

4- Arteries Of The Pelvis

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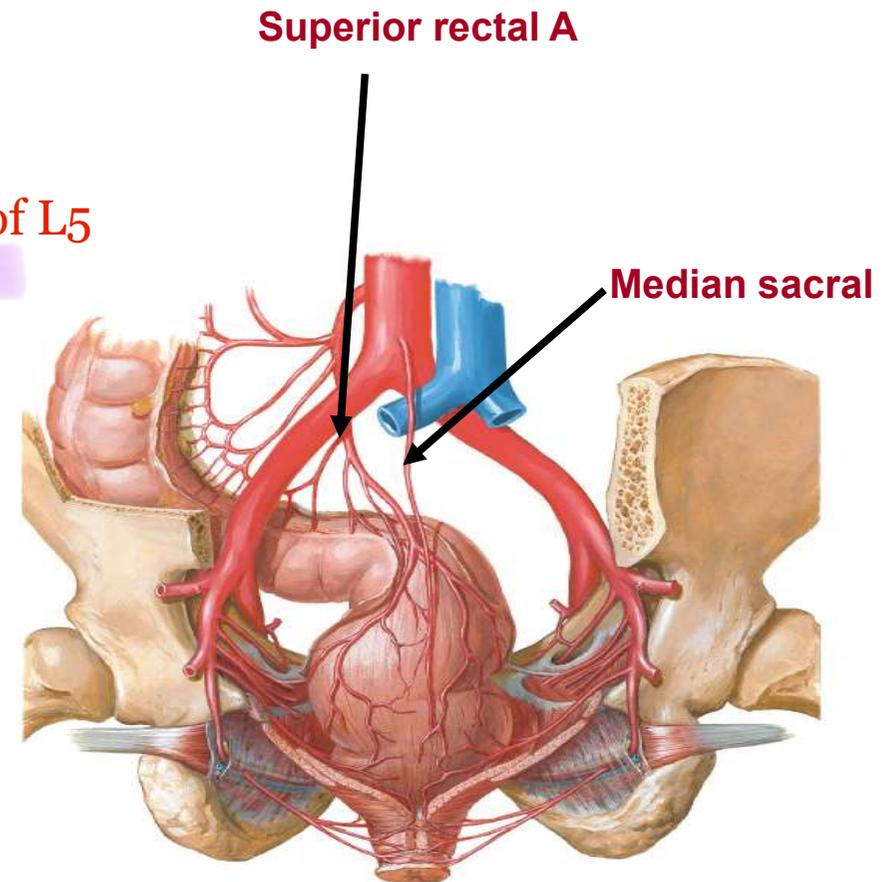
- ❖ Internal iliac artery
- ❖ Other arteries:
 - ✓ Superior rectal artery (continuation of the inferior mesenteric A)
 - ✓ Median sacral artery (from Aorta)
 - ✓ The two ovarian arteries (from Aorta) .

Internal Iliac Artery :

At level of L5

Beginning : Opposite the lumbosacral disc

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

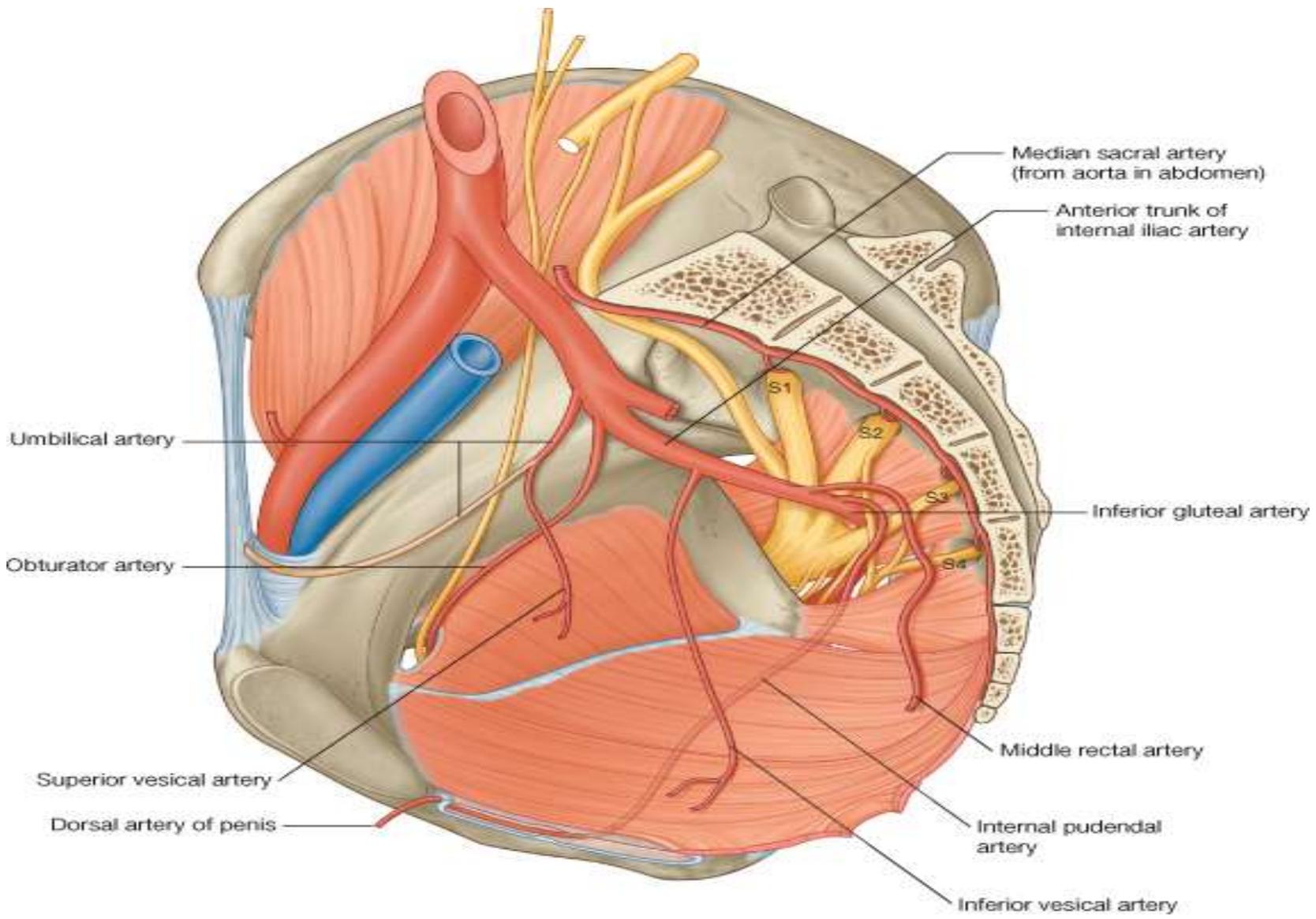


Viscera: rectum, u.bladder,
uterus, vagina.

Branches of Internal Iliac Artery

<u>Anterior Visceral branches</u>	<u>Anterior Parietal branches</u> (Supply the pelvic wall.)	<u>Posterior division parietal branches</u>
Superior vesical A.	Obturator A.	Iliolumbar A.
Inferior vesical A. <u>(OR vaginal in female)</u>	Internal pudendal A	Two lateral sacral arteries (supply contents of sacral canal or vertebral canal & muscles around)
Middle rectal A.	Inferior gluteal A.	Superior gluteal A.
Uterine A. (Supply the uterus & ovaries) <u>(has NO corresponding branch in the male)</u>		

9 branches of internal iliac A. in males & 10 branches in females.



