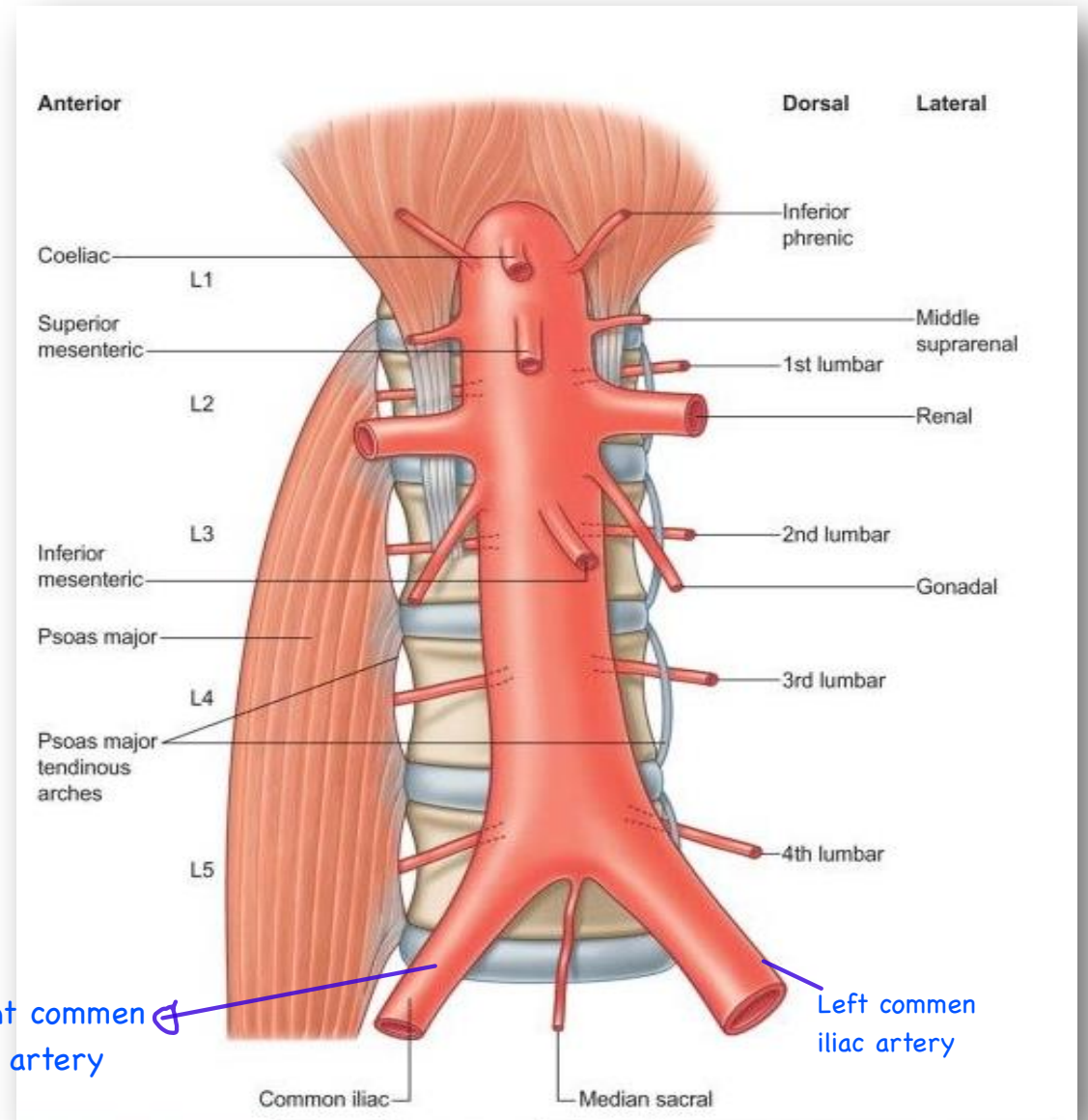
- It begins at aortic aperture of the diaphragm, anterior to the lower border of the 12<sup>th</sup> thoracic vertebra at the midline.

## Course:

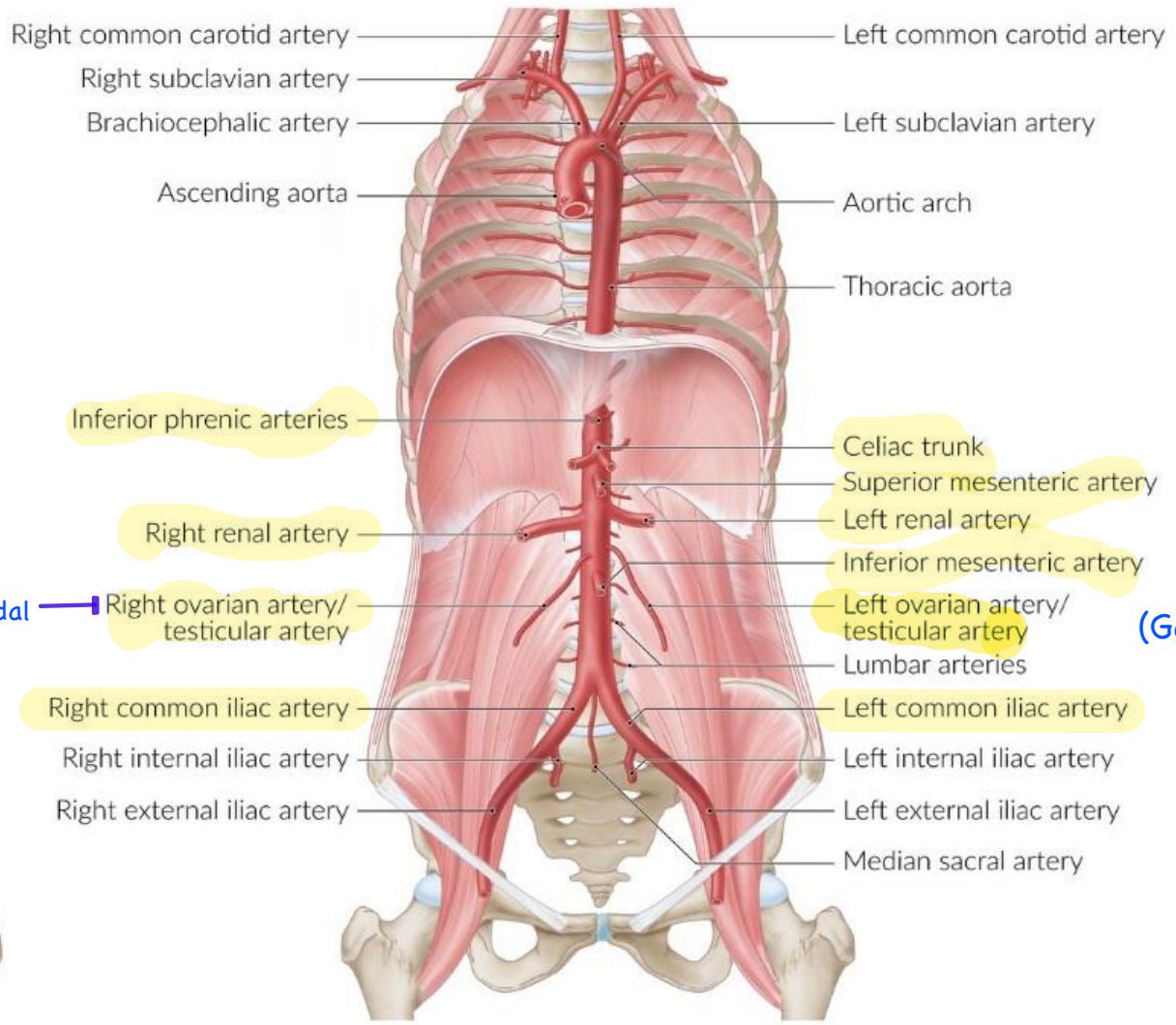
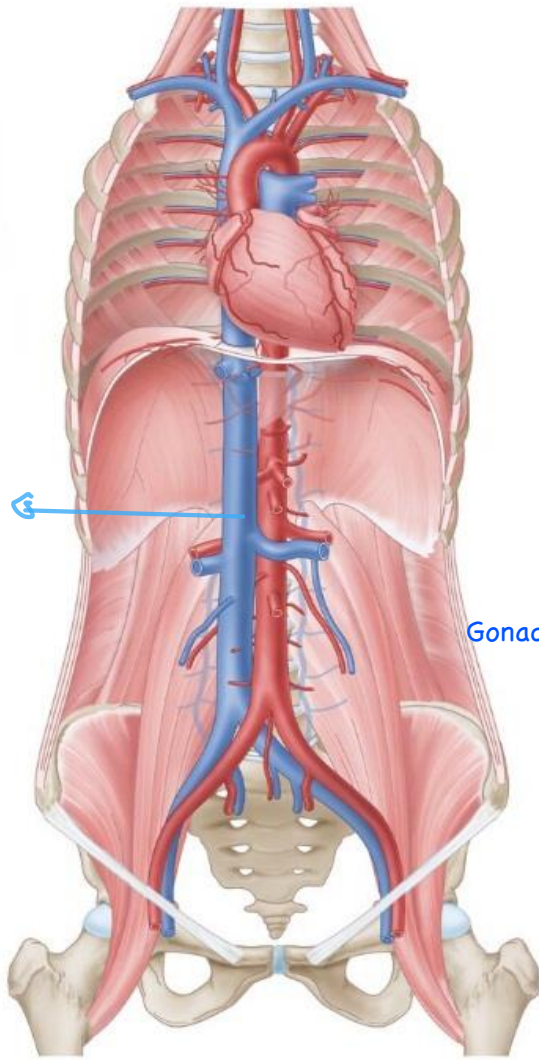
- It descends anterior to the lumbar vertebrae.

