

**The University Of Jordan
Faculty Of Medicine**



Anatomy of the pelvis II

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4- Arteries Of The Pelvis

This item includes;

❖ Internal iliac artery

❖ Other arteries:

✓ Superior rectal artery (continuation of the inferior mesenteric A)

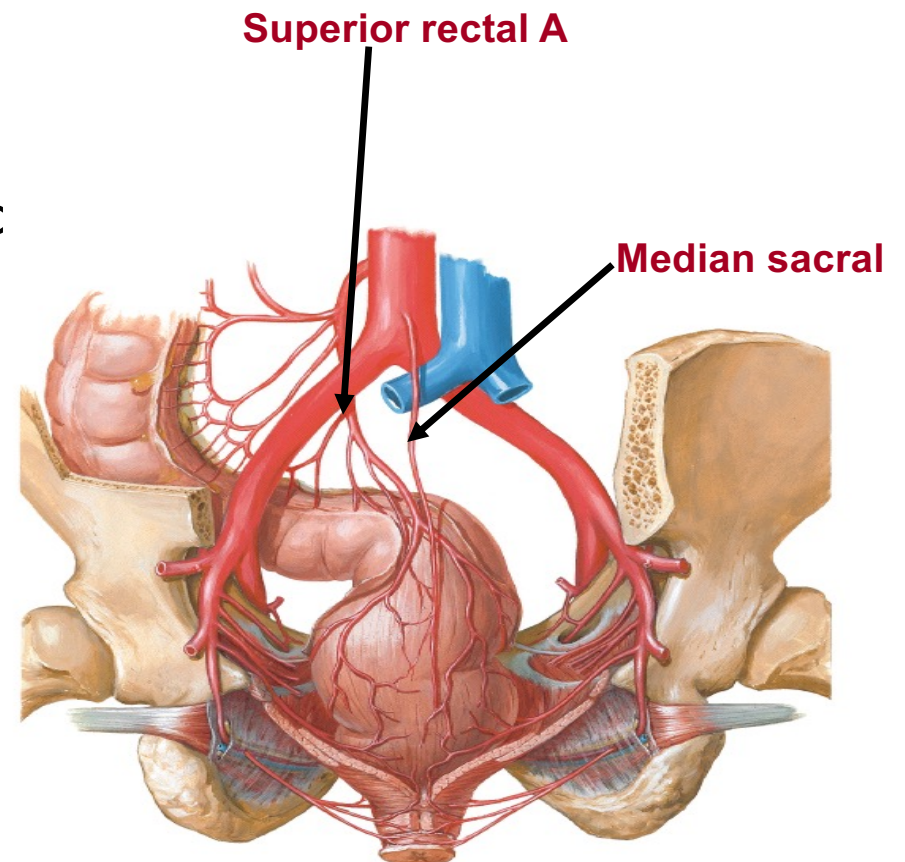
✓ Median sacral artery (from Aorta)

✓ The two ovarian arteries (from Aorta) .

Internal Iliac Artery :

Beginning : Opposite the lumbosacral disc

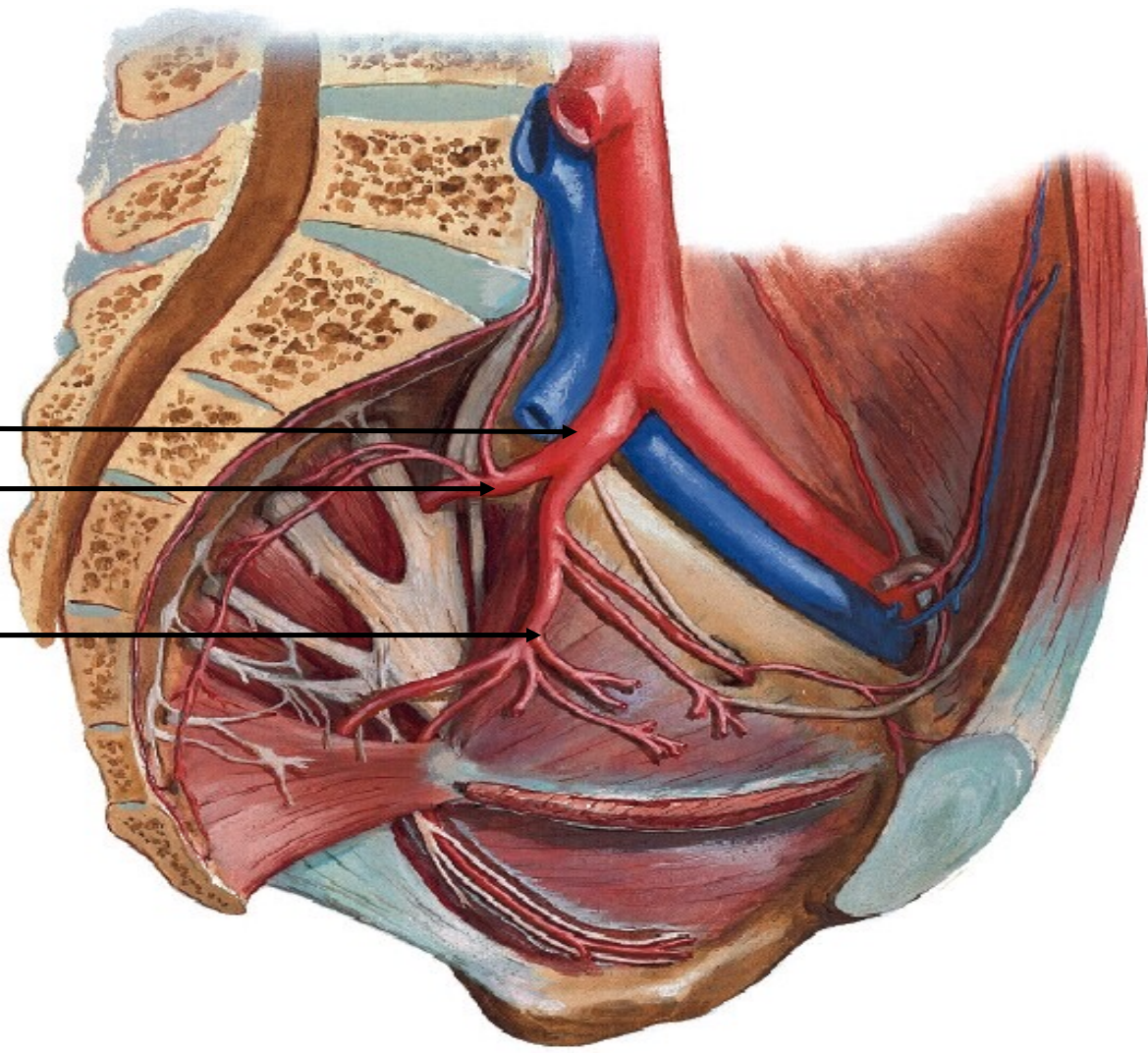
Termination : Upper margin of greater sciatic foramen by dividing into anterior and posterior divisions.



Internal Iliac artery

Posterior Division

Anterior Division



Branches of Internal Iliac Artery

Anterior Visceral branches	Anterior Parietal branches	Posterior division parietal branches
Superior vesical A.	Obturator A.	Iliolumbar A.
Inferior vesical A. <i><u>(OR vaginal in female)</u></i>	Internal pudendal A	Two lateral sacral arteries
Middle rectal A.	Inferior gluteal A.	Superior gluteal A.
Uterine A. <i><u>(has NO corresponding branch in the male)</u></i>		

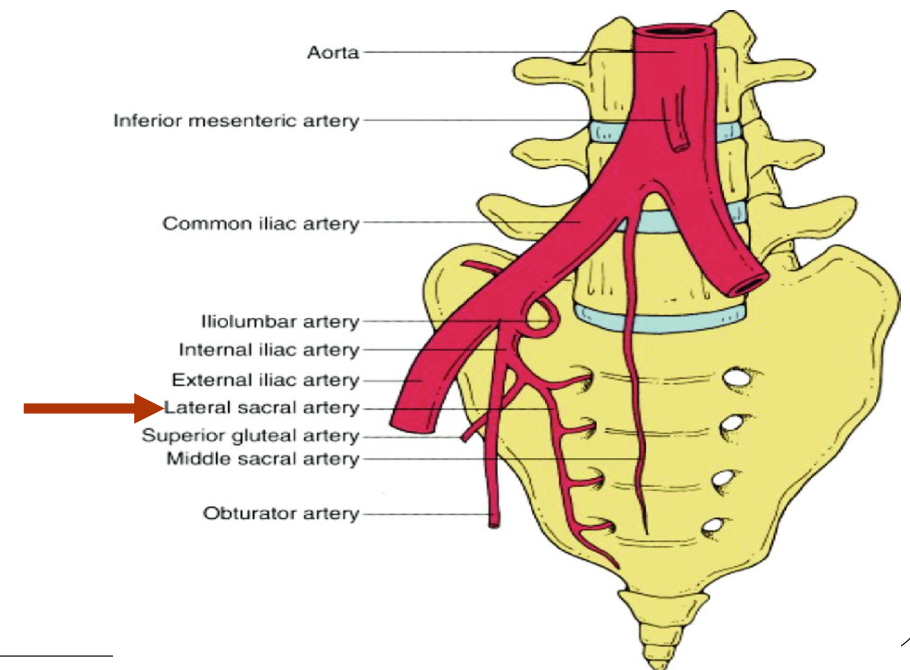
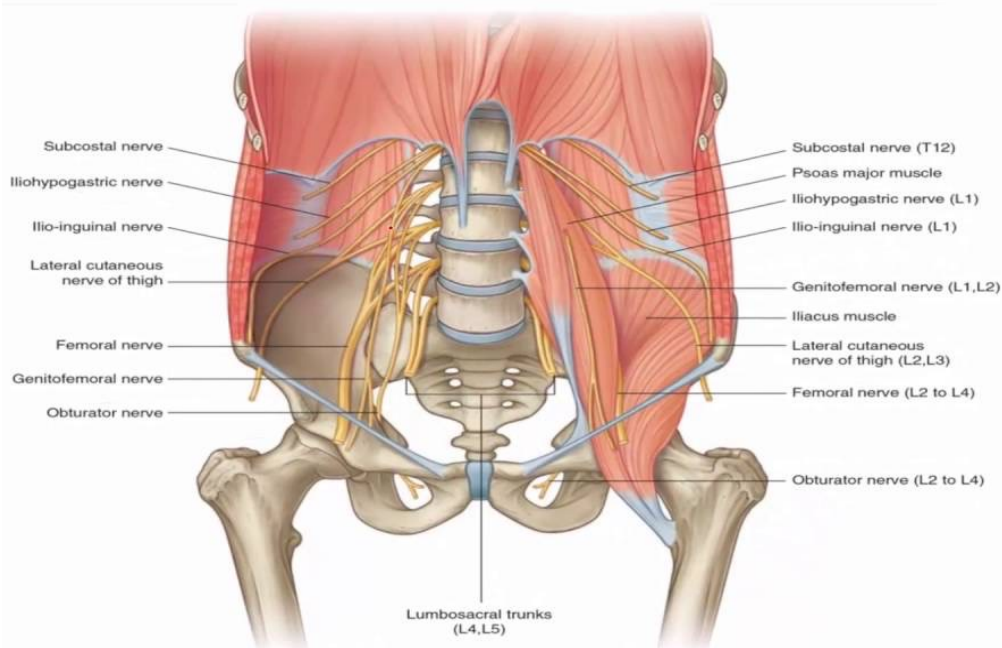
Posterior division Branches