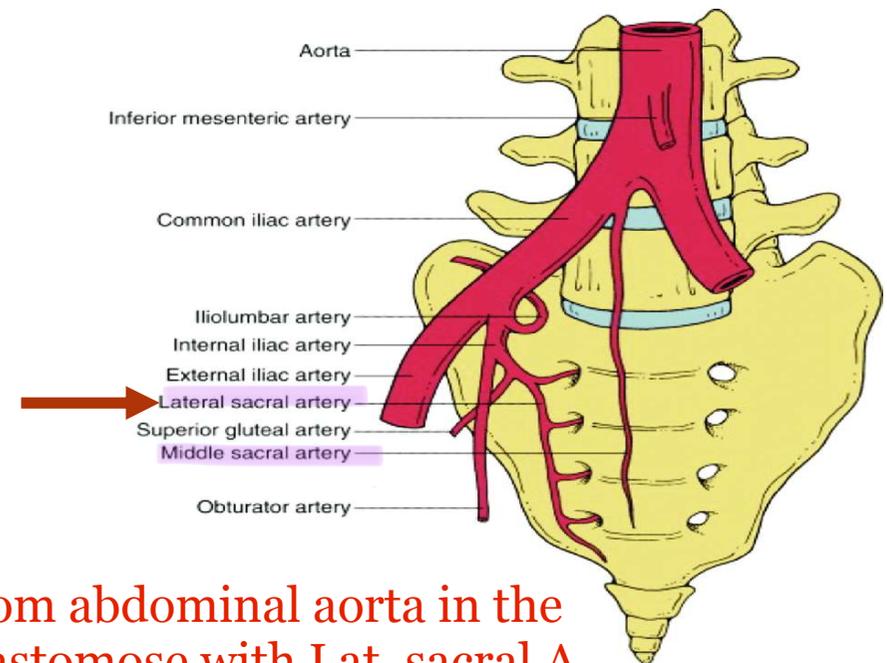
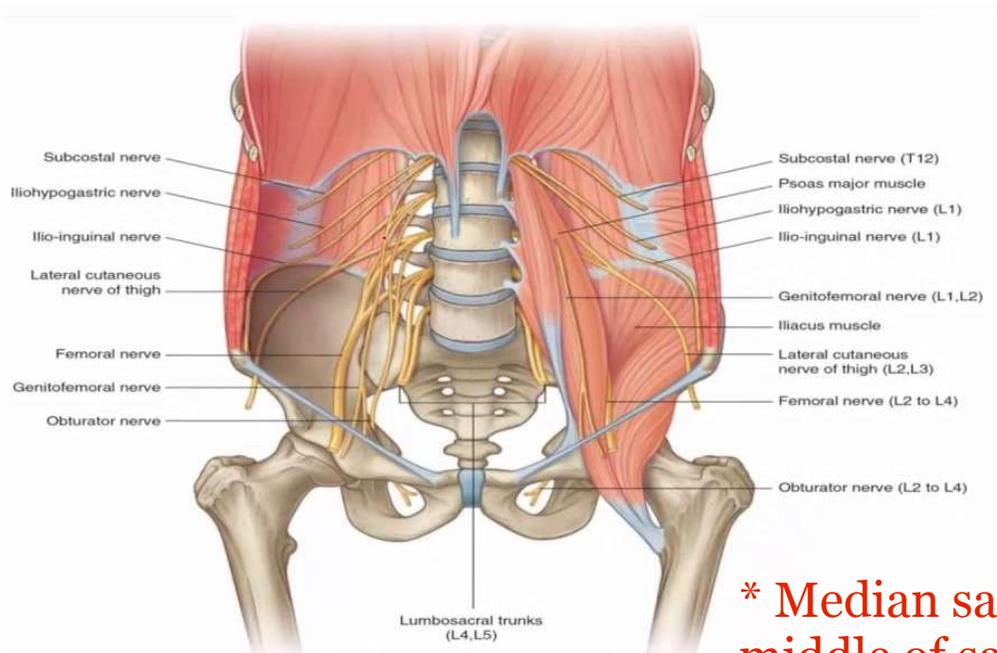
Posterior division Branches

1) Iliolumbar A. (muscular)

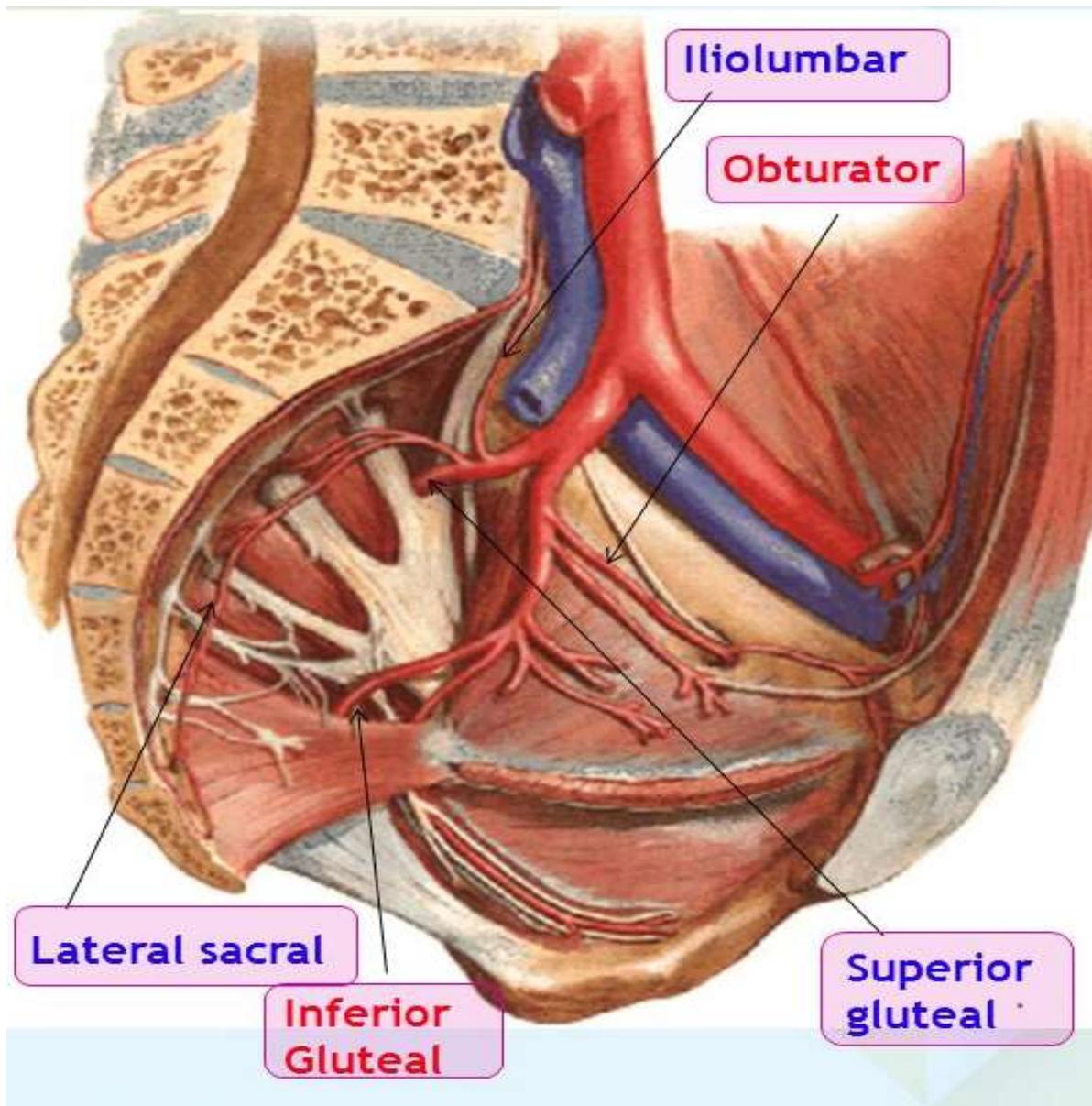
- ❖ It divides into iliac and lumbar branches to supply iliacus, psoas major and quadratus lumborum muscles

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.



* Median sacral A. From abdominal aorta in the middle of sacrum, anastomose with Lat. sacral A.



lateral

inferior

Iliolumbar A

Branches of
Internal Iliac A

Lateral
Sacral A

Obliterated
Umbilical A
(= Medial
Umbilical
Ligament)