## End:

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



ال vein هذا هو  
 inferior vena cava  
 ، يكون موجود على ال right  
 side of descending  
 abdominal aorta



Gonadal

(Gonadal)

## Relations of the descending abdominal aorta:

### On its right side:

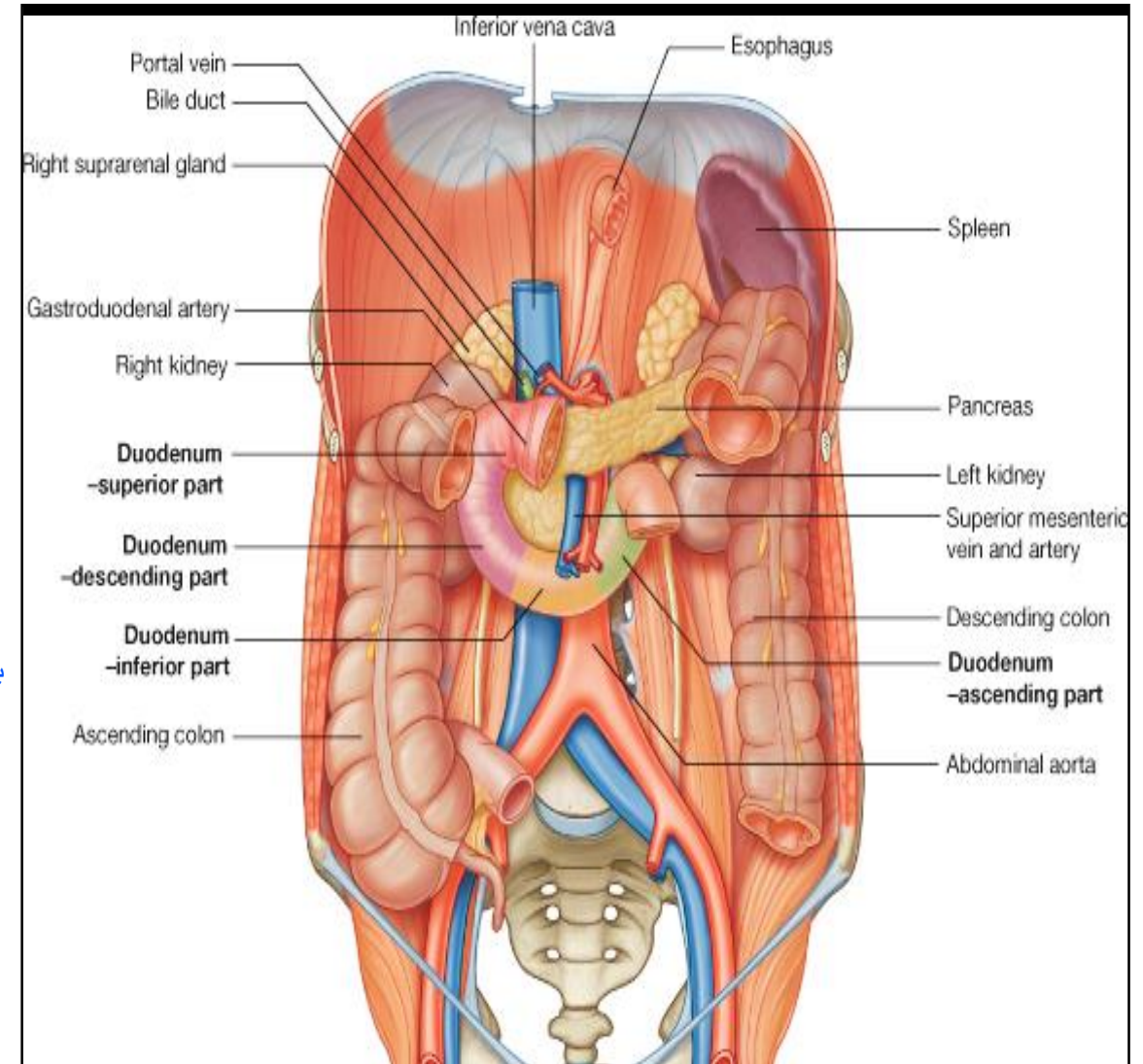
- Inferior vena cava.

### Anterior relations:

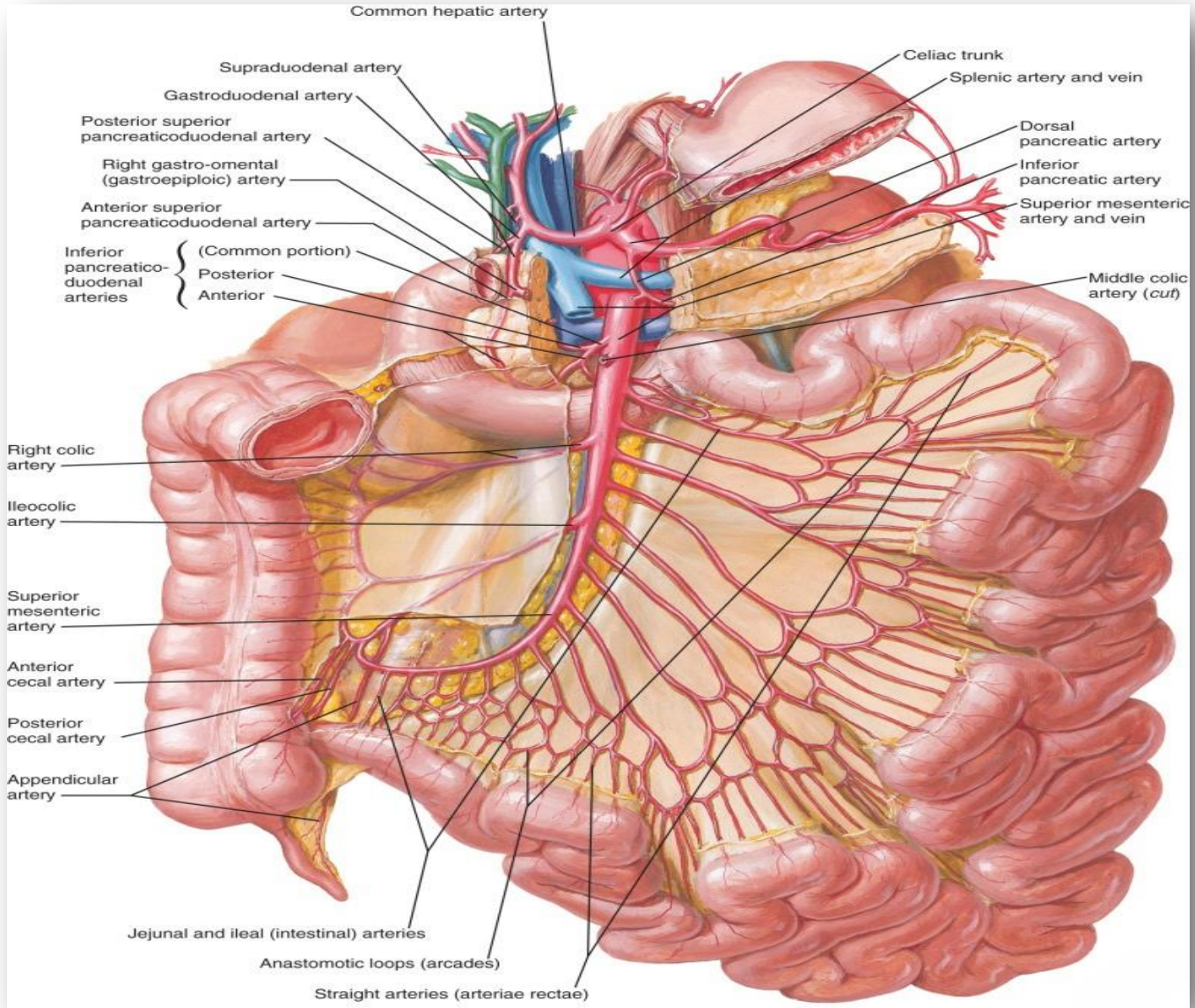
#### Related anteriorly from above downwards to:

- Coeliac trunk and its branches.
- Pancreas & superior mesenteric artery.  
*بكون موجود خلف ال pancreas*
- Horizontal part of duodenum & inferior mesenteric artery.  
*بكون موجود خلف ال horizontal part of duodenum*
- Mesentery of the small intestine.

*ال Mesentery هو يكون attached to small intestine  
ويكون anterior to descending abdominal aorta*



A



## On its left side:

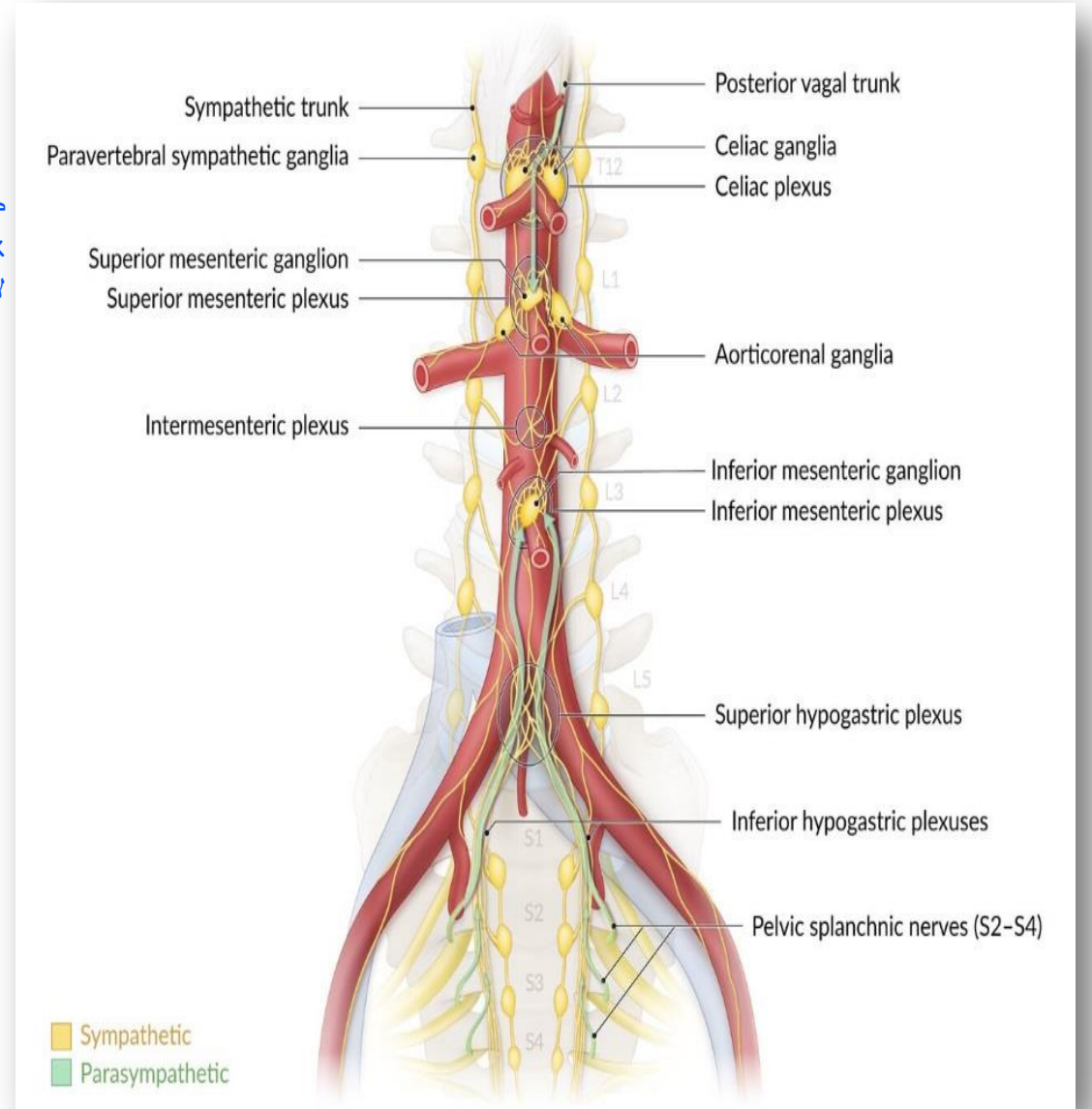
- Left sympathetic trunk.