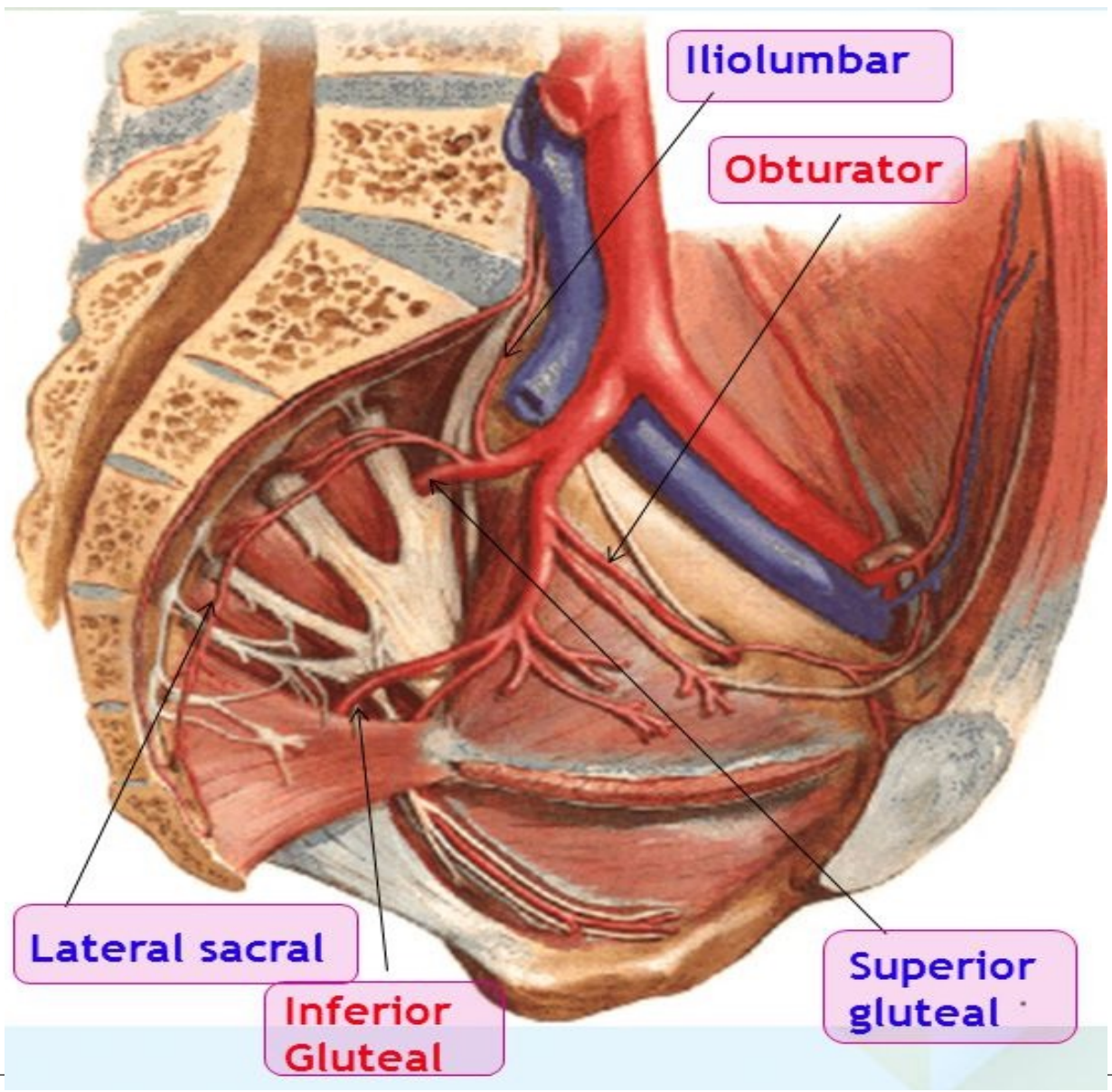
1) Iliolumbar A. (muscular)

- ❖ It divides into iliac and lumbar branches to supply iliacus, psoas major and quadratus lumborum muscles

2) Two Lateral Sacral Arteries (superior, inferior):

- These are the arteries of sacral canal.
- They enter the ventral sacral foramina to supply contents of sacral canal and then come through the dorsal sacral foramina to supply the overlying muscles.





Iliolumbar

Obturator

Lateral sacral

Inferior
Gluteal

Superior
gluteal

Anterior division Branches

1) Superior Vesical A. (Obliterated Umbilical A.):

- It was the umbilical artery in the fetus
- Its **proximal part is patent** (= superior vesical A.)
- It gives branches to the bladder, ureter and vas deference.
- Its **distal part is fibrosed** form medial umbilical ligament which form the medial the medial umbilical fold of peritoneum.

2) Inferior Vesical A. (Vaginal A. in the female):

It supplies base of the urinary bladder, seminal vesicle, prostate and gives artery of the vas which runs in the spermatic cord and anastomoses with the testicular artery.

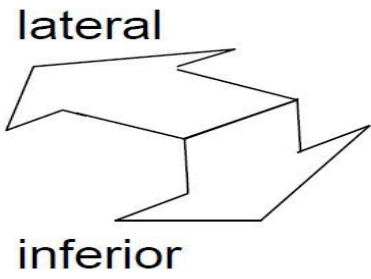
- **In female**: The vaginal A. supplies the base of the bladder and gives vaginal branches which anastomose with vaginal branches from uterine A.

3) Middle Rectal Artery:

- ❖ It supplies the musculosa of rectum, seminal vesicles and prostate in the male and vagina in the female.
- ❖ It anastomoses with other rectal arteries.

4) Uterine Artery:

- ❖ It runs medially on the upper surface of the pelvic diaphragm.
- ❖ It ends by anastomosing with the ovarian A.
- ❖ It supplies pelvic part of ureter, vagina (azygos arteries), cervix and of uterus, medial part of the uterine tube.



Iliolumbar A

Branches of Internal Iliac A

Lateral Sacral A

Superior Gluteal A

Inferior Gluteal A

Internal Pudendal A

Middle Rectal A

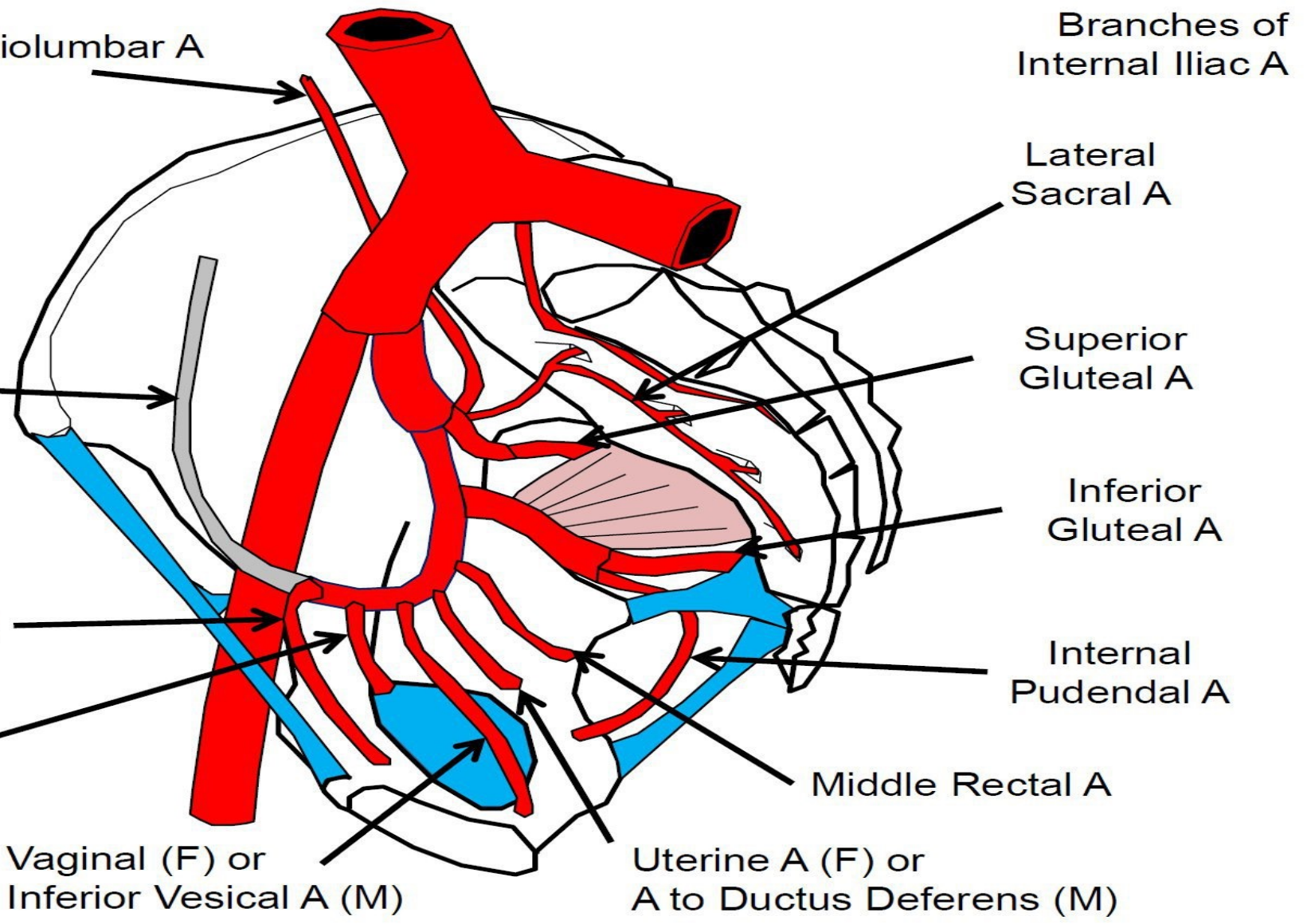
Uterine A (F) or A to Ductus Deferens (M)

Obliterated Umbilical A (= Medial Umbilical Ligament)

Superior Vesical A

Obturator A

Vaginal (F) or Inferior Vesical A (M)

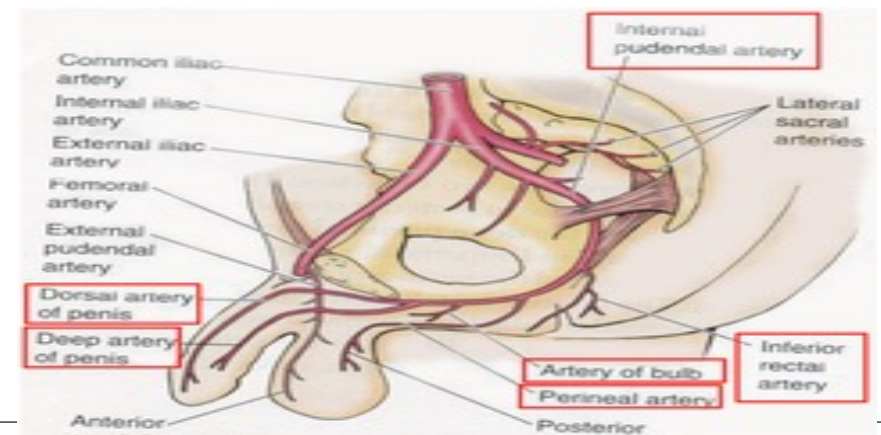


5) Internal pudendal artery

- ❑ It leaves the pelvis through the greater sciatic foramen and enters the gluteal region below the piriformis muscle .
- ❑ It then enters the perineum by passing through the lesser sciatic foramen and passes forward in the pudendal canal with the pudendal nerve.