Superior
Gluteal A

Inferior
Gluteal A

Superior Vesical A

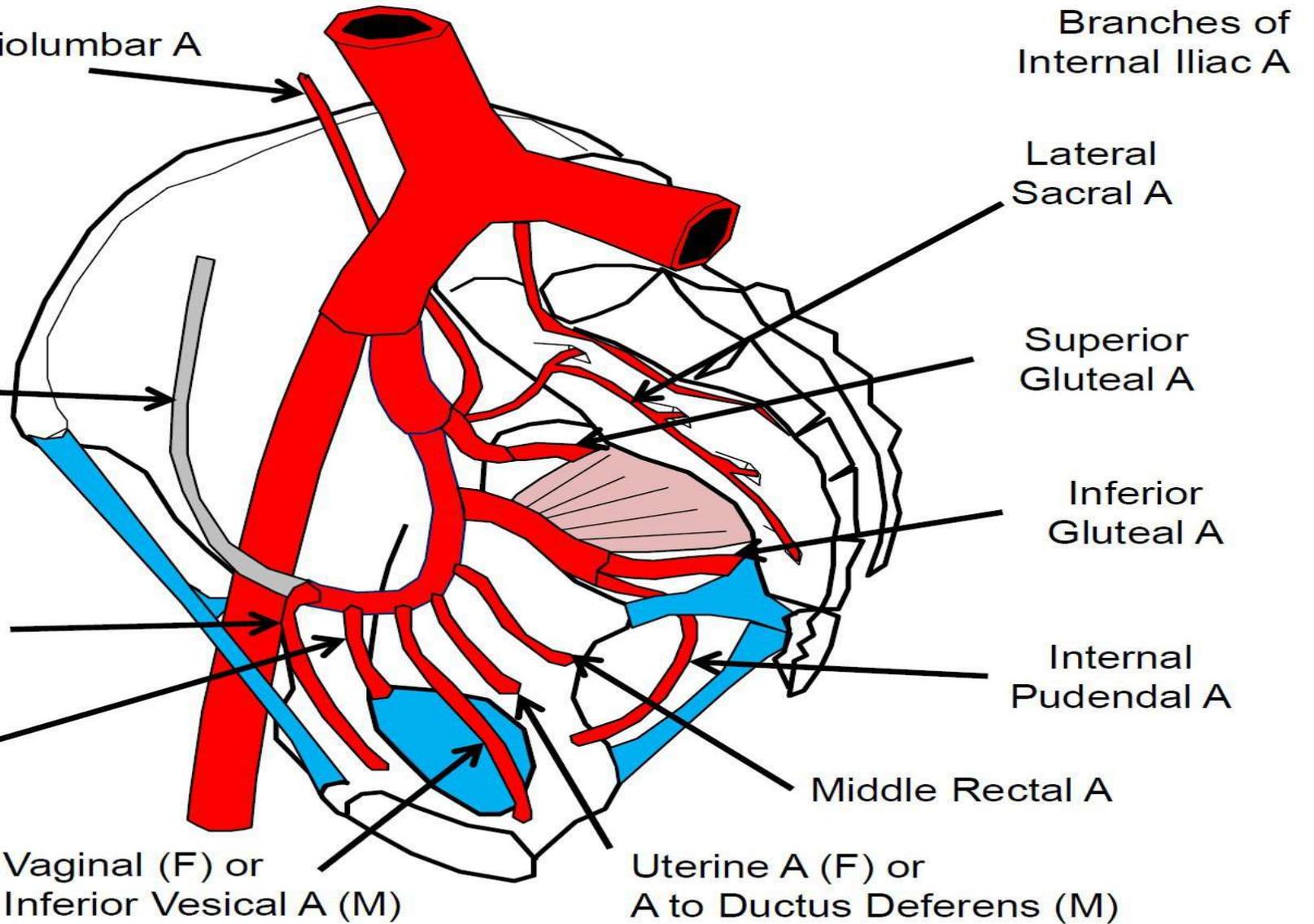
Internal
Pudendal A

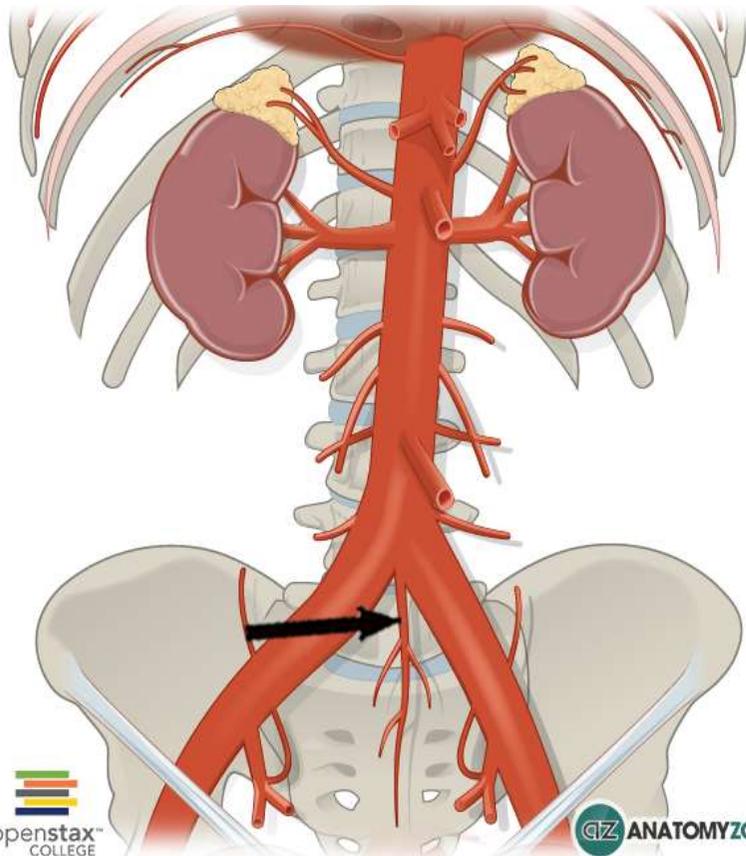
Obturator A

Middle Rectal A

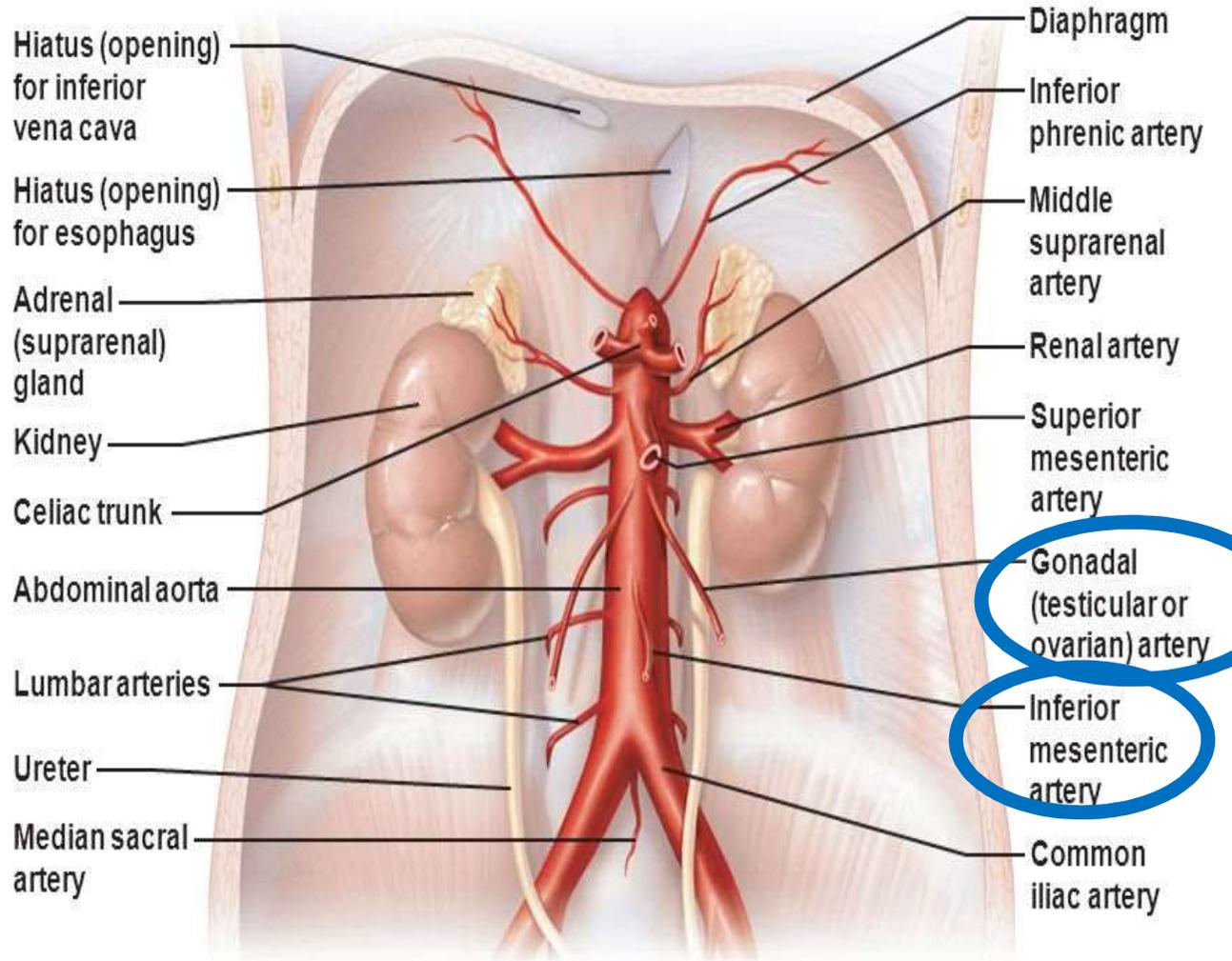
Vaginal (F) or
Inferior Vesical A (M)

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





Median Sacral Artery



(c) Major branches of the abdominal aorta.

5-Venous drainage of the pelvis

This is include

- ❖ Internal iliac vein (Main venous drainage)
- ❖ Superior rectal
- ❖ Median sacral
- ❖ Ovarian veins

Internal Iliac Vein:

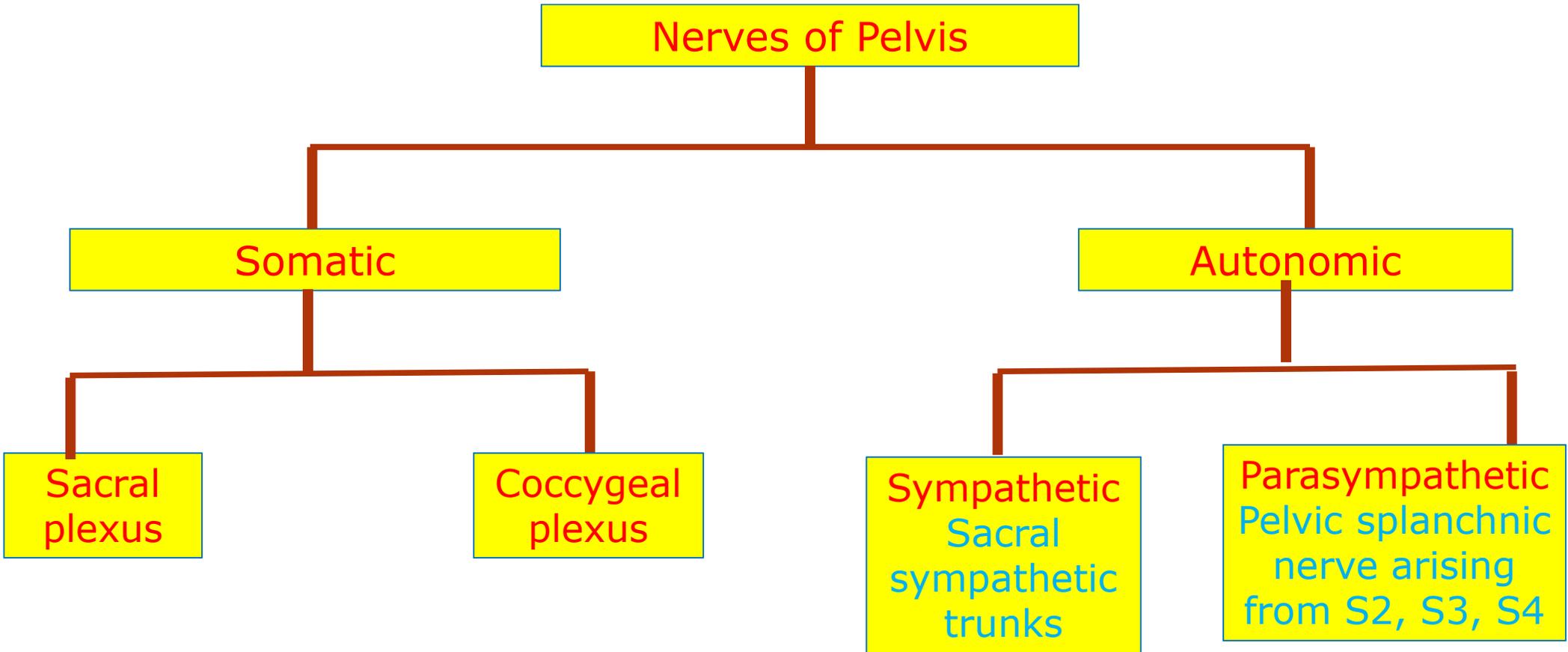
- It begins opposite the upper part of greater sciatic foramen
- It ends at pelvic brim by joining the external iliac vein to form the common iliac vein
- It receives veins similar to the branches of internal iliac artery except the iliolumbar vein which ends in the common iliac vein.