طبيب سؤال احنا ليش ما قلنا عن ال right side of descending abdominal aorta انها تحتوي على ال right sympathetic trunk ?

لانه ال right sympathetic trunk موجود behind the inferior vena cava

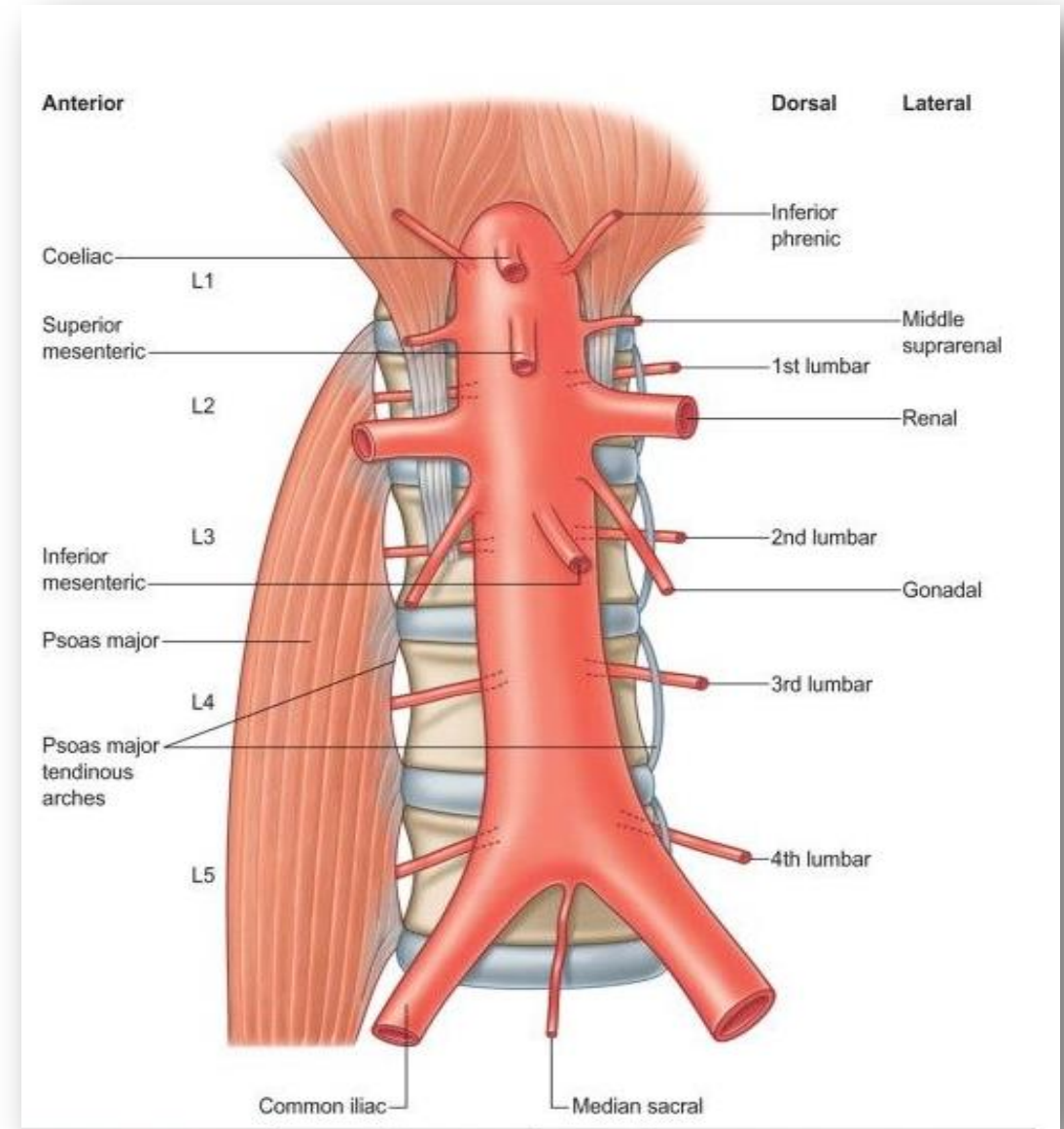
## Posterior relations:

- Thoracolumbar intervertebral discs. ال disc الموجودة بين ال ( T12 ) وال ( L1 )
- 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:

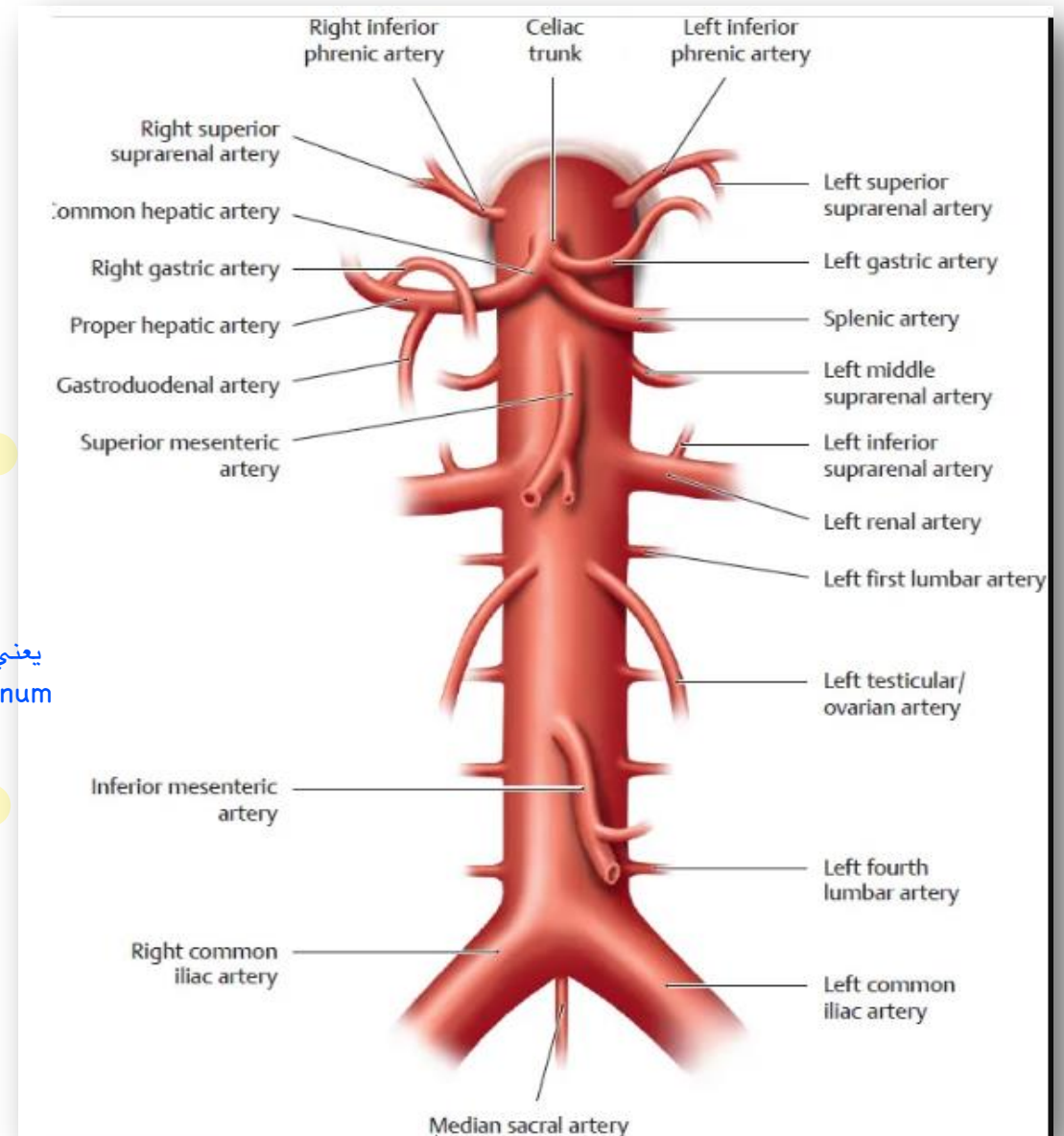
- It arises just below the aortic aperture.
- It is a short trunk passes horizontally forwards above the pancreas.
- It divides into three major branches; **Left gastric, Splenic & Common hepatic arteries.**
- So it supplies gut tube from the lower part of esophagus to the 2<sup>nd</sup> part of duodenum,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

يعني من الجملة الي تحتها خط ، لازم تفهم انه ال coeliac trunk بغذي كل من  
lower part of esophagus , stomach , 1& 2 parts of duodenum