6) Obturator Artery: **READ ONLY**

- ❑ In the pelvis, it gives a pubic branch which anastomoses with the pubic branch of inferior epigastric artery on the posterior surface of the body of the pubis
- ❑ It enters the thigh through obturator foramen



Other arteries in the pelvis

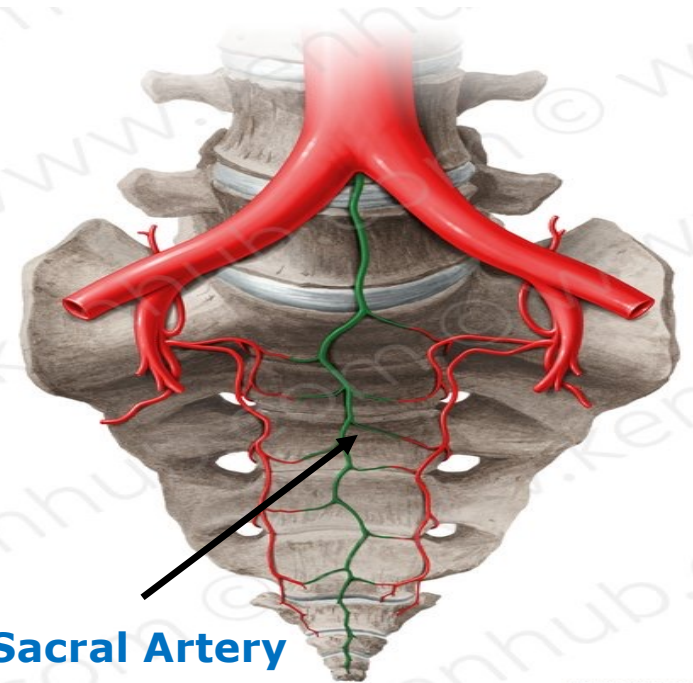
READ ONLY

Superior Rectal Artery

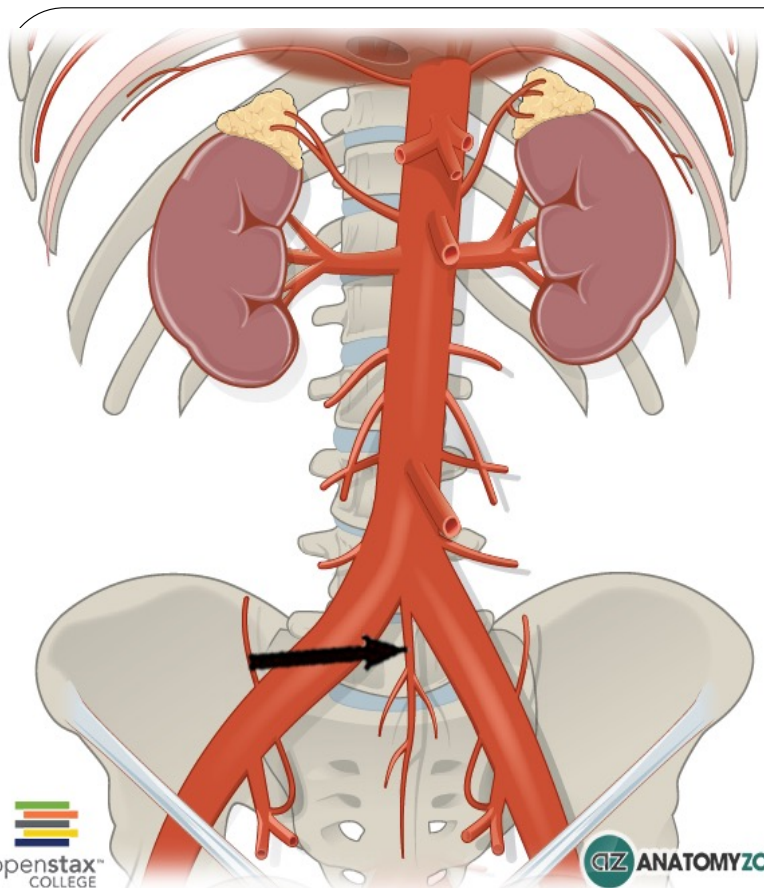
- ❖ The superior rectal artery is a direct continuation of the inferior mesenteric artery as it crosses the left common iliac artery.
- ❖ It supplies the mucous membrane of the rectum and the upper half of the anal canal.

Median Sacral Artery

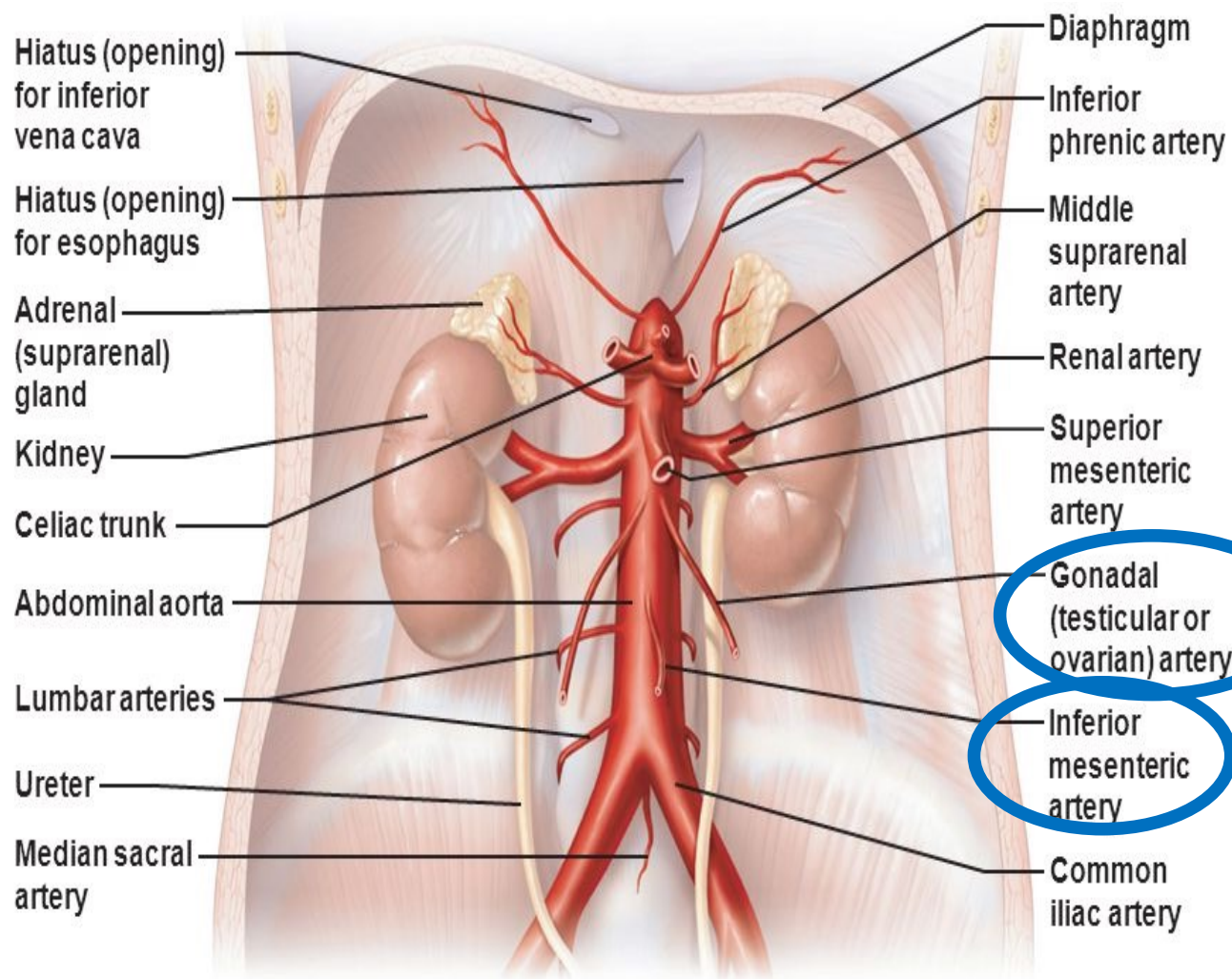
- ❑ The median sacral arises at the bifurcation of the aorta .
- ❑ It descends over the anterior surface of the sacrum and coccyx.



Median Sacral Artery



Median Sacral Artery



(c) Major branches of the abdominal aorta.

5-Venous drainage of the pelvis

This is include

- ❖ Internal iliac vein
- ❖ Superior rectal
- ❖ Median sacral
- ❖ Ovarian veins

Internal Iliac Vein:

- It begins opposite the upper part of greater sciatic foramen
- It ends at pelvic brim by joining the external iliac vein to form the common iliac vein
- It receives veins similar to the branches of internal iliac artery except the iliolumbar vein which ends in the common iliac vein.