- 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 **Like: prostatic cancer can spread to bone.**

* internal vertebral venous plexus consists of Ant. & post. veins inside vertebral canal.

6- Nerves in The Pelvis



Sacral Plexus:

Formation :

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

Location :

**Any plexus in our body consists of ventral rami (brachial plexus, lumbar ...*

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

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.

Branches Of The Sacral Plexus (pelvic branches)

1-To levator ani and coccygeus . to supply the pelvic floor.

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

it is the somatic nerve of the perineum.

3-Pelvic splanchnic nerves (S2, S3, S4): (Autonomic supply of pelvis/
parasympathetic).

It join inferior hypogastric plexus.

4- Perforating cutaneous nerve:

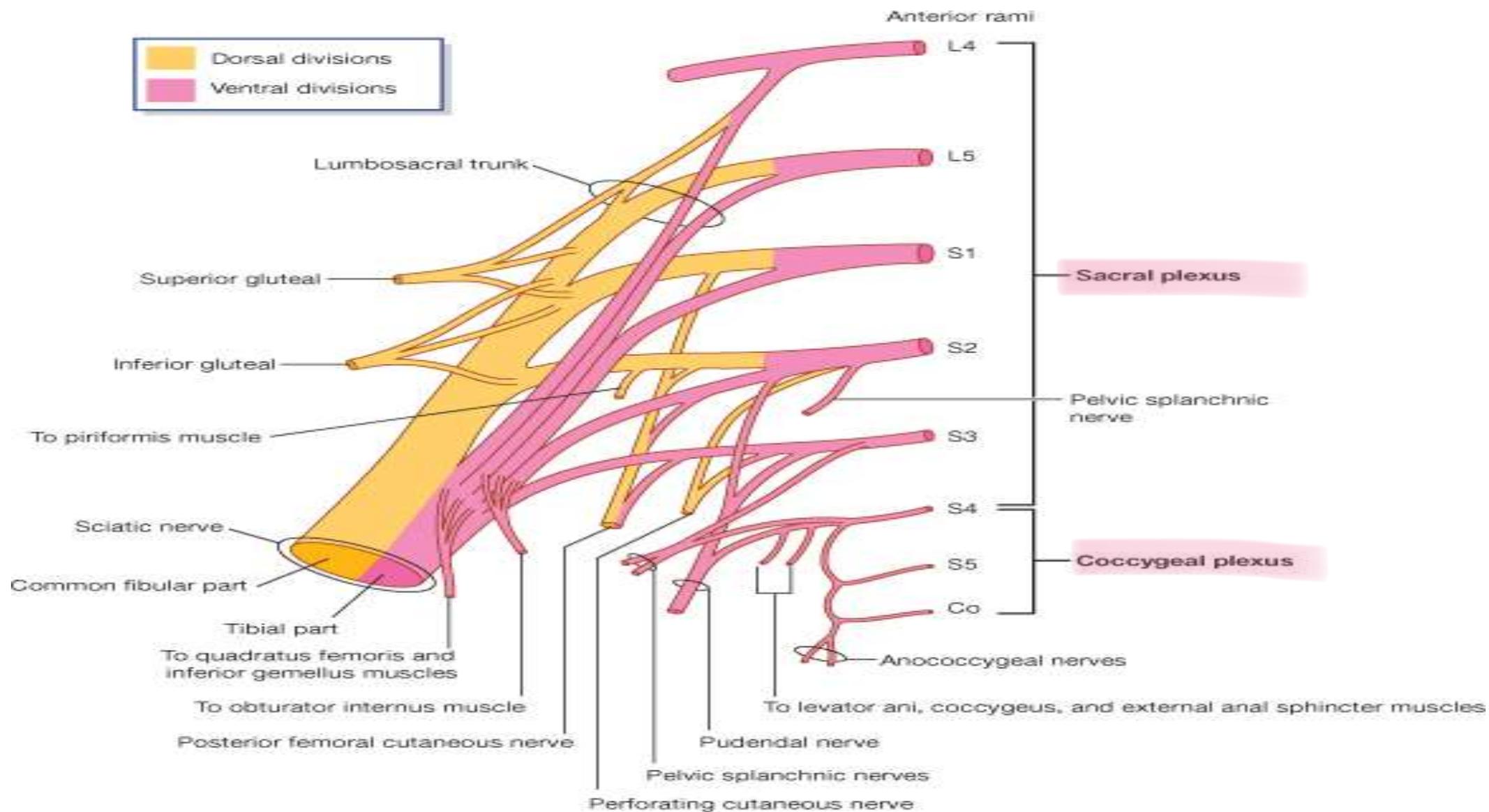
Supplies skin of lower medial part of the buttock



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.

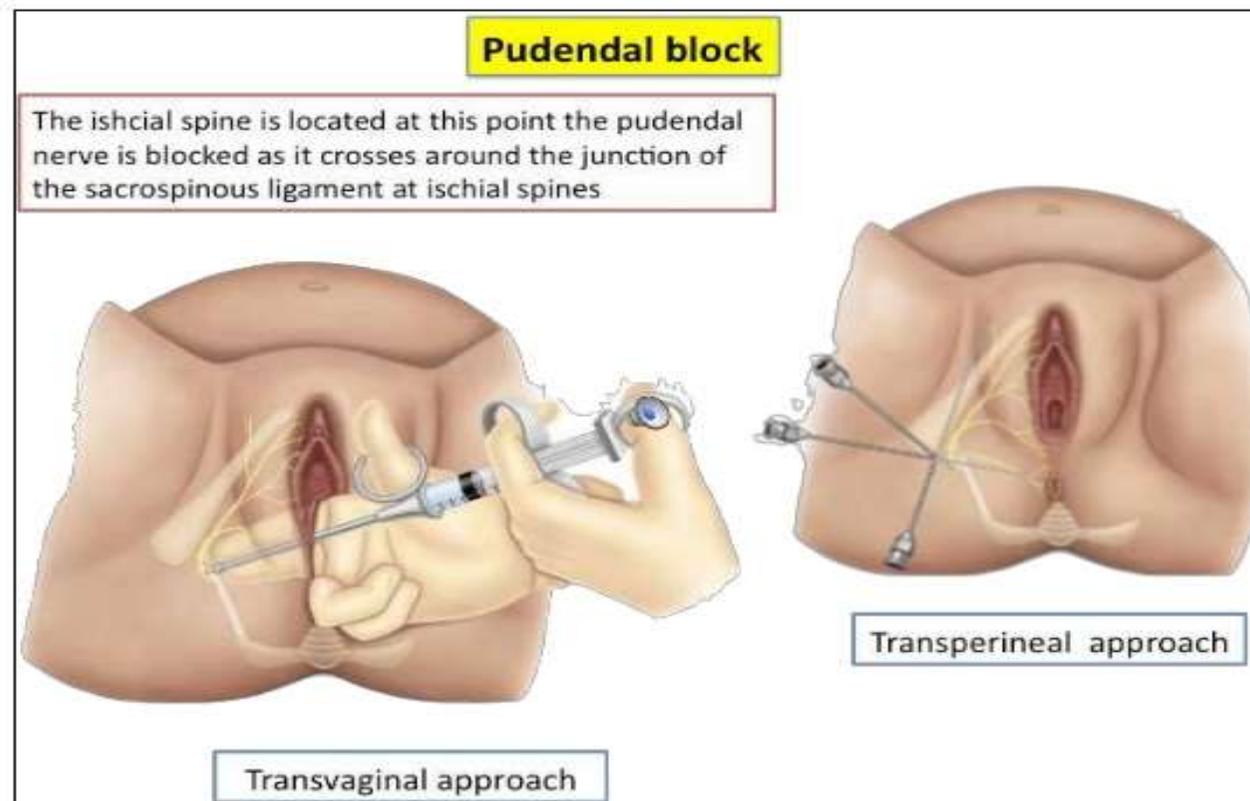
* this pain is relieved after labor.