## 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.

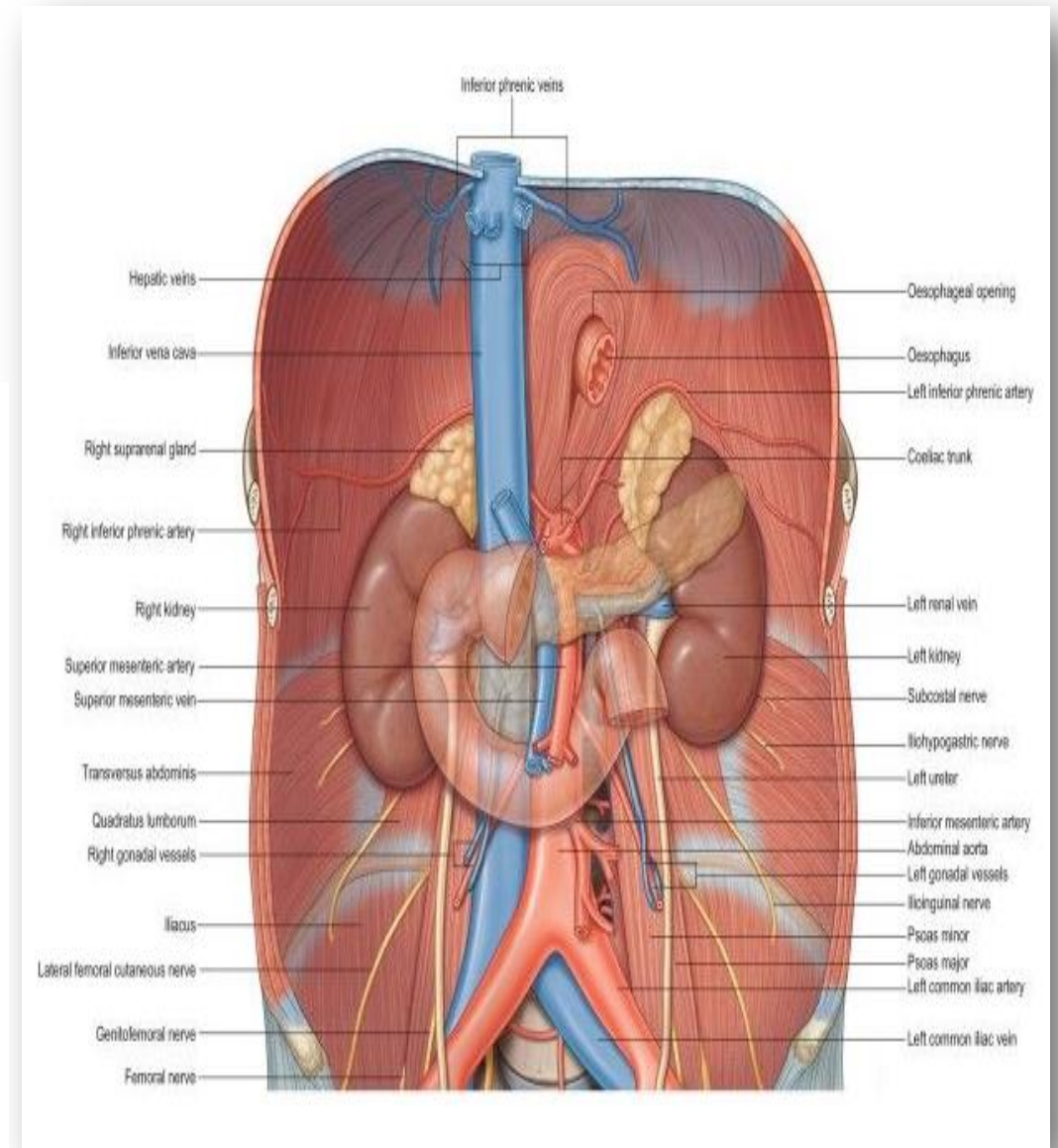
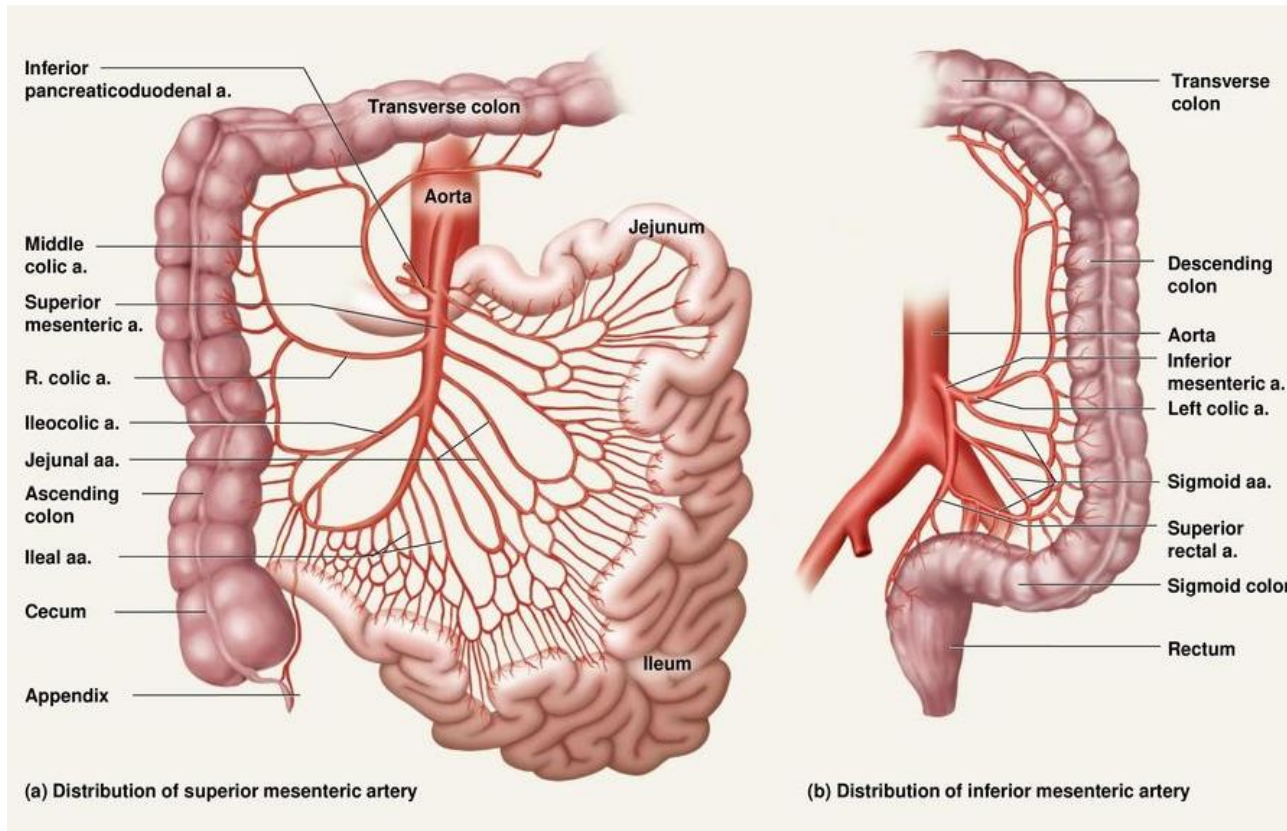
احنا قلنا انه most of small intestine لغشان ال coeliac trunk بغذي ال duodenum  
غشان هيك ما قلنا all of small intestine





## Inferior mesenteric artery:

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

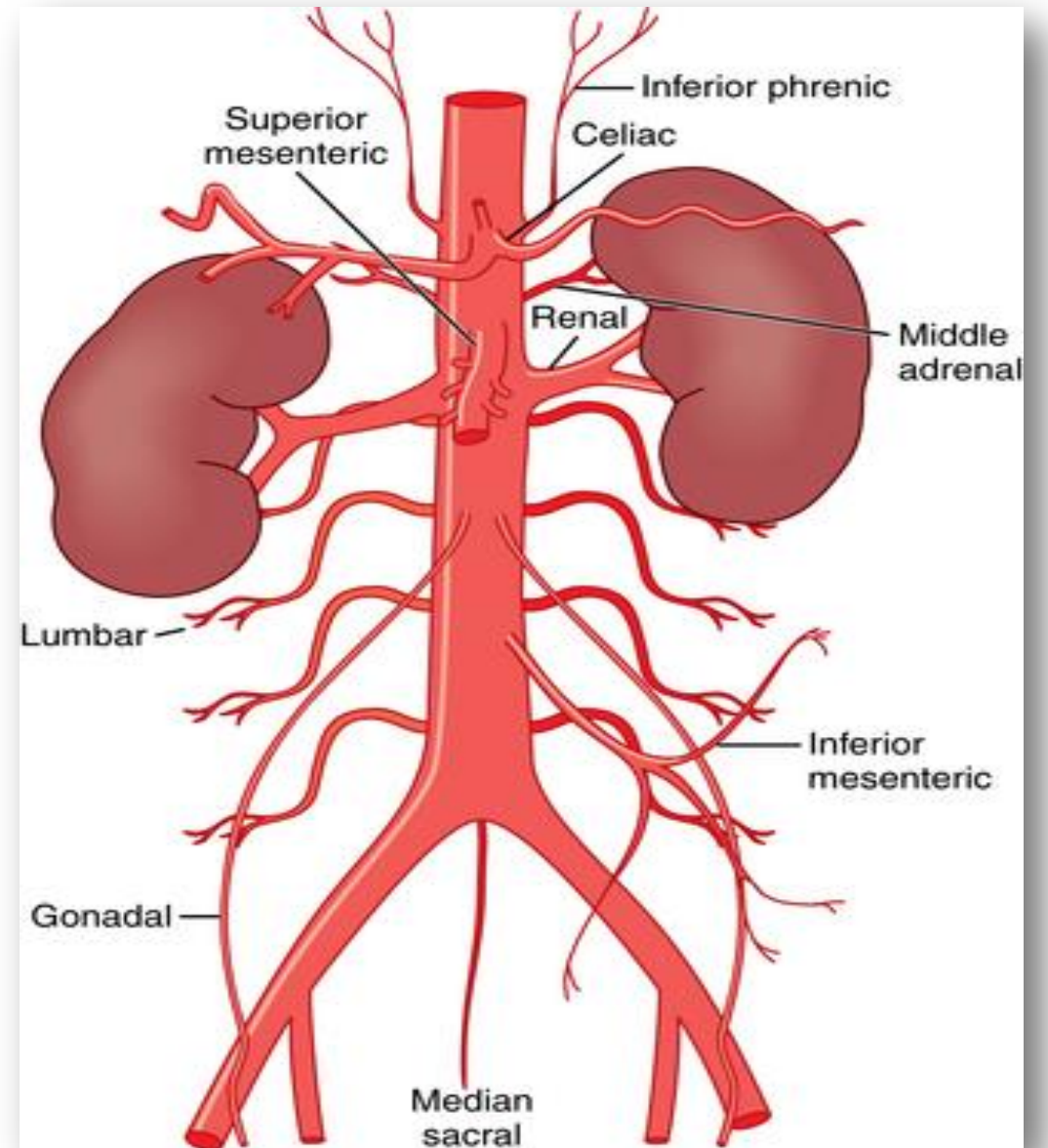


### The inferior phrenic arteries:

- 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.