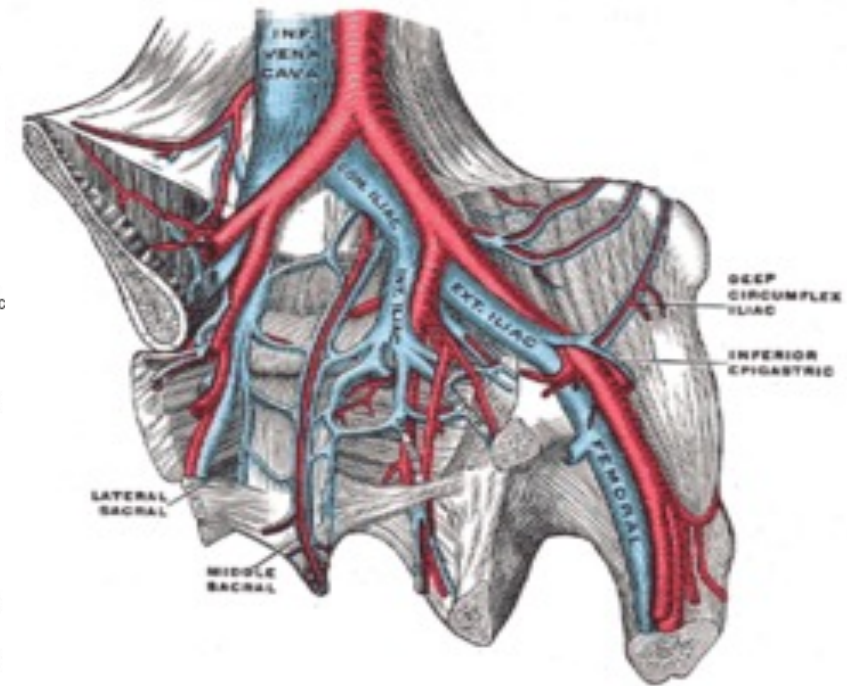
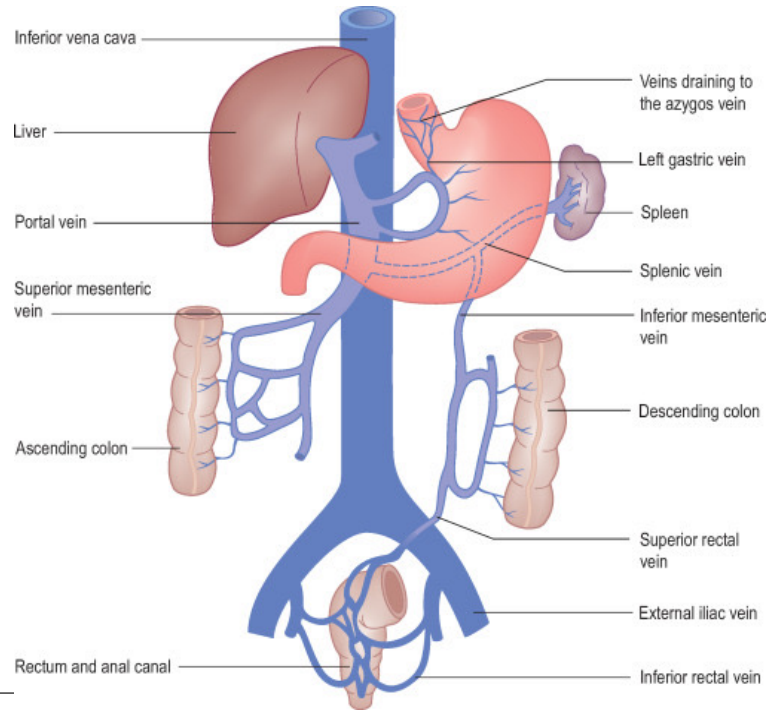
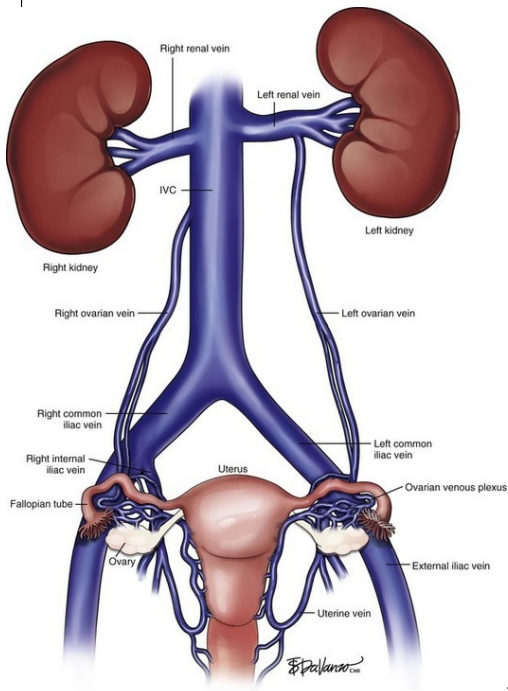
- The internal iliac veins drain blood from the pelvic viscera by means of visceral veins and drain blood from the internal vertebral venous plexuses by means of the valveless lateral sacral veins.
- Increase in the pelvic pressure (e.g. coughing & straining) may cause reflux of blood backwards up to the internal vertebral venous plexuses.
- In this way, primary tumors in pelvic viscera give rise to secondaries in the lumbar vertebrae

Other Veins in The Pelvis:

READ ONLY

1. Superior rectal vein : arises from the internal rectal venous plexus of rectum and ascends to become inferior mesenteric vein which joins splenic vein.

2. Median sacral vein : begins in front of sacrum and ascends to join **left common iliac v.**



6- Nerves in The Pelvis

Nerves of Pelvis

Somatic

Autonomic

Sacral plexus

Coccygeal plexus

Sympathetic
Sacral sympathetic trunks

Parasympathetic
Pelvic splanchnic nerve arising from S2, S3, S4

Sacral plexus

Sacral plexus is formed by union of lumbosacral trunk (part of L₄ and whole L₅) and S₁, S₂, S₃ and part of S₄ ventral rami

The plexus lies between piriformis and parietal pelvic fascia.

Vessels Related To The Sacral Plexus:

- Internal pudendal vessels descends in front of the plexus.
- The superior gluteal A. passes backwards between the lumbosacral trunk and S₁ ventral ramus.
- The inferior gluteal A. passes backwards between S₁, S₂ ventral rami

Branches Of The Sacral Plexus (pelvic branches)

1-To levator ani and coccygeus .

2-Pelvic splanchnic nerves (S2, S3, S4):

It join inferior hypogastric plexus.

3-Pudendal N, (S2, S3, S4):

it is the somatic nerve of the perineum.

4- Perforating cutaneous nerve:

Supplies skin of lower medial part of the buttock



Pressure from the Fetal Head During the later stages of pregnancy, leads to compression of sacral plexus , the mother often complains of discomfort or aching pain extending down one of the lower limbs.

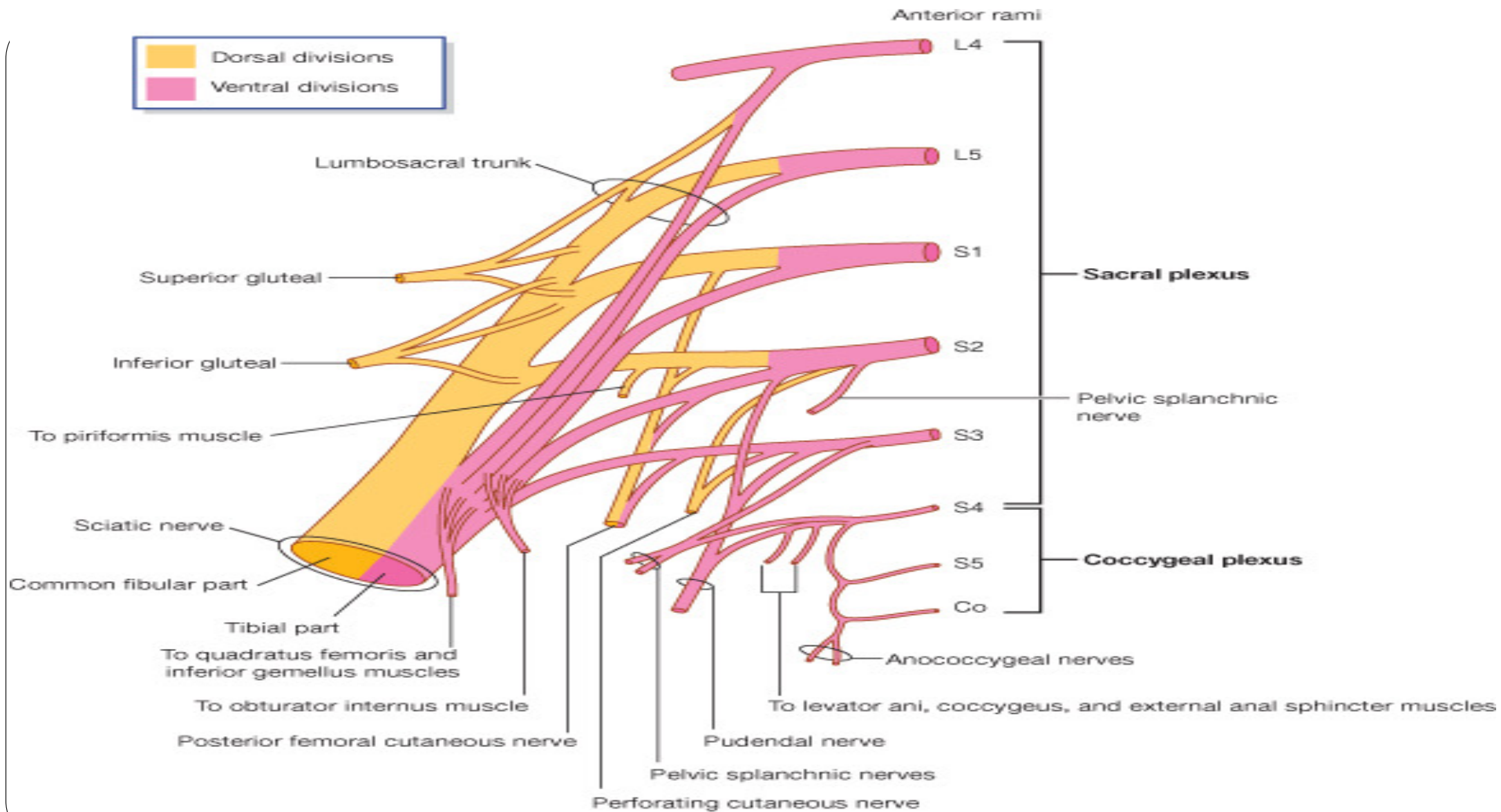
The Coccygeal Plexus

It is formed by union of the inferior part of S₄ and whole S₅ and coccygeal ventral rami.

It gives

Anococcygeal nerves :

supplies skin from coccyx to the anus.