Pudendal nerve block

In vaginal operations or Episiotomy , the pudendal nerve is infiltrated near the ischial spine by local anesthetic medication.



Autonomic plexuses of pelvis

I-Sacral sympathetic trunk

- ❖ Is continuous above with the abdominal sympathetic 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***

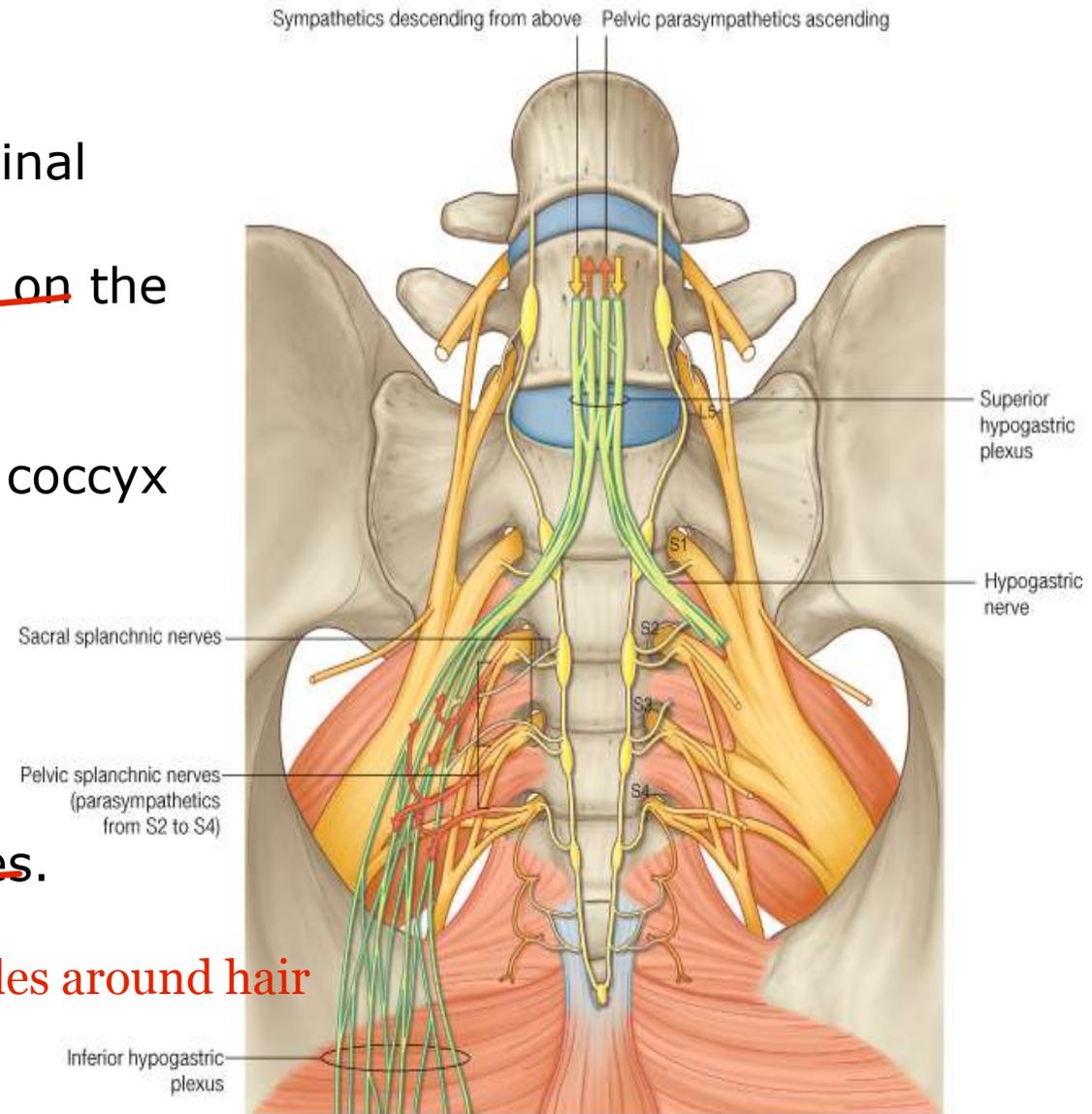
• Branches

✓ **Grey rami communicantes :**

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

✓ **Visceral branches :**

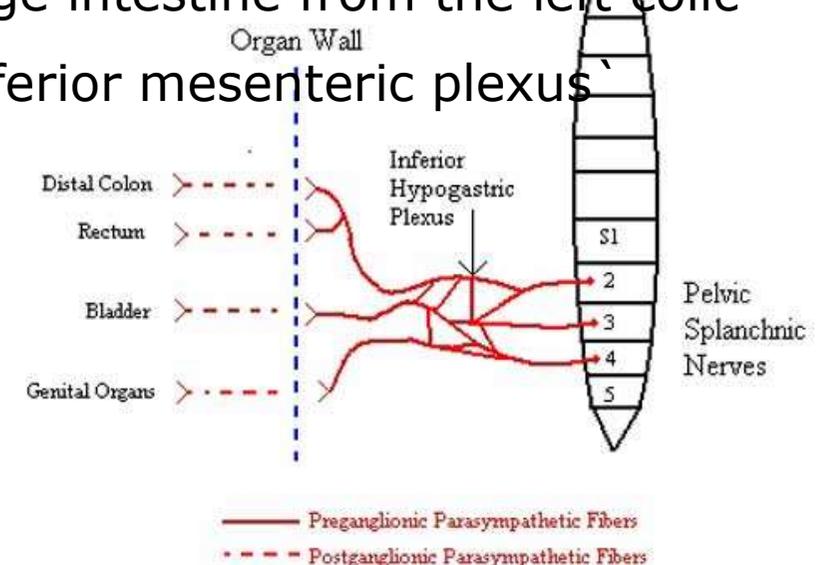
Join inferior hypogastric plexus **muscles around hair**



II-Parasympathetic

Pelvic Splanchnic Nerves (S2,S3,S4)

- 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



Pelvic Autonomic plexuses

1-Superior Hypogastric Plexus

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.

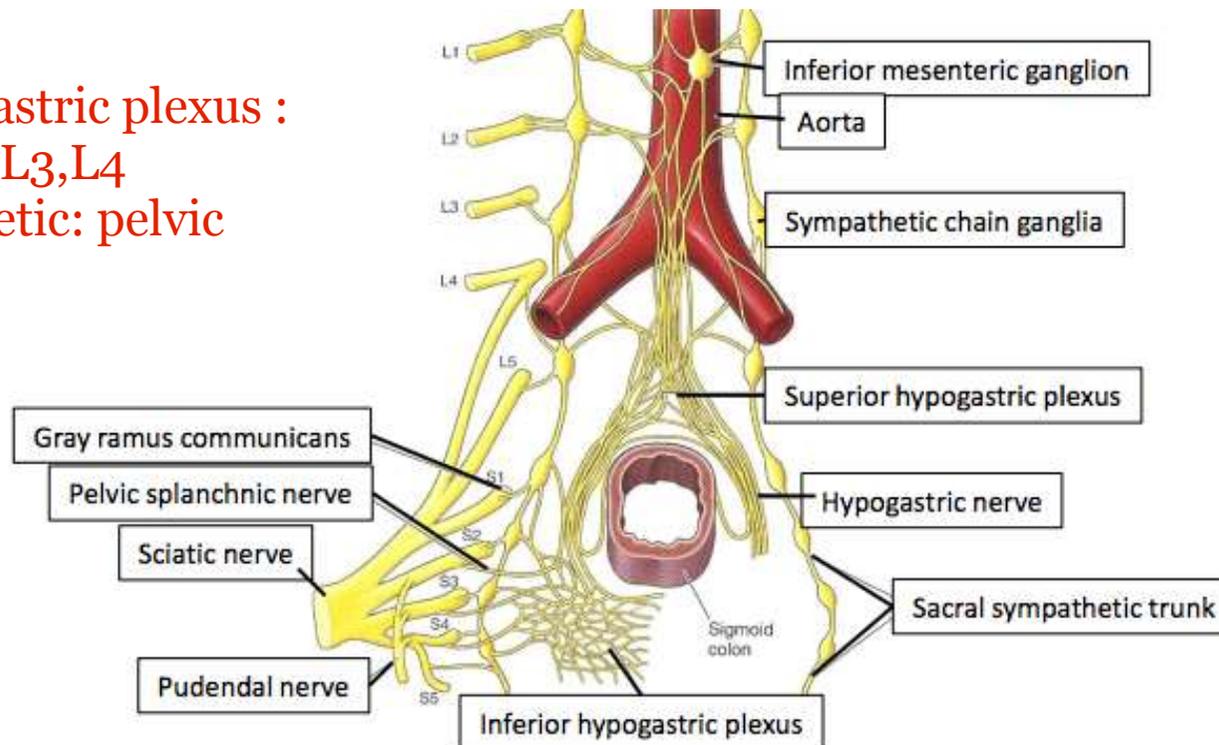
It contains sympathetic and sacral parasympathetic nerve fibers and visceral afferent nerve fibers.