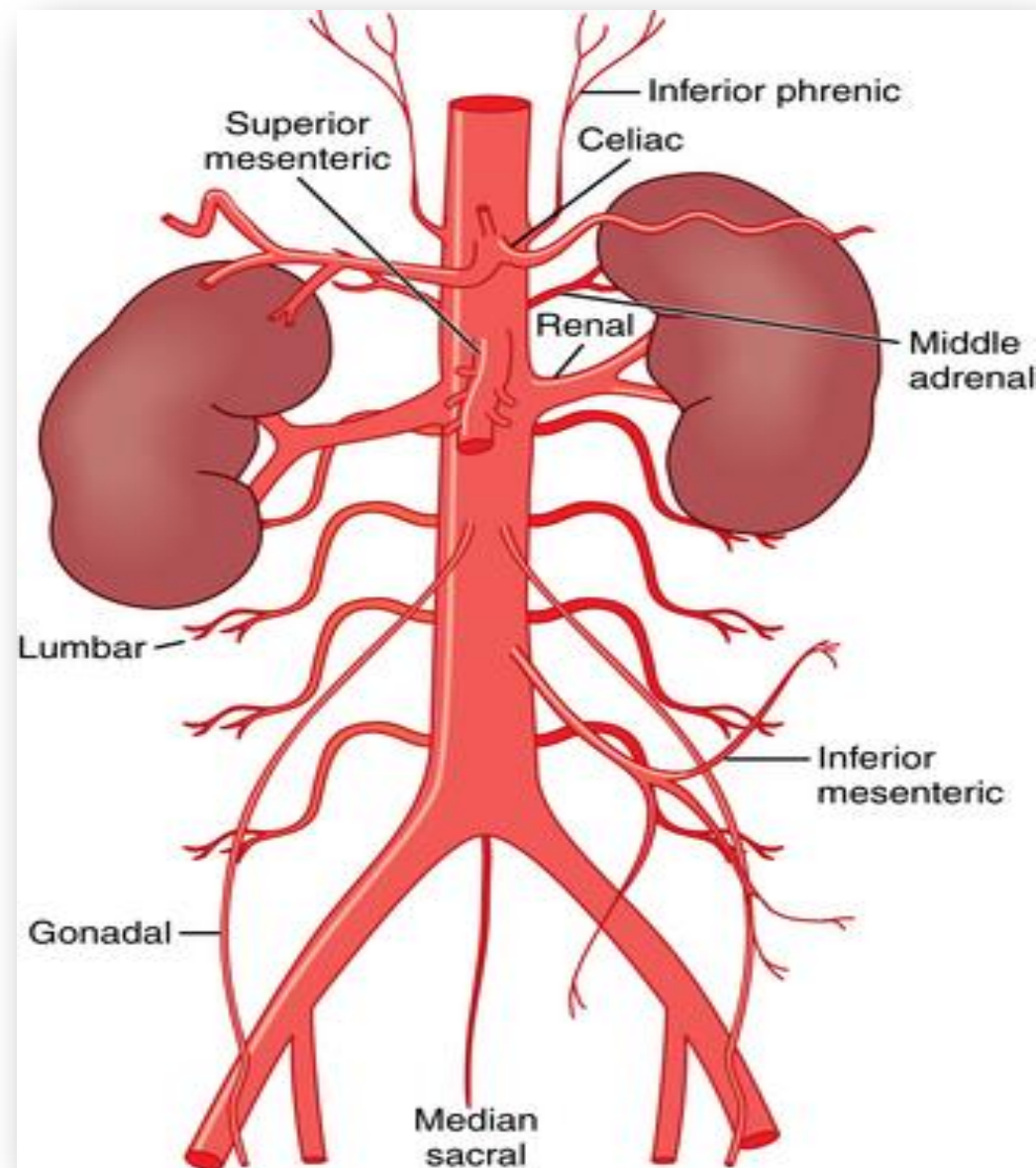


## Renal arteries:

- 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.** بالرغم من ان ال testis and ovary are not an abdominal organs ، الا انه بوخذوا ال supply تبعهم من ال abdominal aorta ، ليش؟
- **Ovarian artery in females.** لانه ال testis and ovary كانوا من ال abdominal organs بعدها صار الهم ال descending و راحوا لاماكنهم الي حاليا بنعرفها
- They are long, slender vessels.
- Each passes inferolaterally.



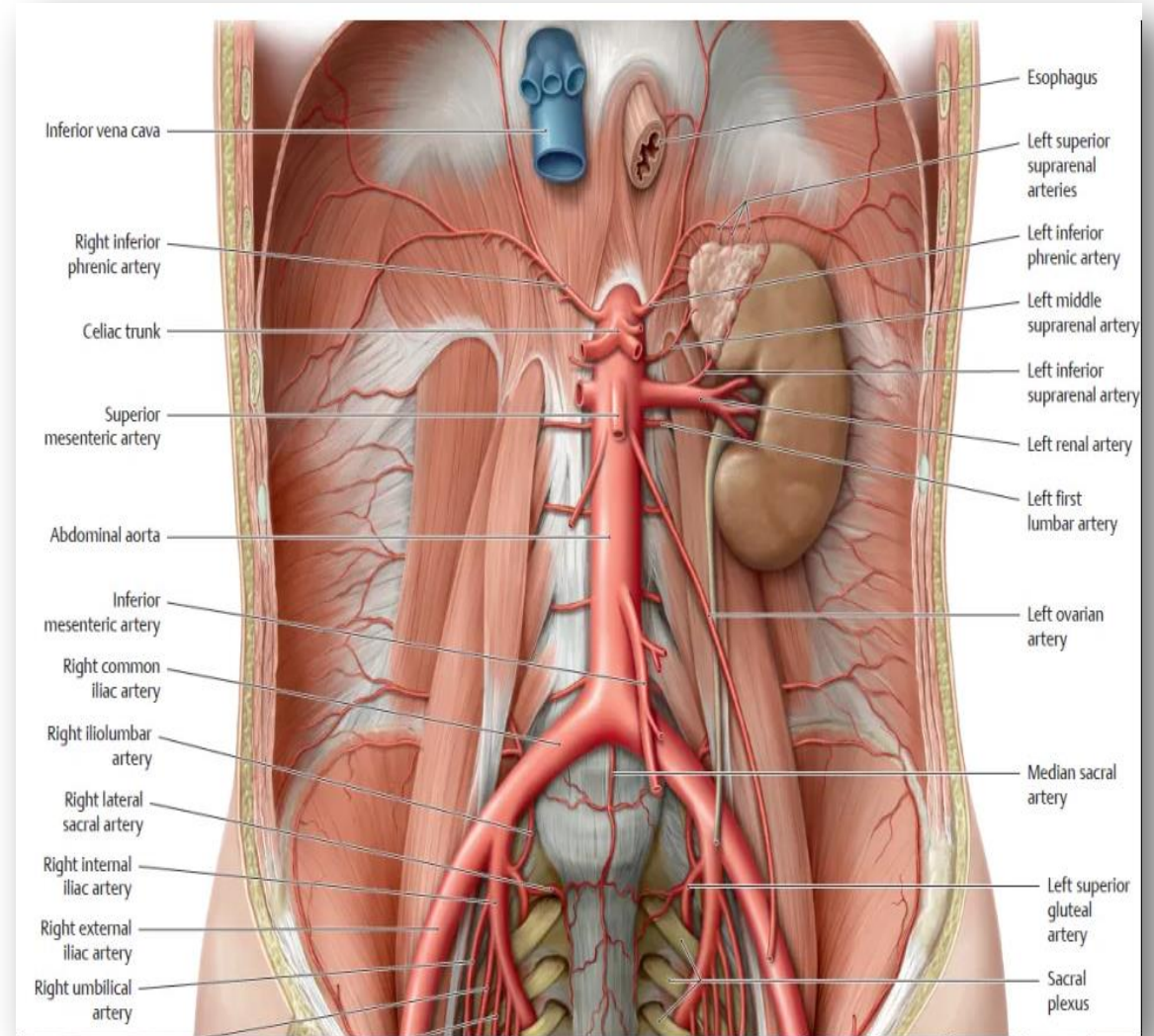
## Lumbar arteries:

- 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.

تذكر اي كلام باللون البنفسجي في محاضرات الدكتورة امانى بكون للفهم  
والدكتورة ما راح تسألك فيه

## 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.**

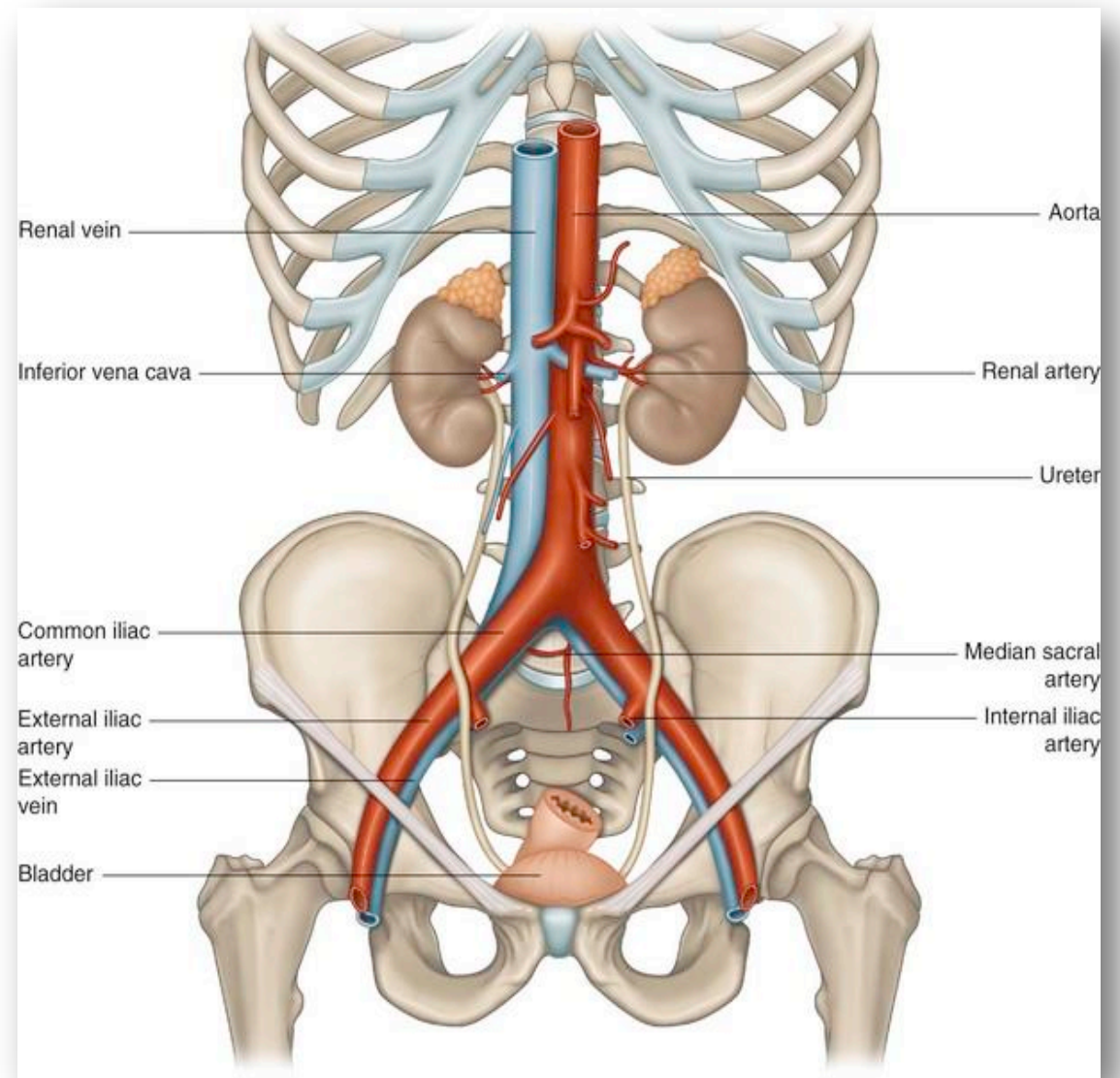
## Course:

- 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.**

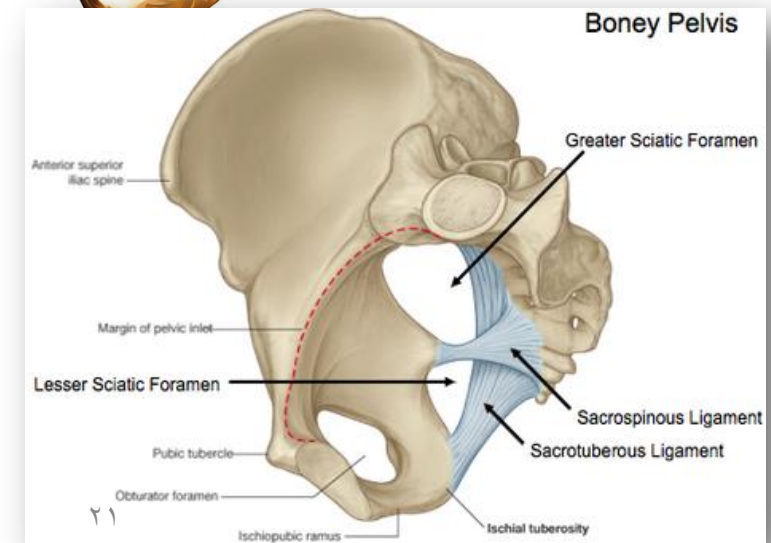
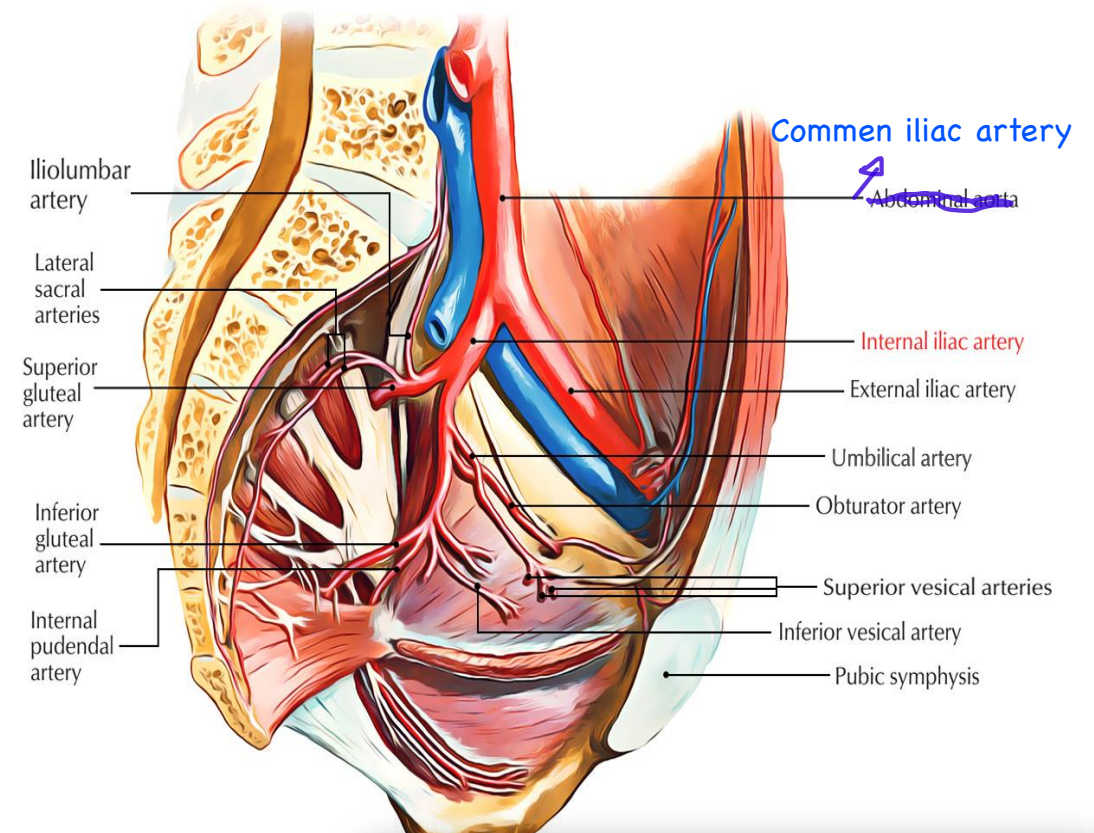
يتم تسميتهم حسب اذا كانوا موجودين داخل ال iliac cavity ولا لا



# Internal iliac artery

## Course:

- Each descends posteriorly to reach the superior margin of the greater sciatic foramen where it divides into an anterior trunk and a posterior trunk.
- It supply; most of the pelvic viscera, the perineum and the gluteal region.



## Branches of anterior trunk of internal iliac artery:

### 1-Superior vesical artery:

- It runs anteroinferiorly. بكونوا موجودين في ال male & female
- It supplies the ureter, urinary bladder, ductus deferens and seminal vesicles. بكونوا موجودين فقط في ال male

### 2-Obturator artery:

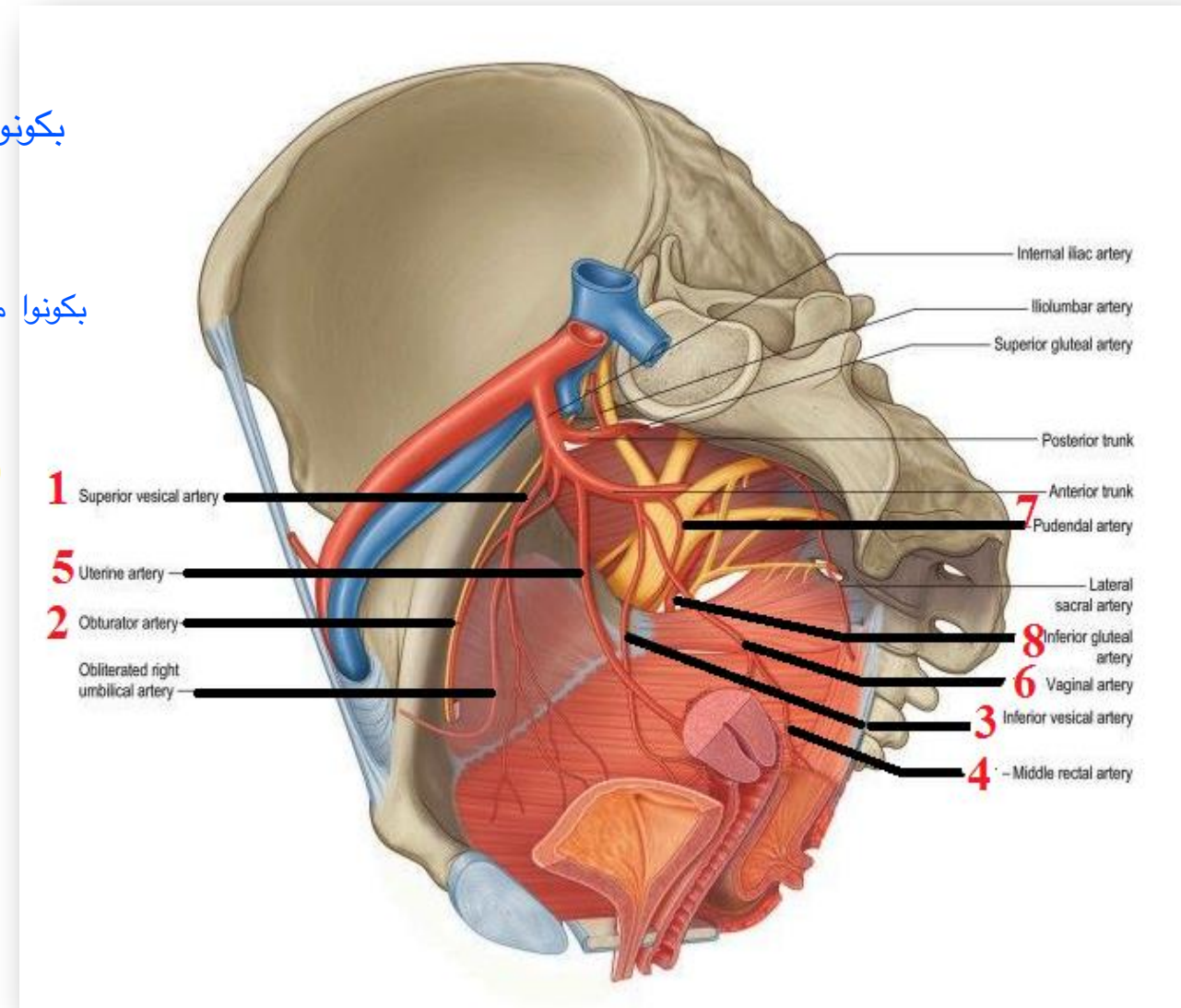
- It runs forward along the lateral wall of the pelvis and leaves the pelvis through the obturator canal.
- It supplies some structures of the lower limb.

### 3-Inferior vesical artery (in male):

- It supplies the urinary bladder and the prostate. بتكون موجودة فقط في ال male

### 4-Middle rectal artery:

- It supplies the rectum.