Autonomic plexuses of pelvis^A

Sacral sympathetic trunk

- ❖ Is continuous above with the abdominal part at Common iliac vessels
- ❖ It runs down behind the rectum and on the front of the sacrum
- ❖ Has 4 or 5 ganglion
- ❖ The two trunks unite in front of the coccyx to form

ganglion impar

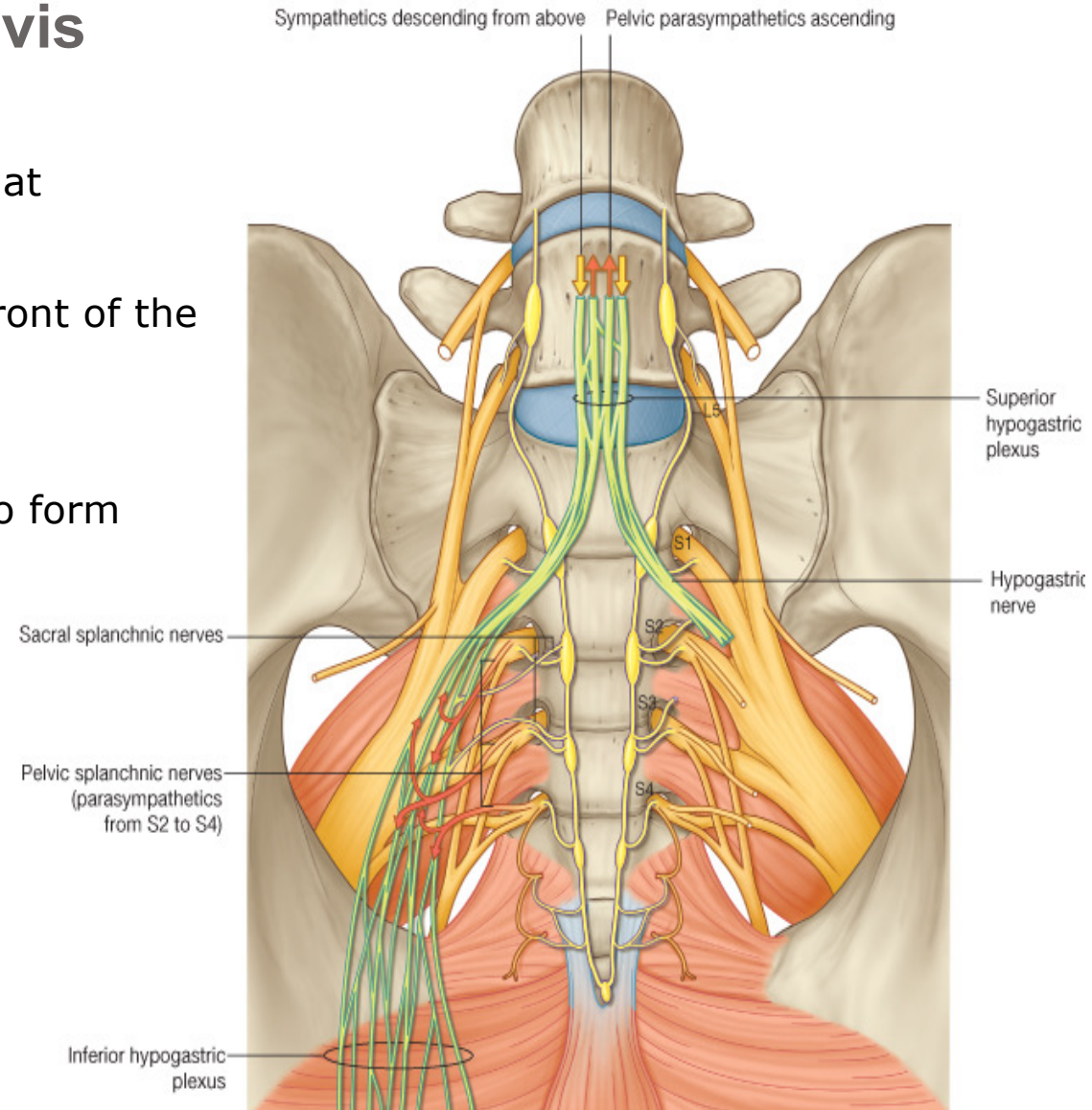
• Branches

✓ Grey rami communicantes :

Join the sacral, coccygeal nerves for distribution to the blood vessels, sweat glands and erector pilae muscles.

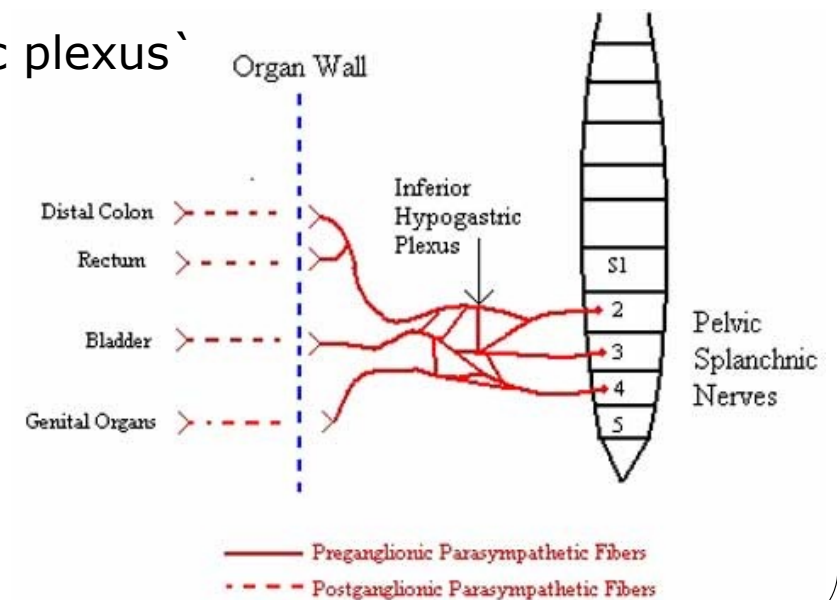
✓ Visceral branches :

Join inferior hypogastric plexus



Pelvic Splanchnic Nerves

- It forms the parasympathetic part of the autonomic nervous system in the pelvis.
- The preganglionic fibers arise from the 2nd, 3rd and 4th sacral nerves
- It synapses in ganglia in the **inferior hypogastric plexus** or in **the walls of the viscera.**
- Some of the parasympathetic fibers supplies large intestine from the left colic flexure to the upper half of the anal canal via inferior mesenteric plexus`



Superior Hypogastric Plexus

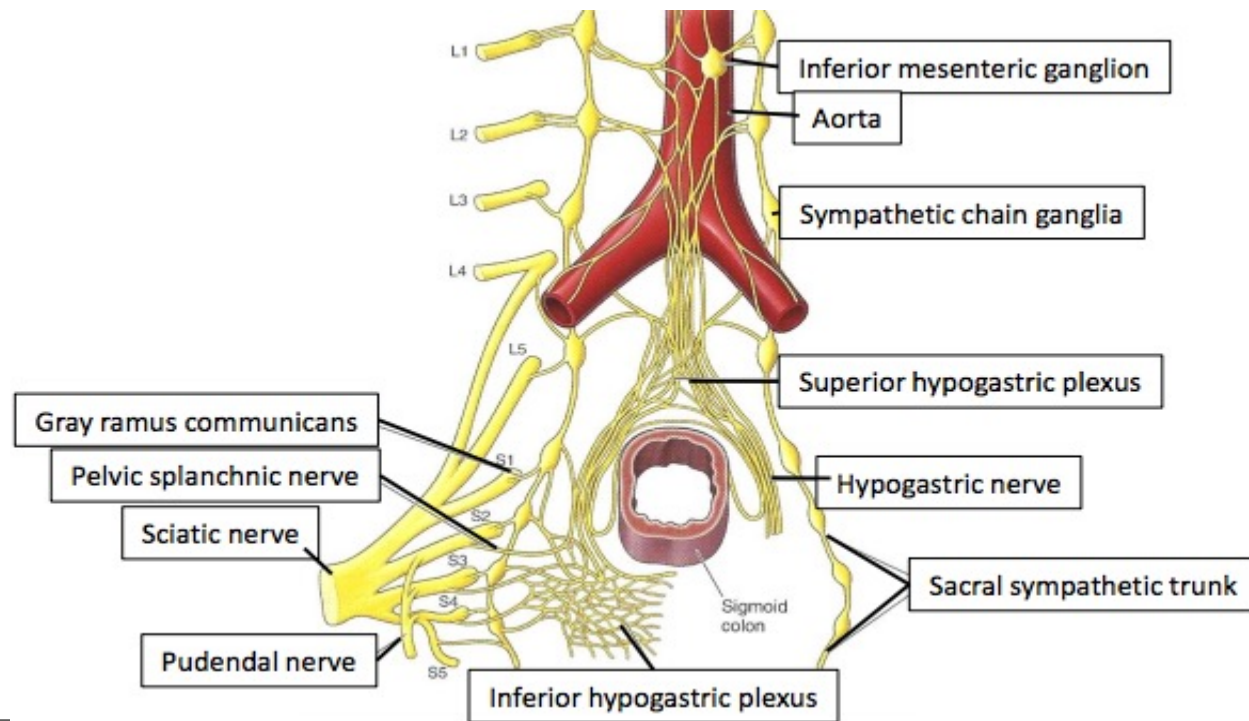
READ ONLY

Location : It is situated in front of the promontory of the sacrum .

It is formed as a continuation of the aortic plexus and from branches of the 3rd and 4th lumbar sympathetic ganglia.

It contains sympathetic and sacral parasympathetic nerve fibers and visceral afferent nerve fibers.

It divides inferiorly to form the **right** and **left hypogastric nerves**



Inferior hypogastric plexus

Location : Lie medial to internal iliac vessels and lateral to rectum

Contributions:

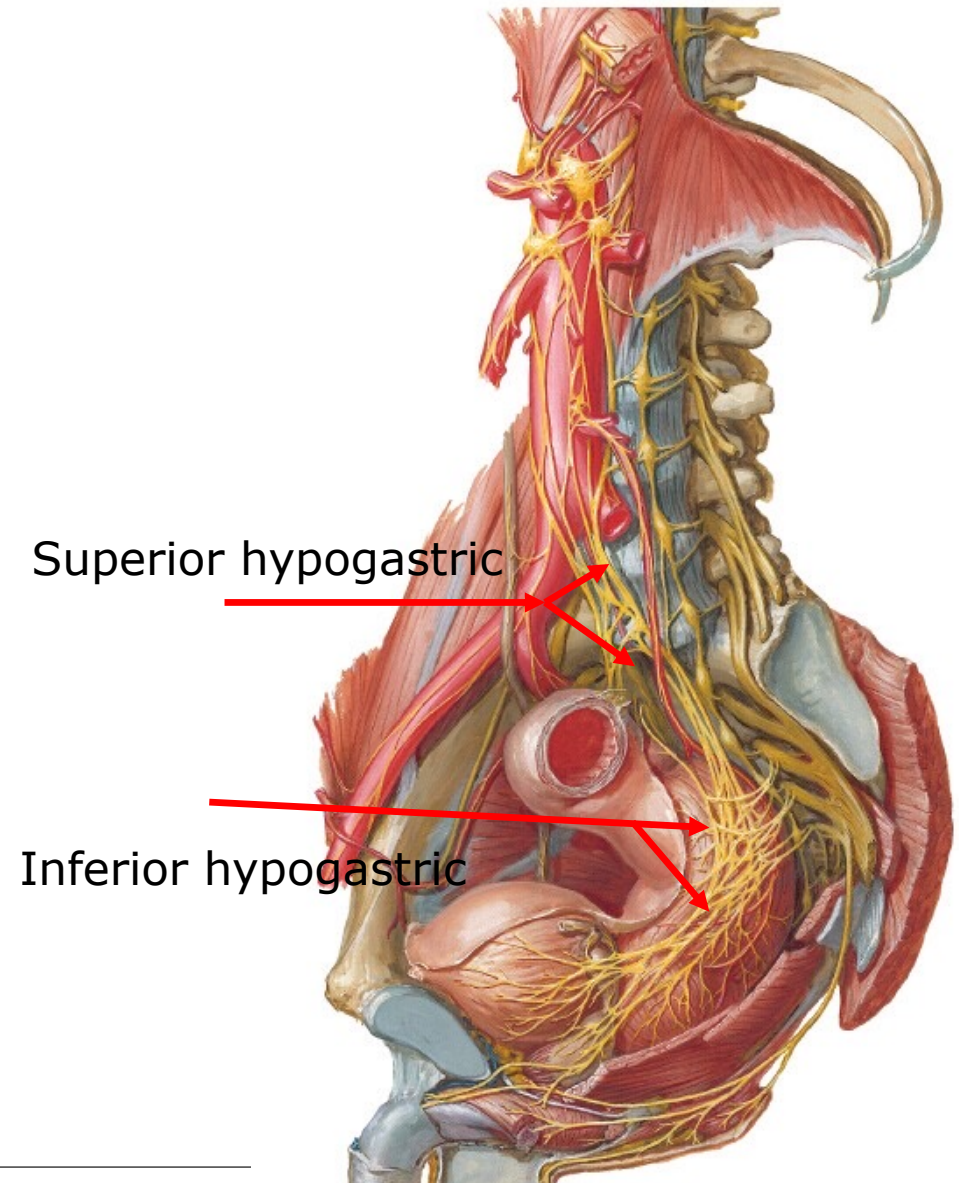
1- Parasympathetic contribution

Pelvic splanchnic nerves (S2, S3, S4).

2- Sympathetic contribution

Is derived mainly from

- superior hypogastric plexus
- sacral sympathetic chain



Distribution :

READ ONLY

The branches of the plexus reach the viscera along the branches of internal iliac artery as follows:-

A.Branches (parasympatbetic)

ascend to join inferior mesenteric plexus to supply hindgut.

B. Autonomic branches to pelvic viscera and perineal organs:

1. Rectum, anal canal and internal anal sphincter.
2. Urinary bladder and internal urethral sphincter.
3. Male genitalia:

Prostate, seminal vesicles, and ejaculatory ducts (for ejaculation).

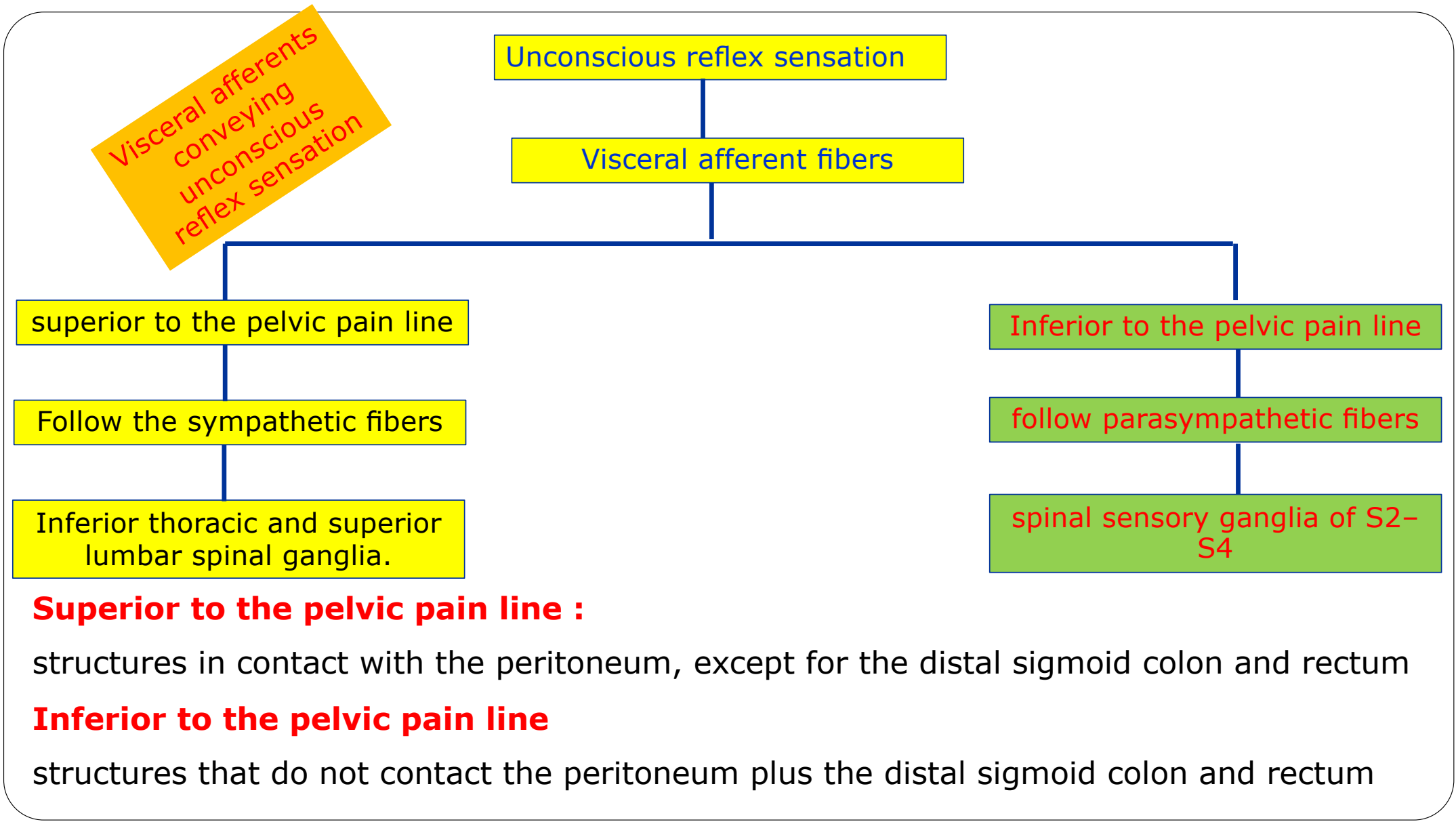
Corpora cavernosa, corpus spongiosum (for erection).

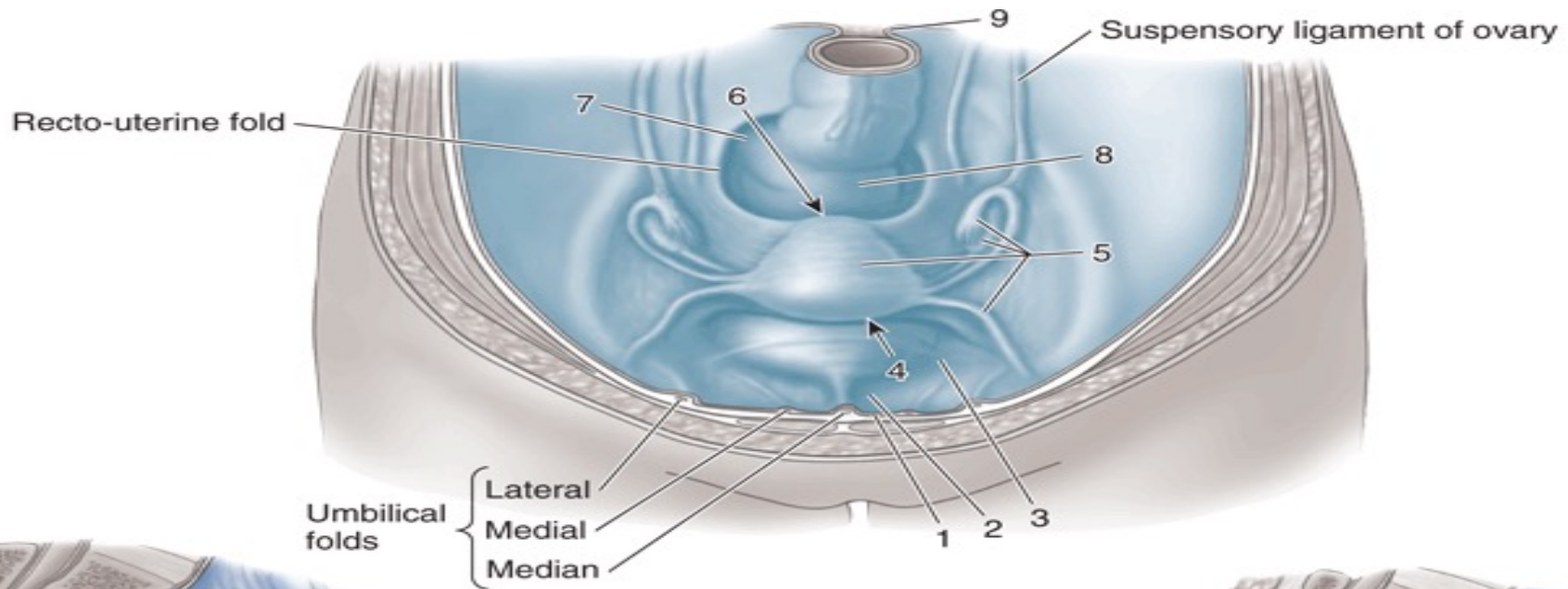
N.B- Ejaculation depends upon the sympathetic while erection depends upon the parasympathetic innervation.

- 4- Female genitalia

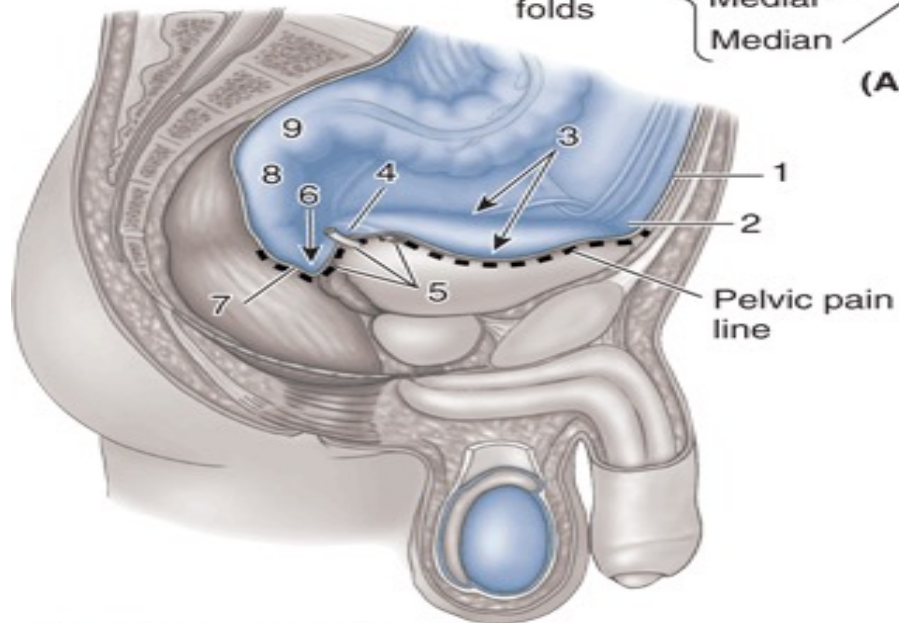
Uterus, medial part of uterine tube.