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

* Superior hypogastric plexus :

—> sympathetic: L3,L4

—> parasympathetic: pelvic splanchnic nerve



2- Inferior hypogastric plexus

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

Contributions:

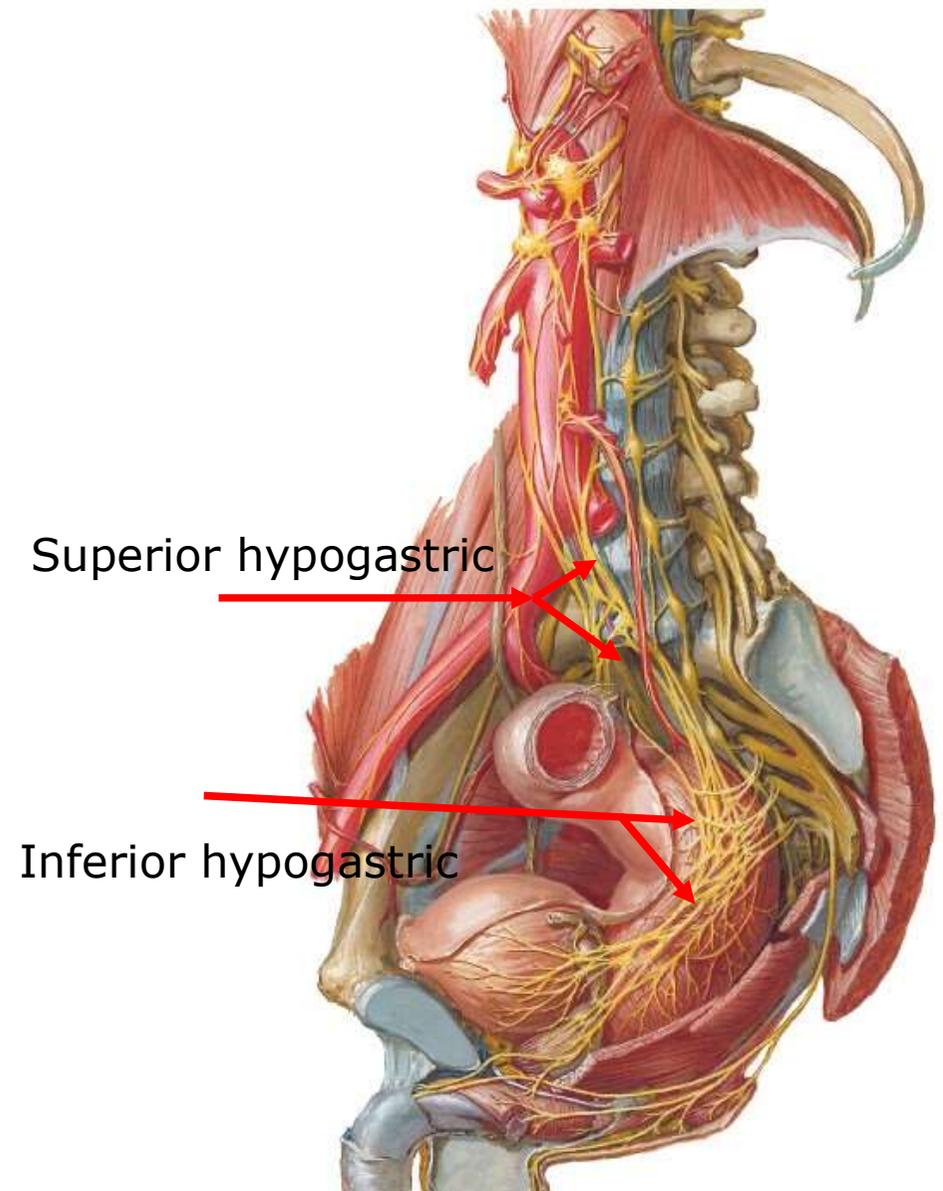
1- Parasympathetic contribution

Pelvic splanchnic nerves (S2, S3, S4).

2- Sympathetic contribution

Is derived mainly from

- superior hypogastric plexus
- sacral sympathetic chain



Distribution :

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

A. Branches (parasympathetic) 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- Female genitalia

Uterus, medial part of uterine tube.

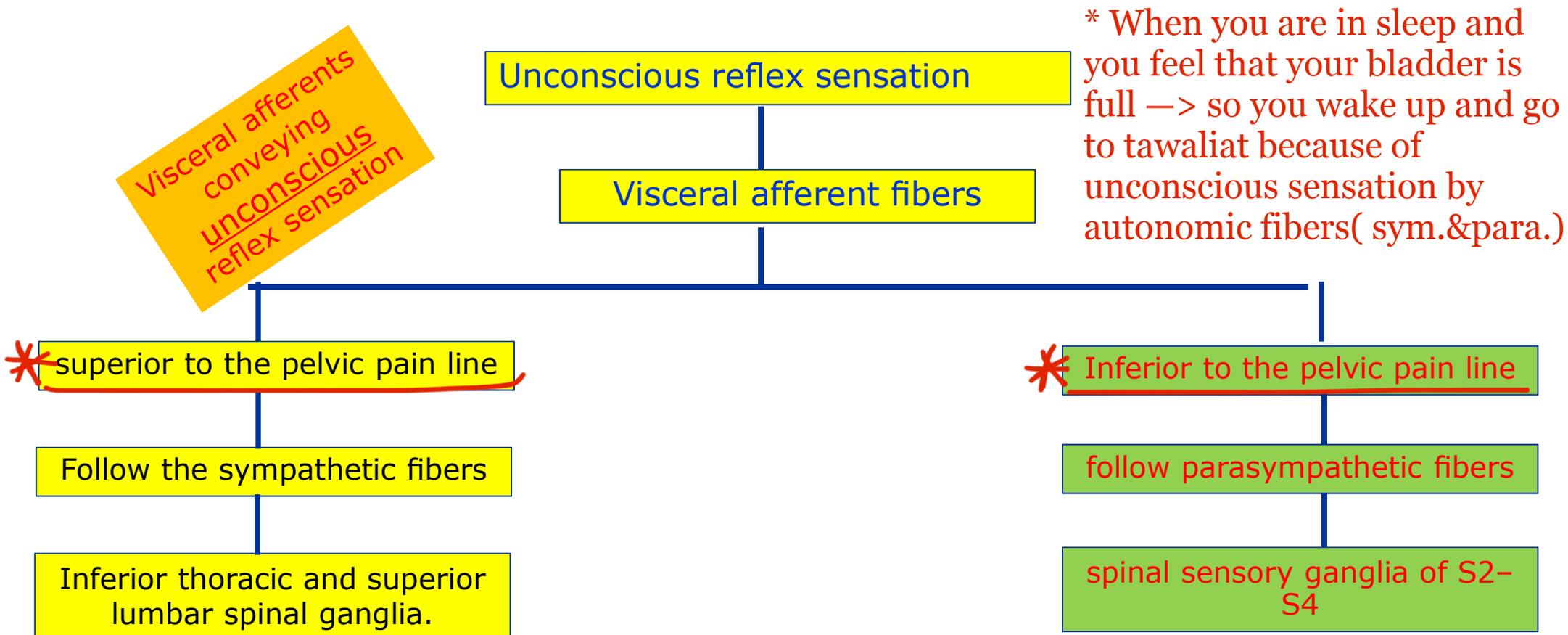
Vagina, erectile tissue of vestibular bulbs and clitoris

4. 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.

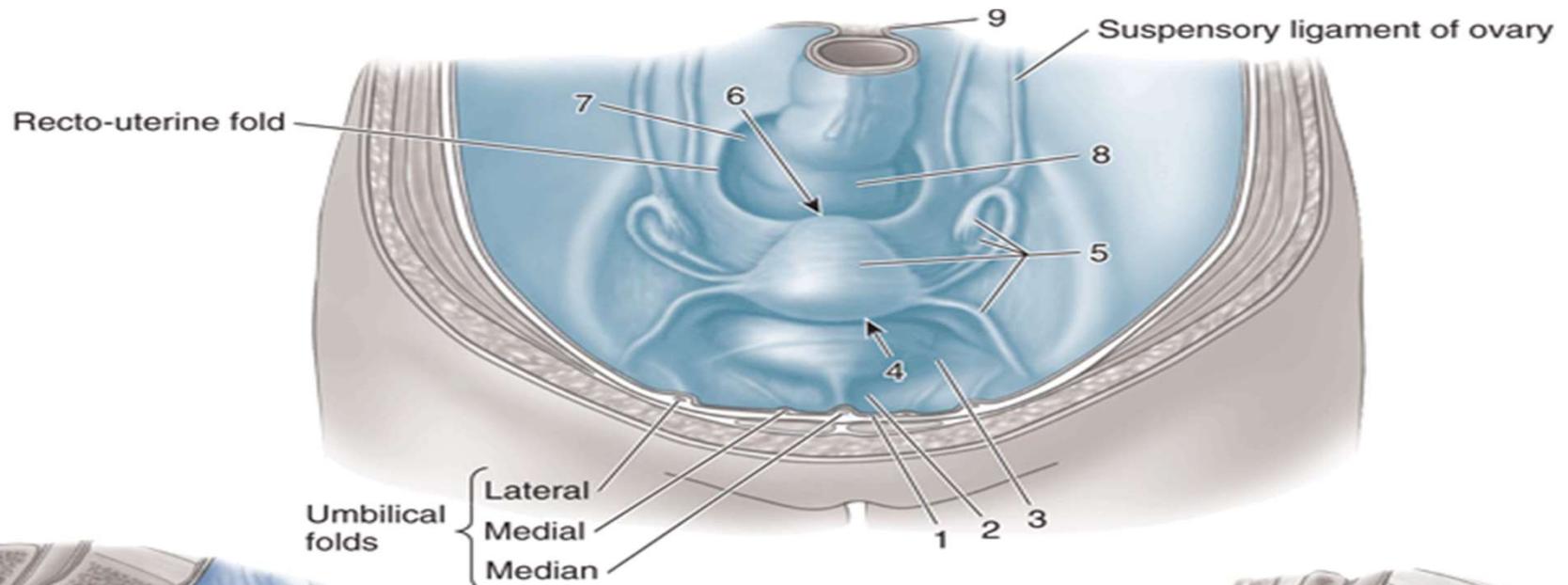


Superior to the pelvic pain line :