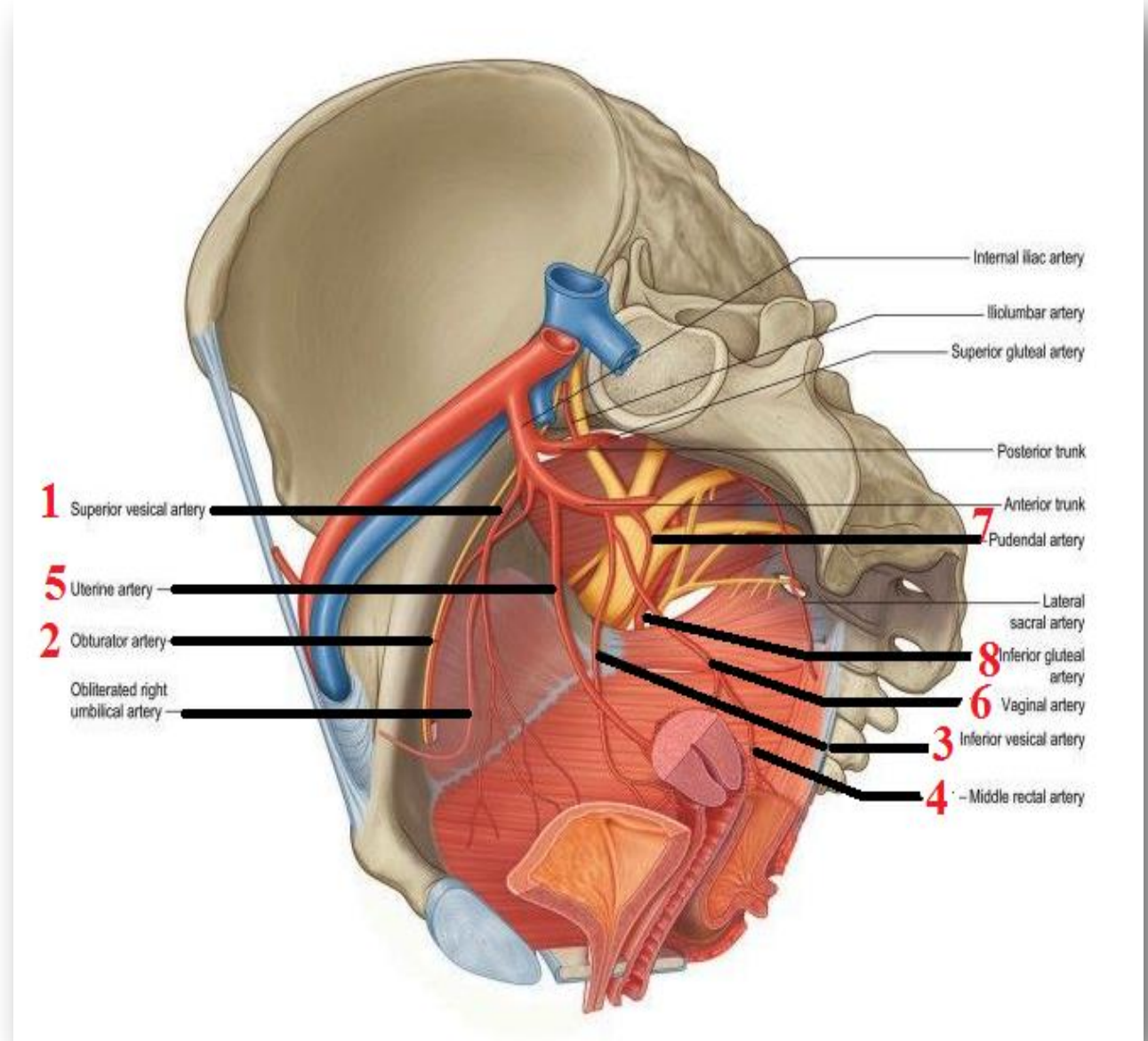
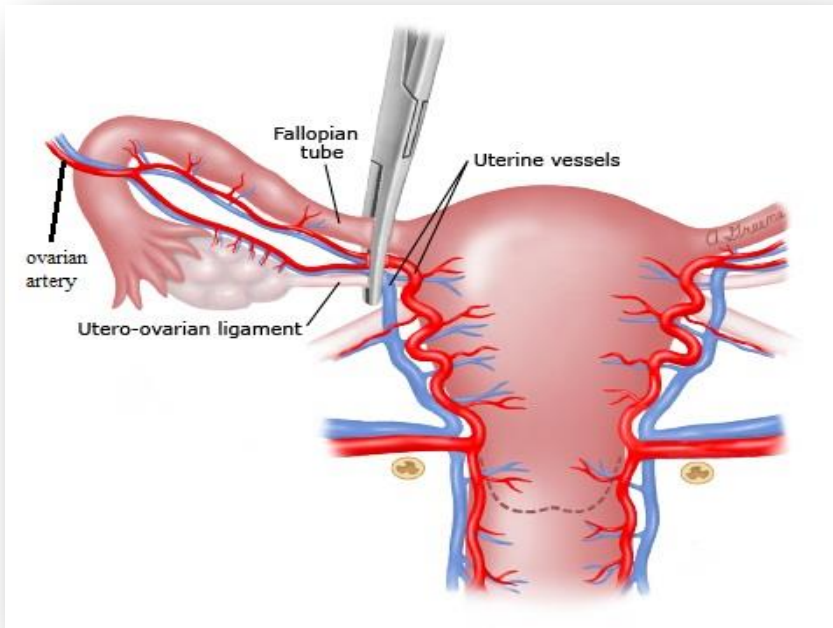


## 5- Uterine artery (in female):

- 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.





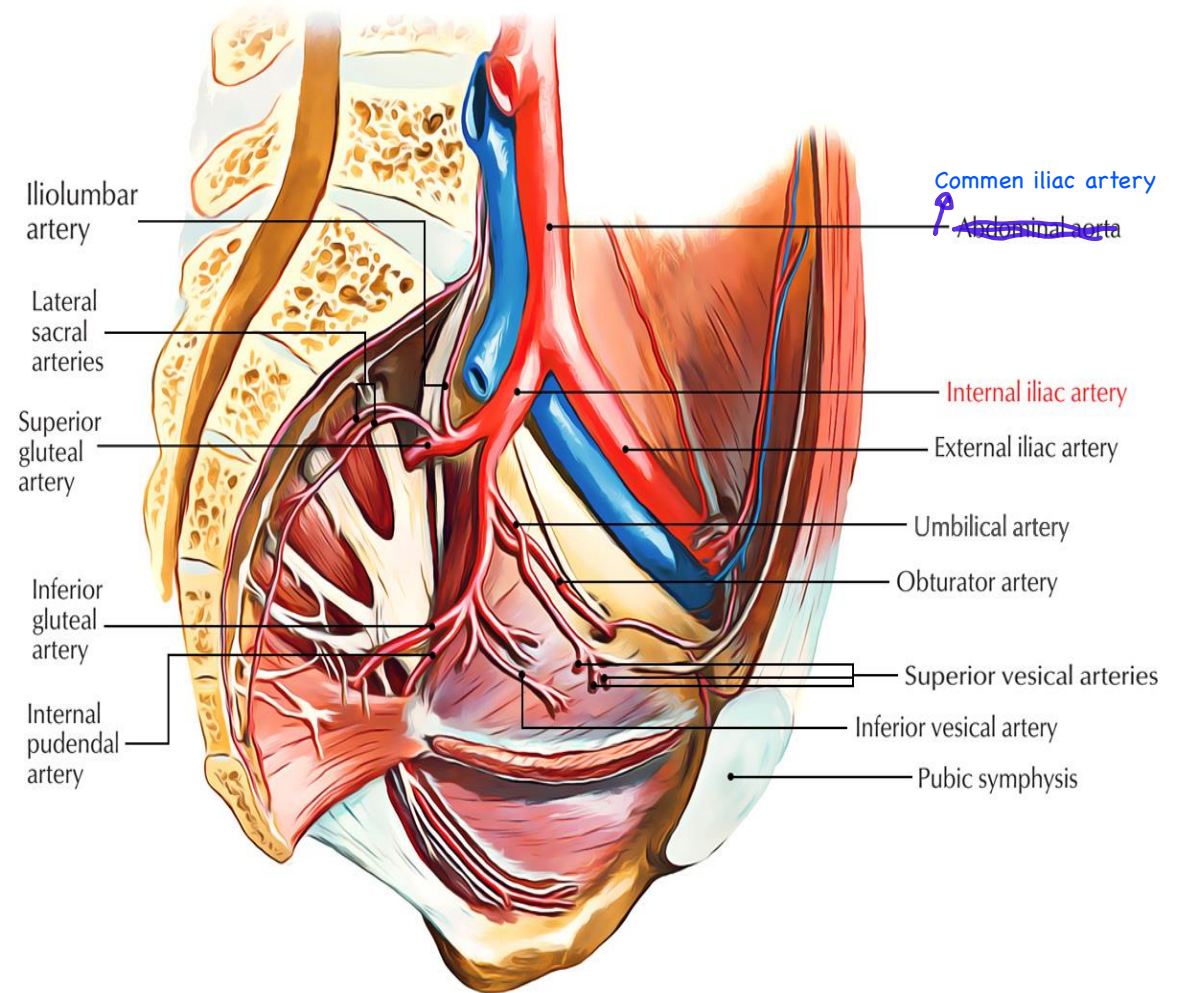
## 7-Internal pudendal artery

- 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.