Vagina, erectile tissue of vestibular bulbs and clitoris

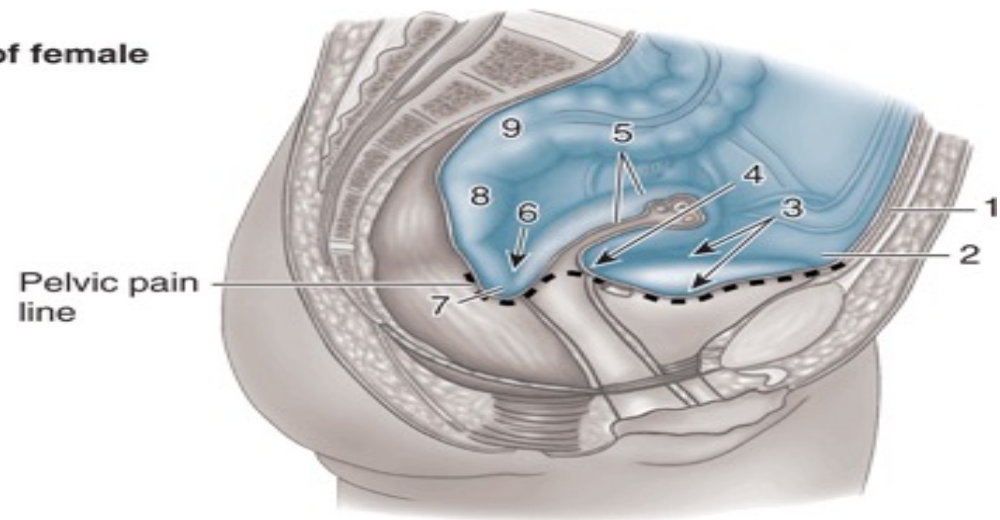




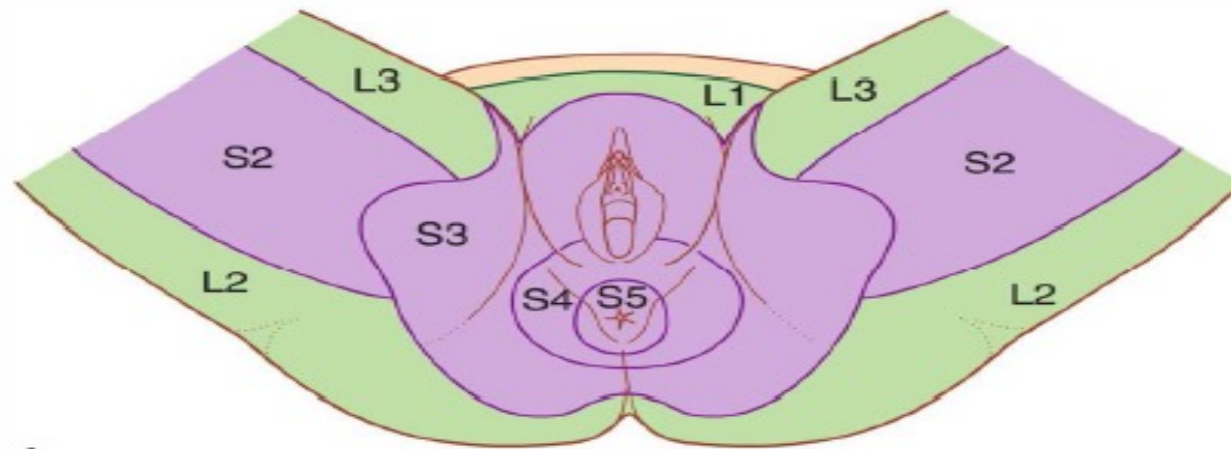
(A) Anterior view of female



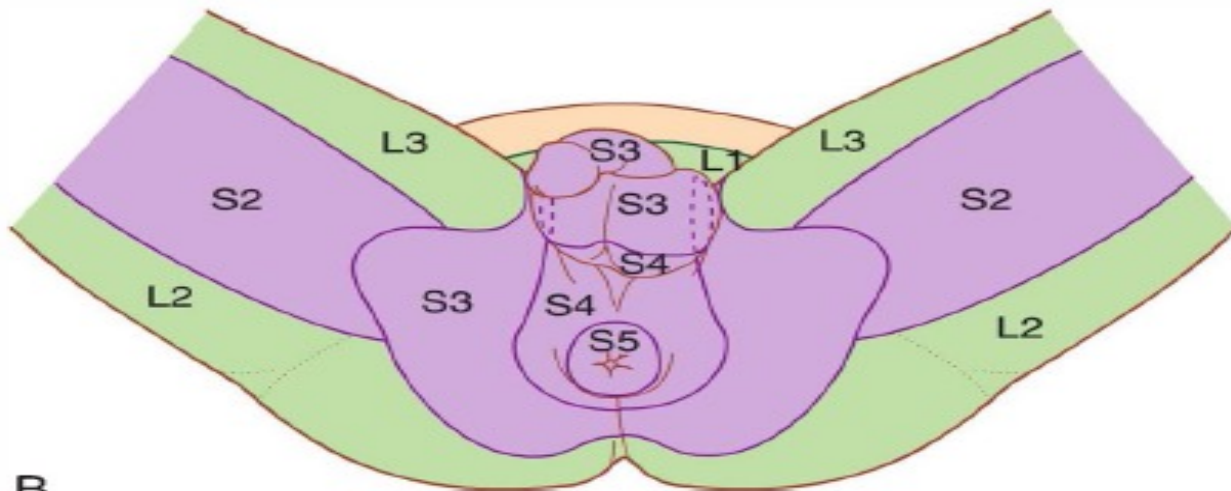
(B) Right lateral view of male



(C) Right lateral view of female



A



B

Fig. 5.14 Dermatomes of the perineum. **A.** In women. **B.** In men.

7-Lymph Drainage of the Pelvis

- ❑ The lymph drainage of pelvic viscera and deep perineum returns to 3 groups of lymph nodes : 2 main groups : internal and external iliac lymph nodes and one subsidiary : sacral lymph nodes.
- ❑ The final lymph nodes for these 3 groups is the common iliac lymph nodes.
- ❑ Some of pelvic viscera drain directly to the lateral aortic lymph nodes as ovaries, uterine tubes and fundus of the uterus

**READ ONLY WE
WILL DISCUSS IT
LATER**

lateral aortic lymph node

Common Iliac lymph node
Close to common iliac vessels

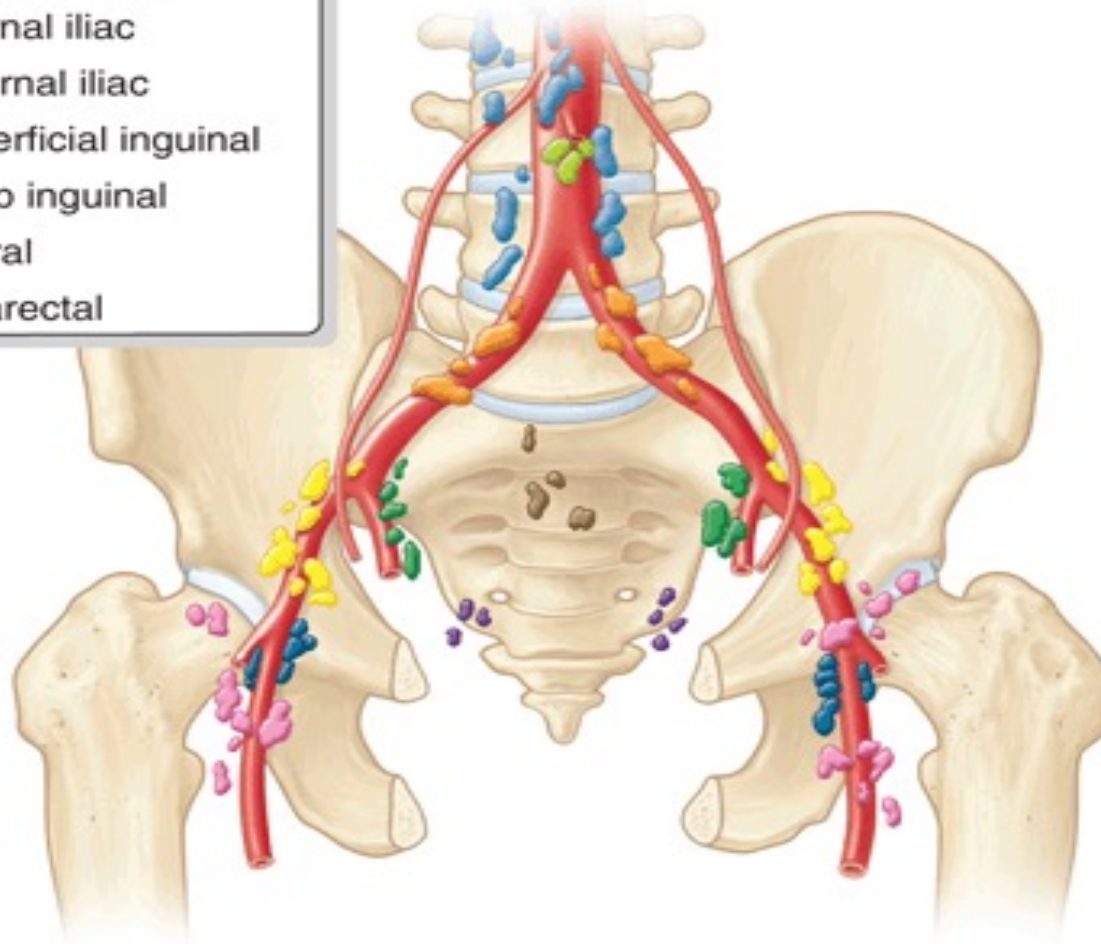
Internal Iliac Lymph node
Close to internal iliac vessels

External Iliac Lymph node
Close to external iliac vessels

Sacral Lymph node
Close to lateral sacral
vessels in front of sacrum

Lymph nodes:

- Lumbar (caval/aortic)
- Inferior mesenteric
- Common iliac
- Internal iliac
- External iliac
- Superficial inguinal
- Deep inguinal
- Sacral
- Pararectal



8- Peritoneum of The Pelvis

1- The peritoneum forms the sigmoid mesocolon, and cover front and, sides of the upper 1/3 of rectum, front only of the middle 1/3 of the rectum.