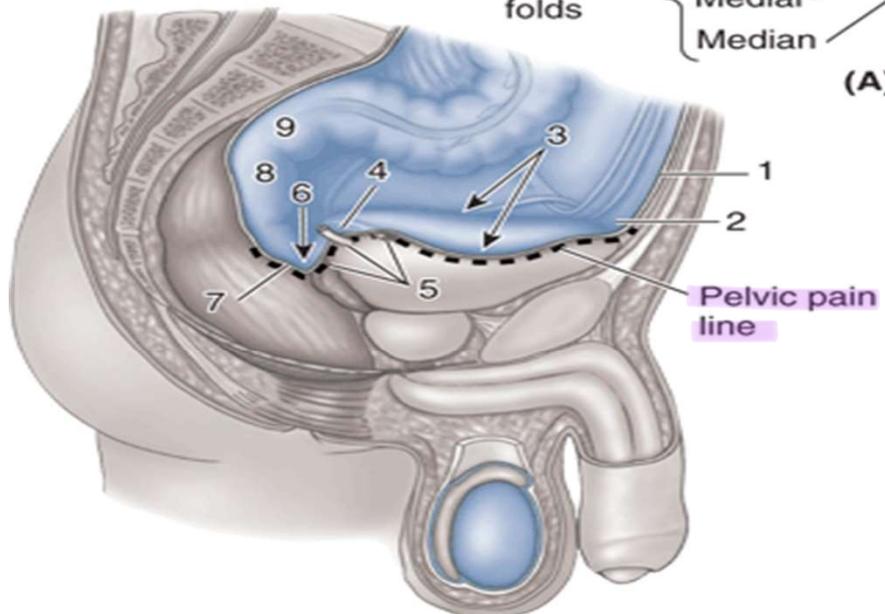
structures in contact with the peritoneum, **EXCEPT** for the distal sigmoid colon and rectum

Inferior to the pelvic pain line

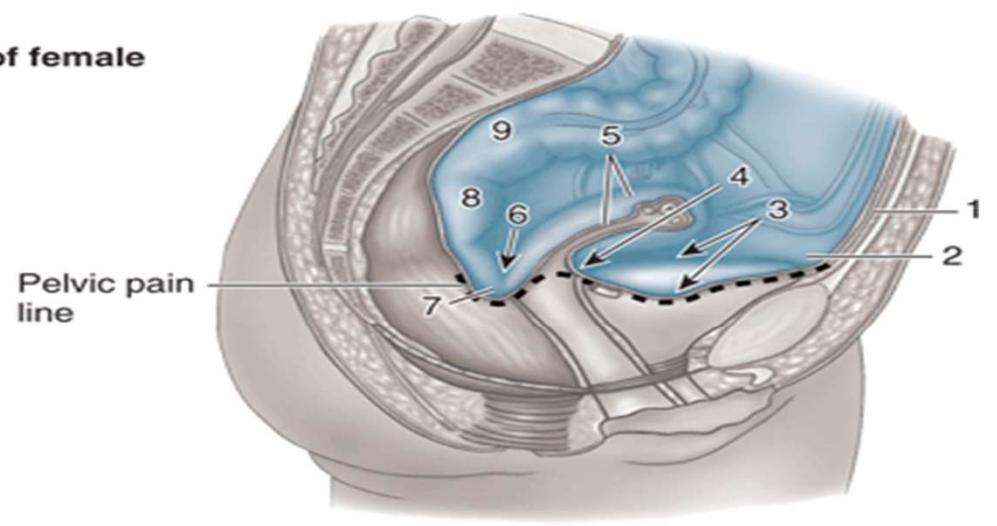
structures that do not contact the peritoneum plus the distal sigmoid colon and rectum



(A) Anterior view of female



(B) Right lateral view of male



(C) Right lateral view of female

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

lateral aortic lymph node

Common Iliac lymph node

Site: Close to common iliac vessels.

Internal Iliac Lymph node

Site: Close to internal iliac vessels.

External Iliac Lymph node

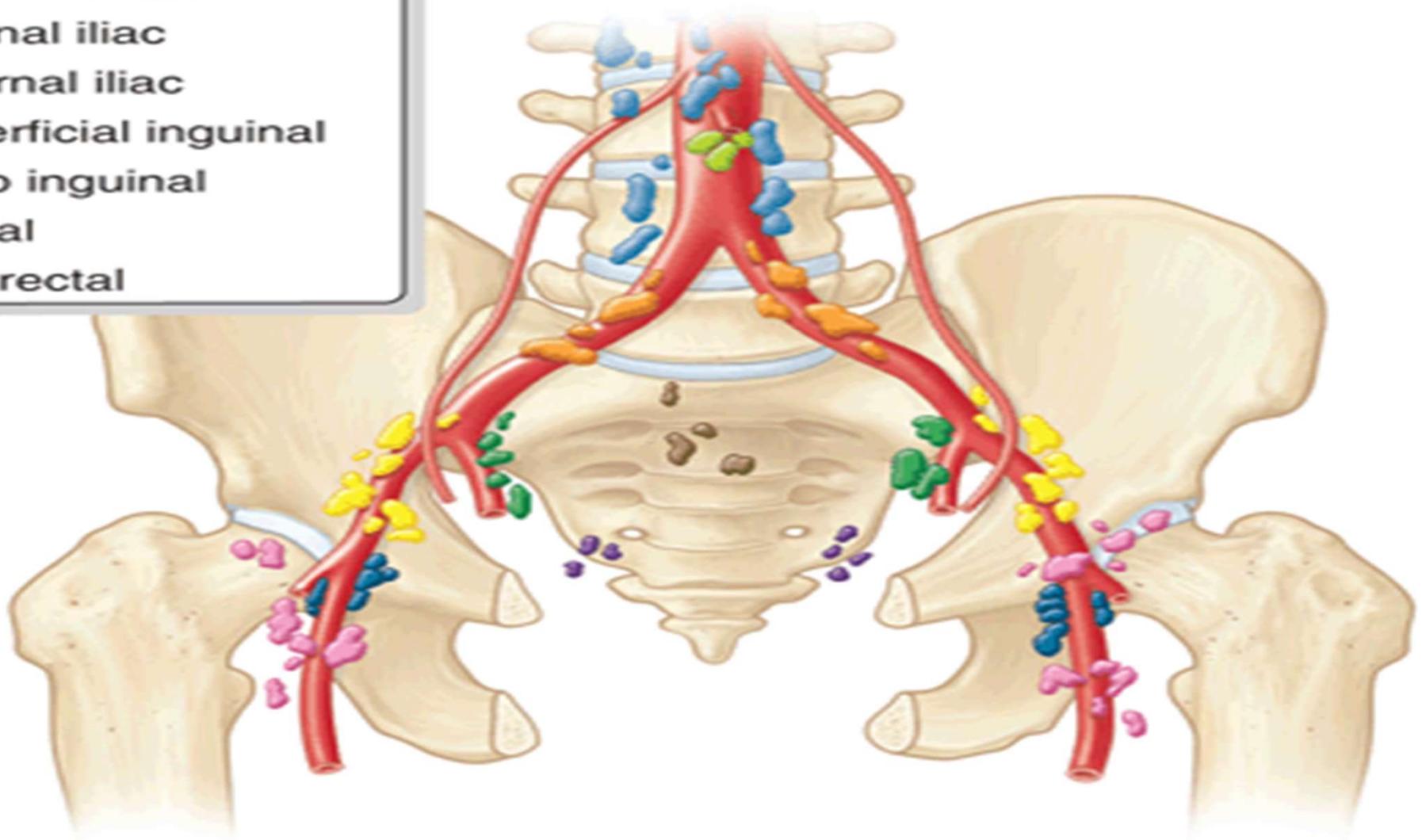
Site: Close to external iliac vessels.

Sacral Lymph node

Site : 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.

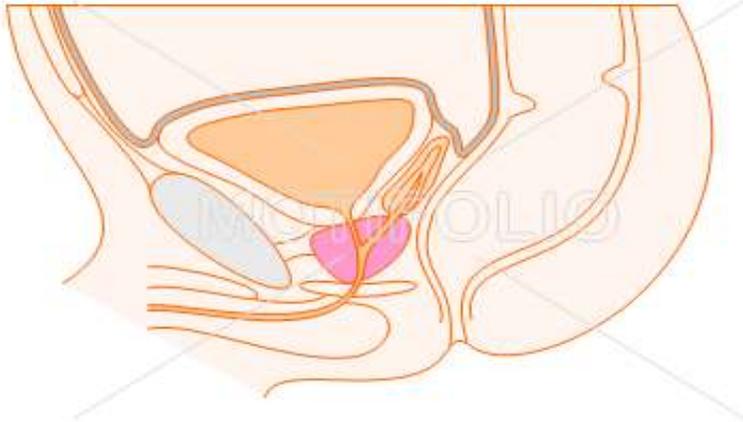
The pouch, so formed, is called **rectovesical pouch.**

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 **utero-vesical pouch**, then to anterior abdominal wall.