هسا لازم تعرف اي artery يحتوي على كلمة pudendal يعني انه بعمل supply to external genital organ

## 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:

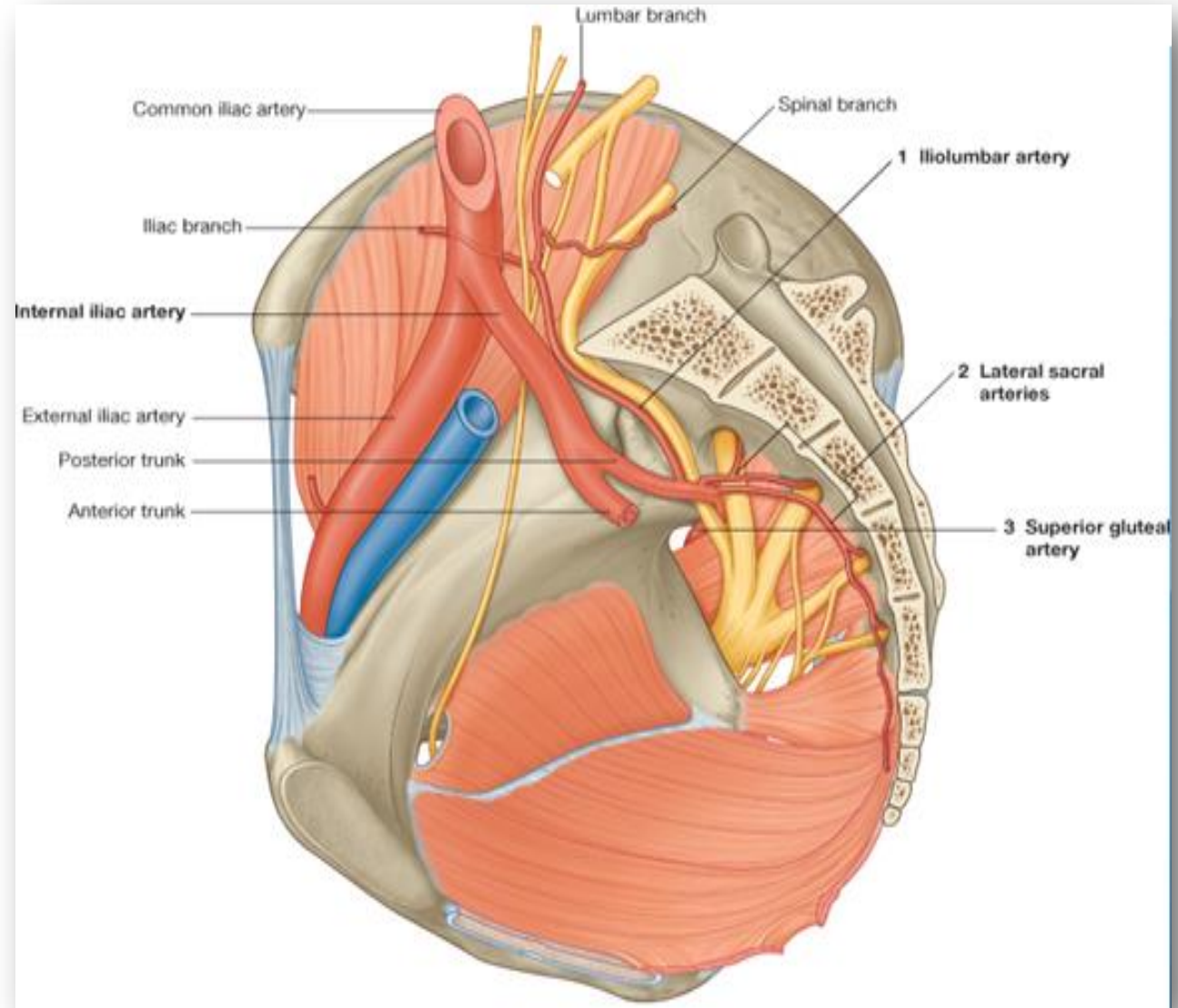
### 1-Iliolumbar artery.

### 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.



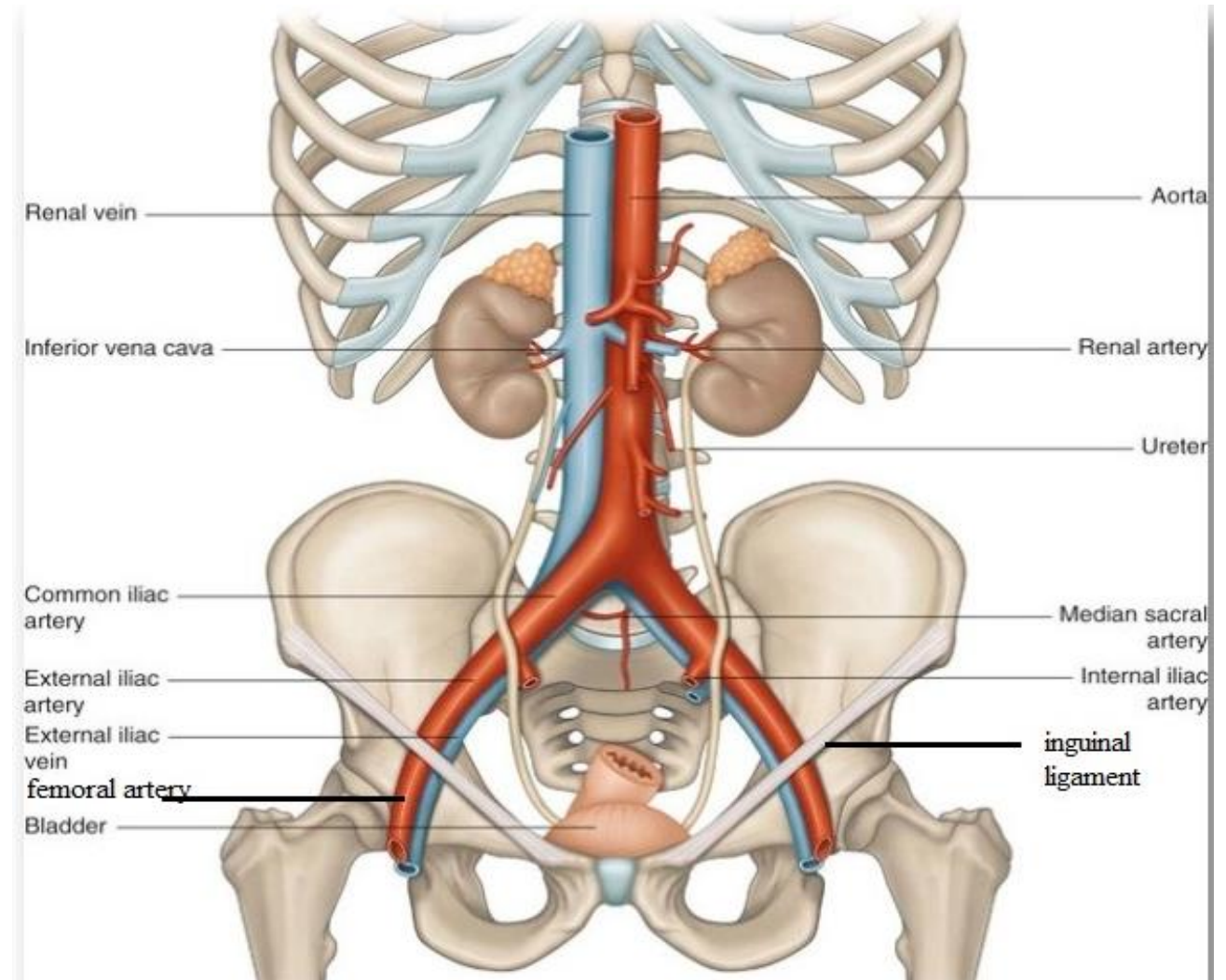
# External Iliac Artery.

## 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 become the femoral artery.

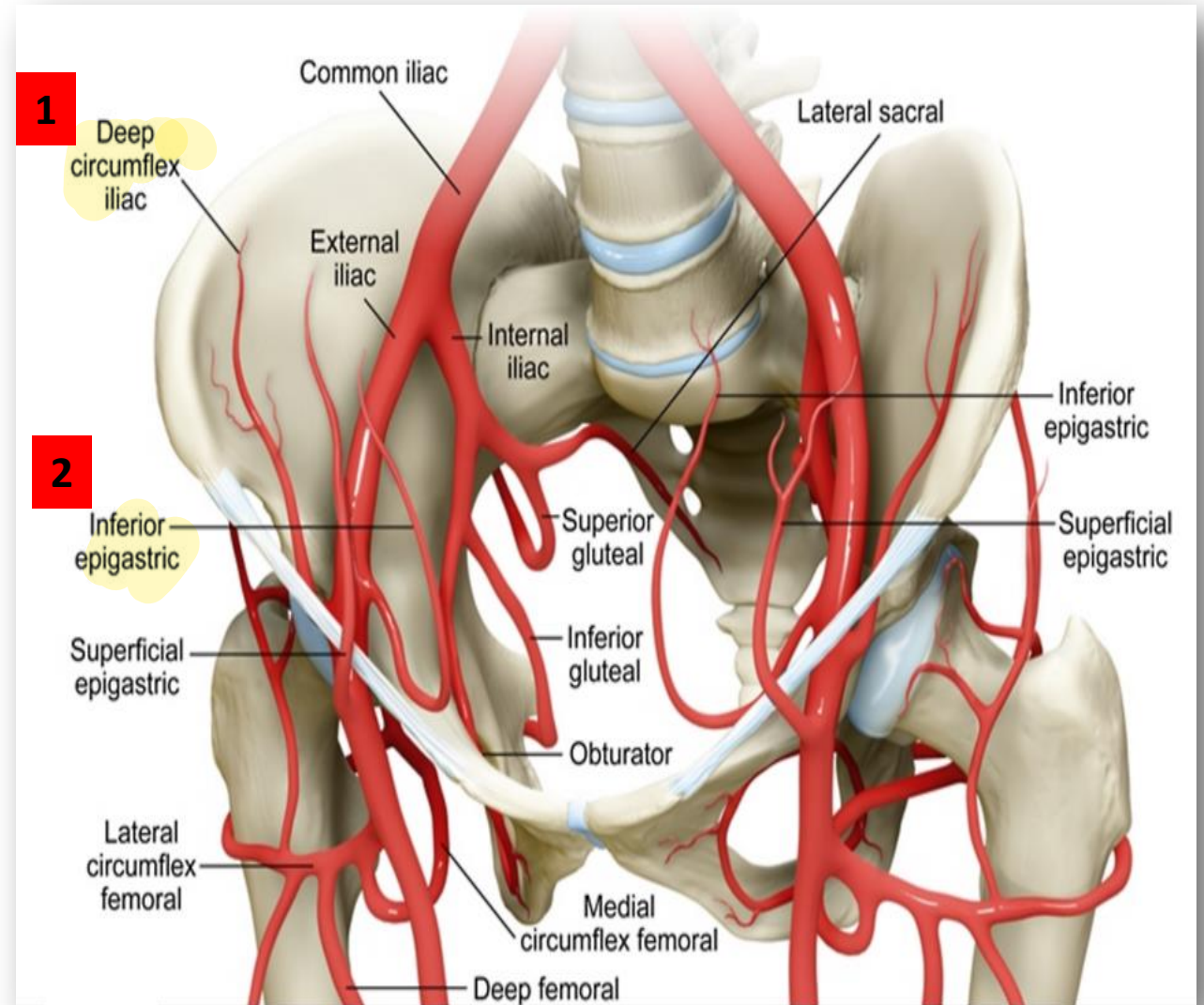


## Branches of the external iliac artery:

**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

الجواب: A

**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.

الجواب: A

*Thank  
you*