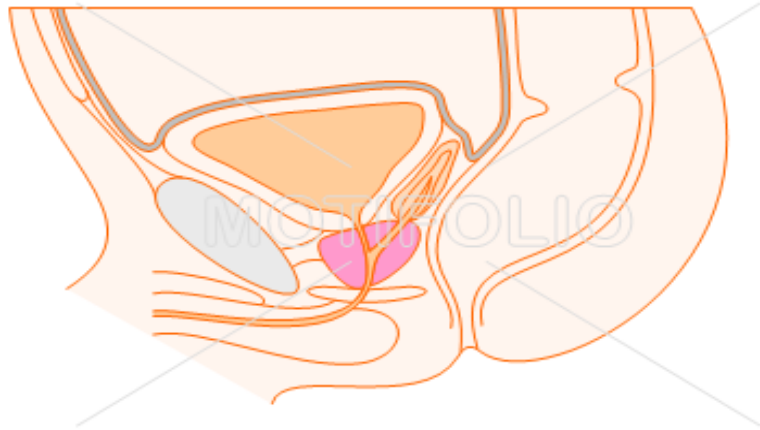
2- In the male, the peritoneum cover upper part of the fundus and upper surface of urinary bladder and then is reflected on to the anterior abdominal wall.

The pouch, so formed, is called **rectovesical pouch.**

3-In the female, the peritoneum is reflected on to the upper part of posterior vaginal wall, forming **recto-vaginal pouch (pouch of Douglas)**

4- It covers upper surface of uterus, inferior surface of uterus down to level of internal os, then reflected on to upper surface of the urinary bladder, forming **uterovesical pouche**, then to anterior abdominal wall.

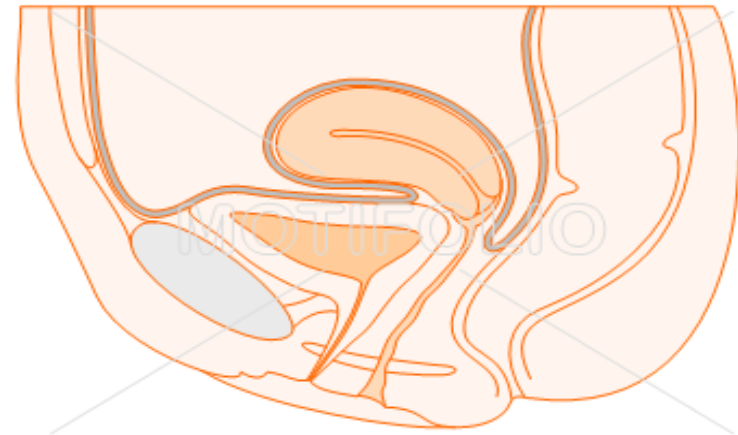
Peritoneum covering male pelvic organs



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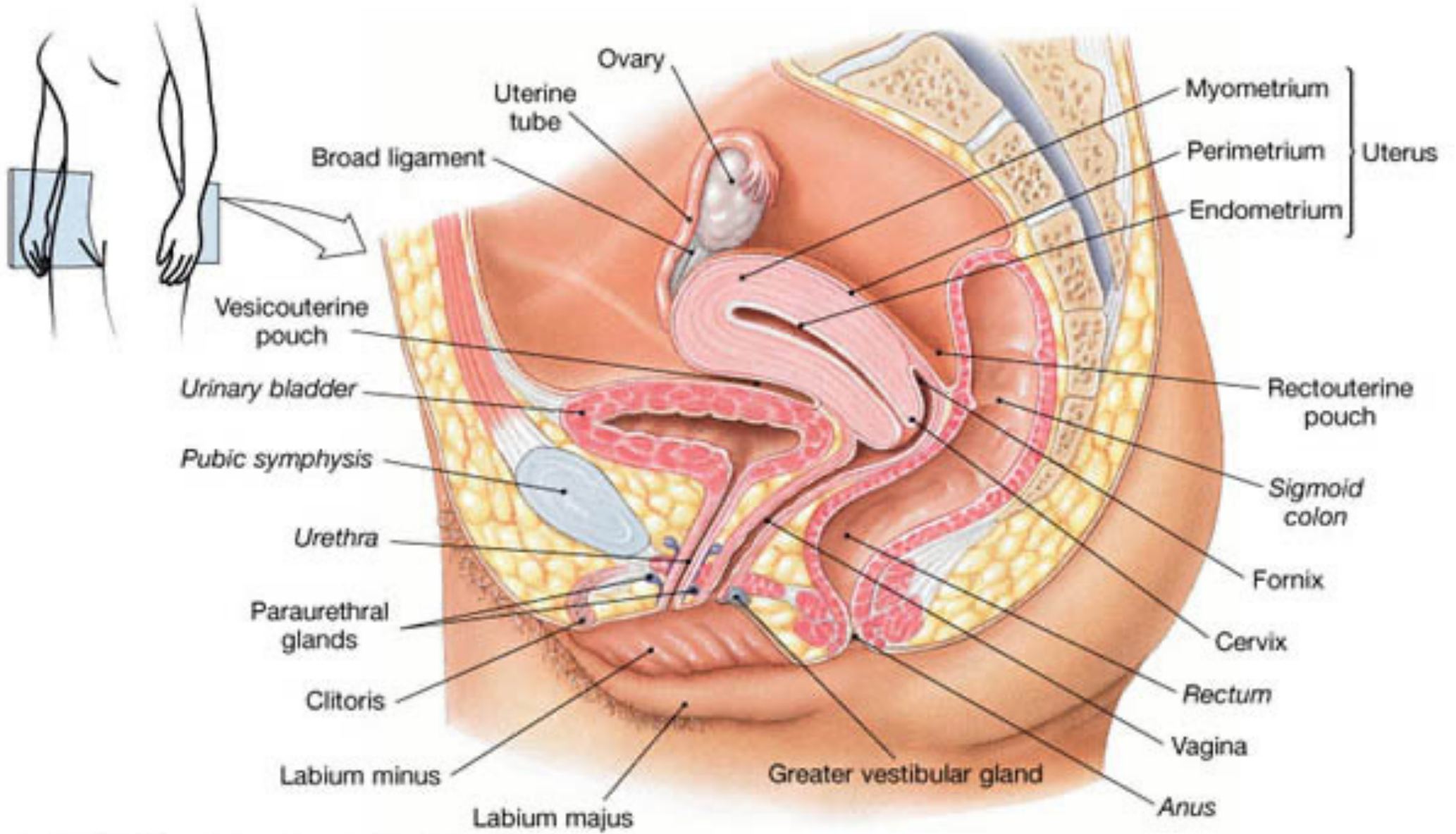
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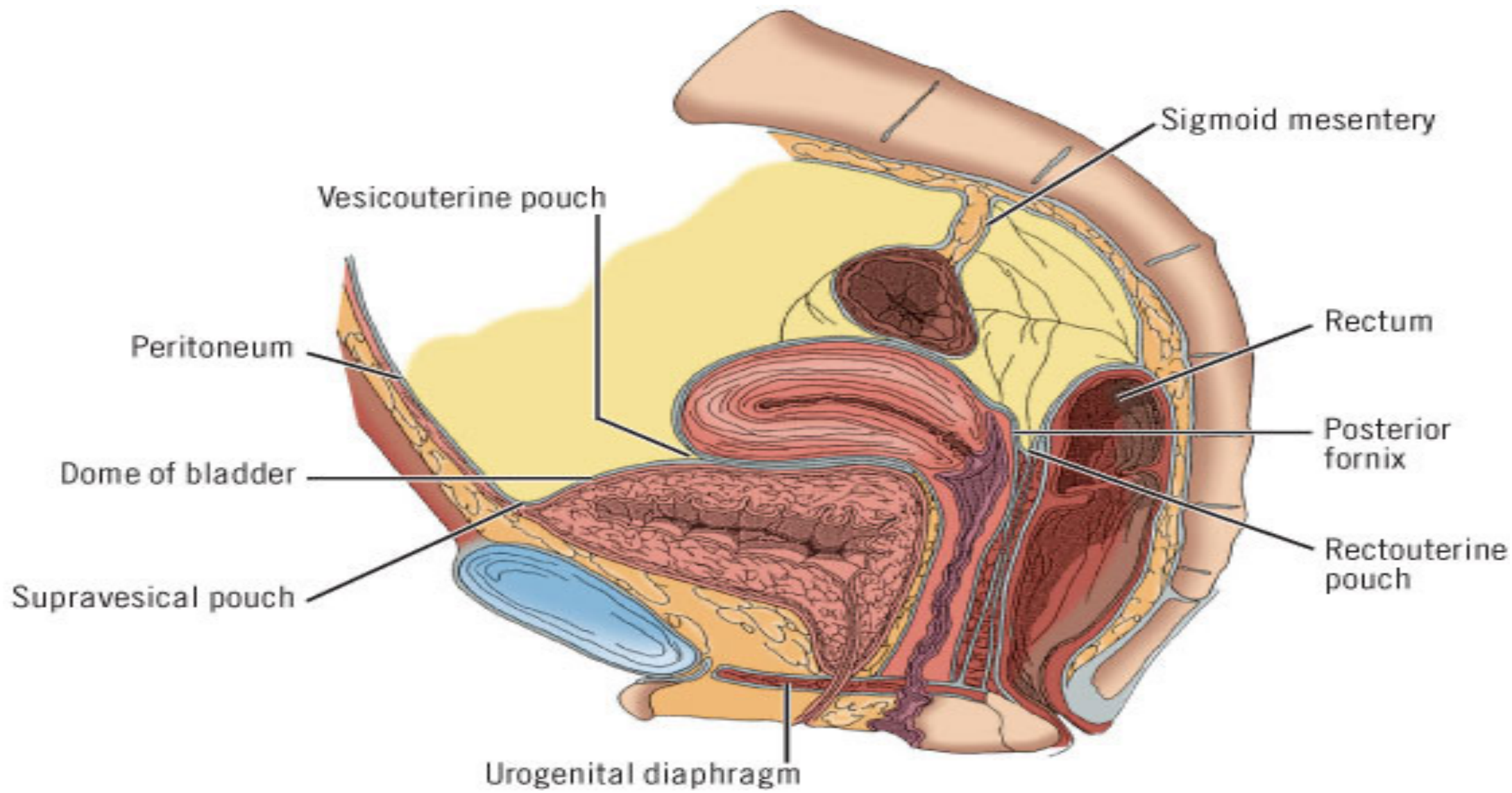
Peritoneum covering female pelvic organs



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