***in females (2 pouches) & in males (1pouch)**

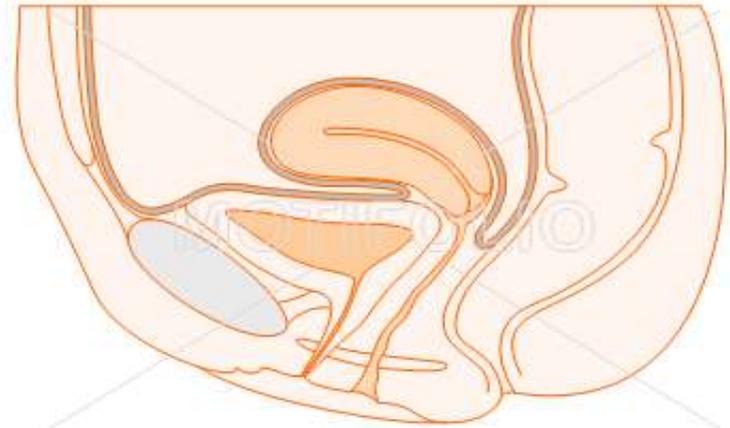
Peritoneum covering male pelvic organs



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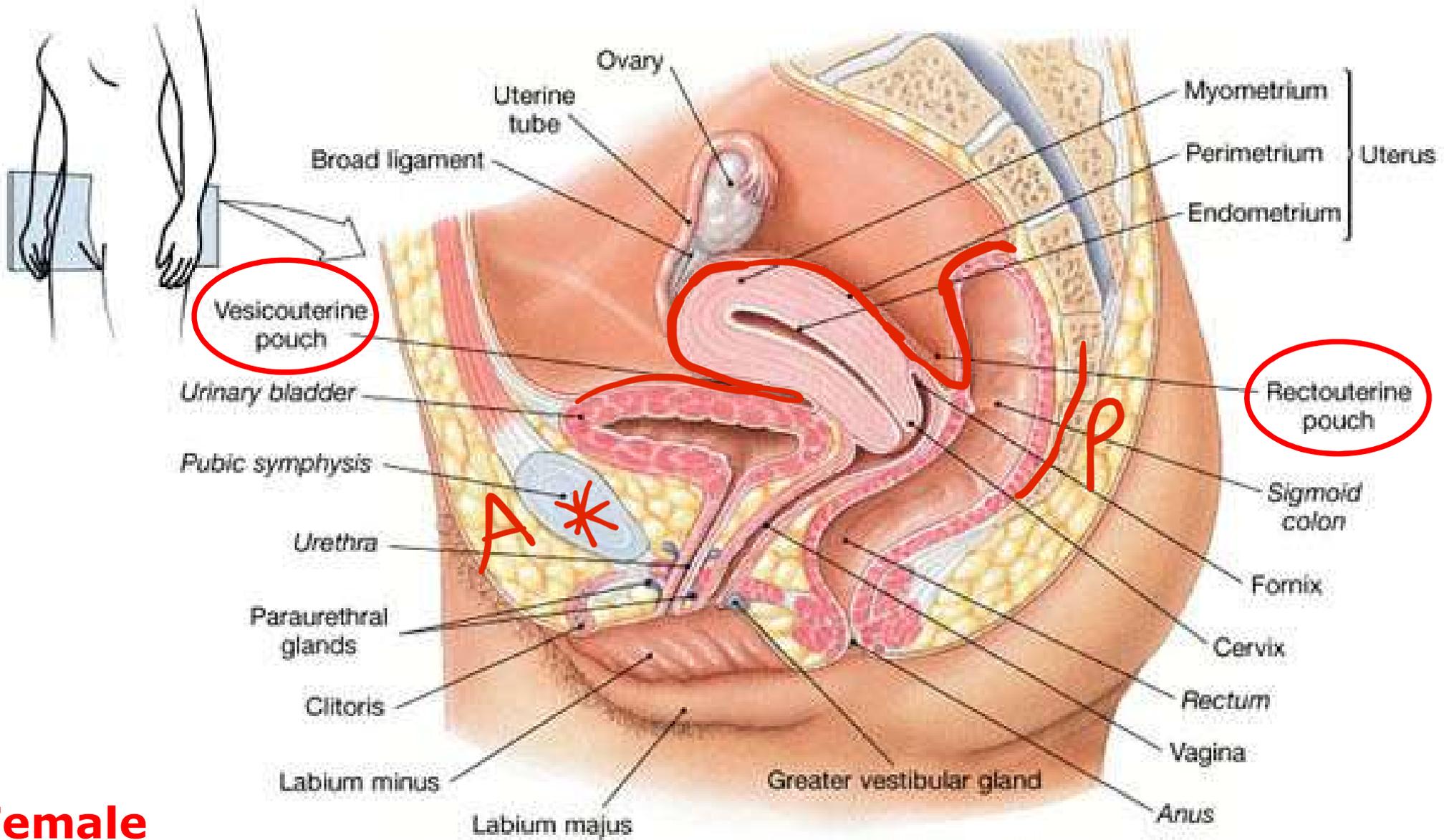
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Peritoneum covering female pelvic organs

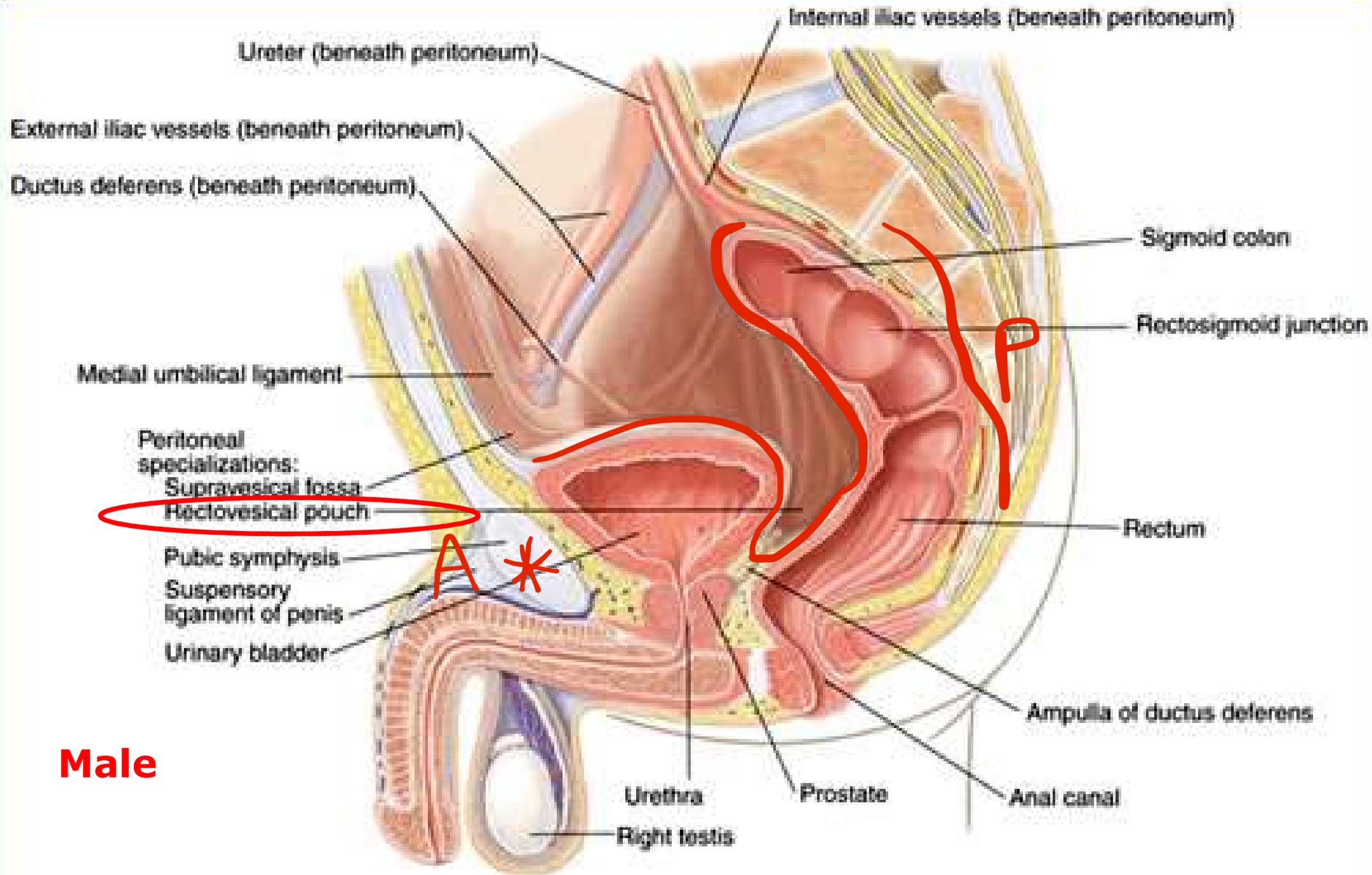


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Female





**Thank You
ALL**