

UROGENITAL SYSTEM

THE PERINEUM & ISCHIORECTAL FOSSA

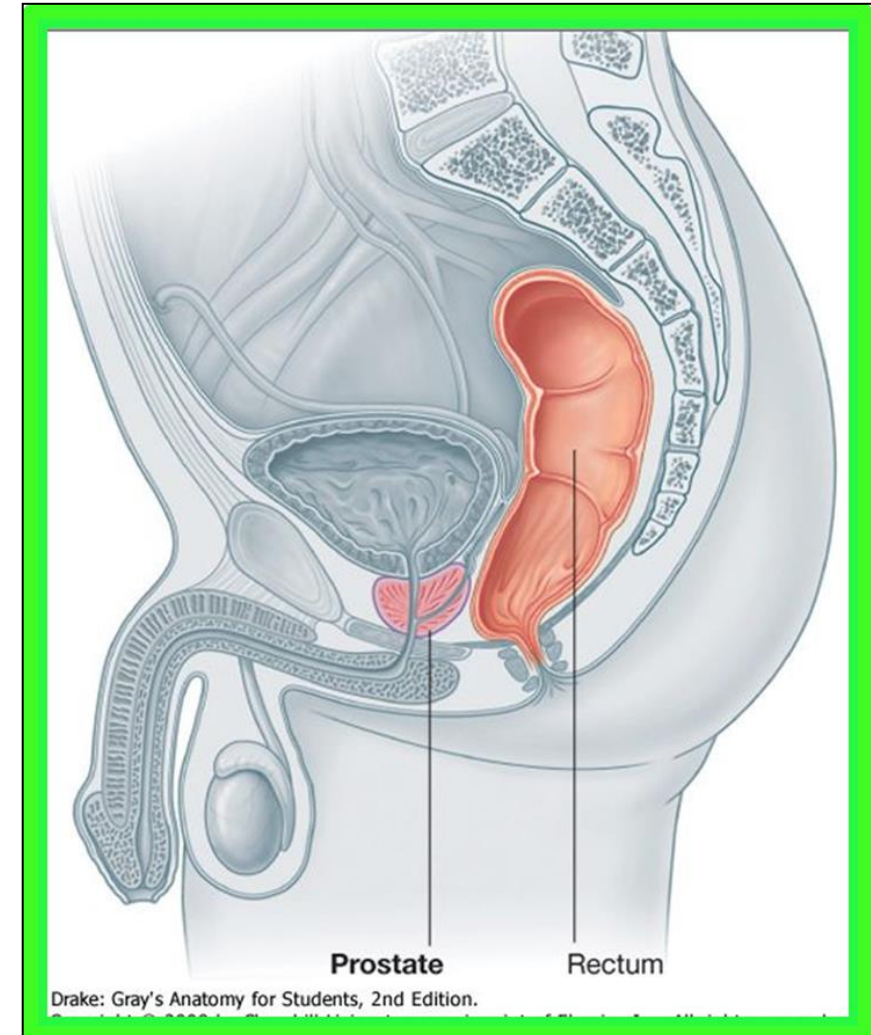
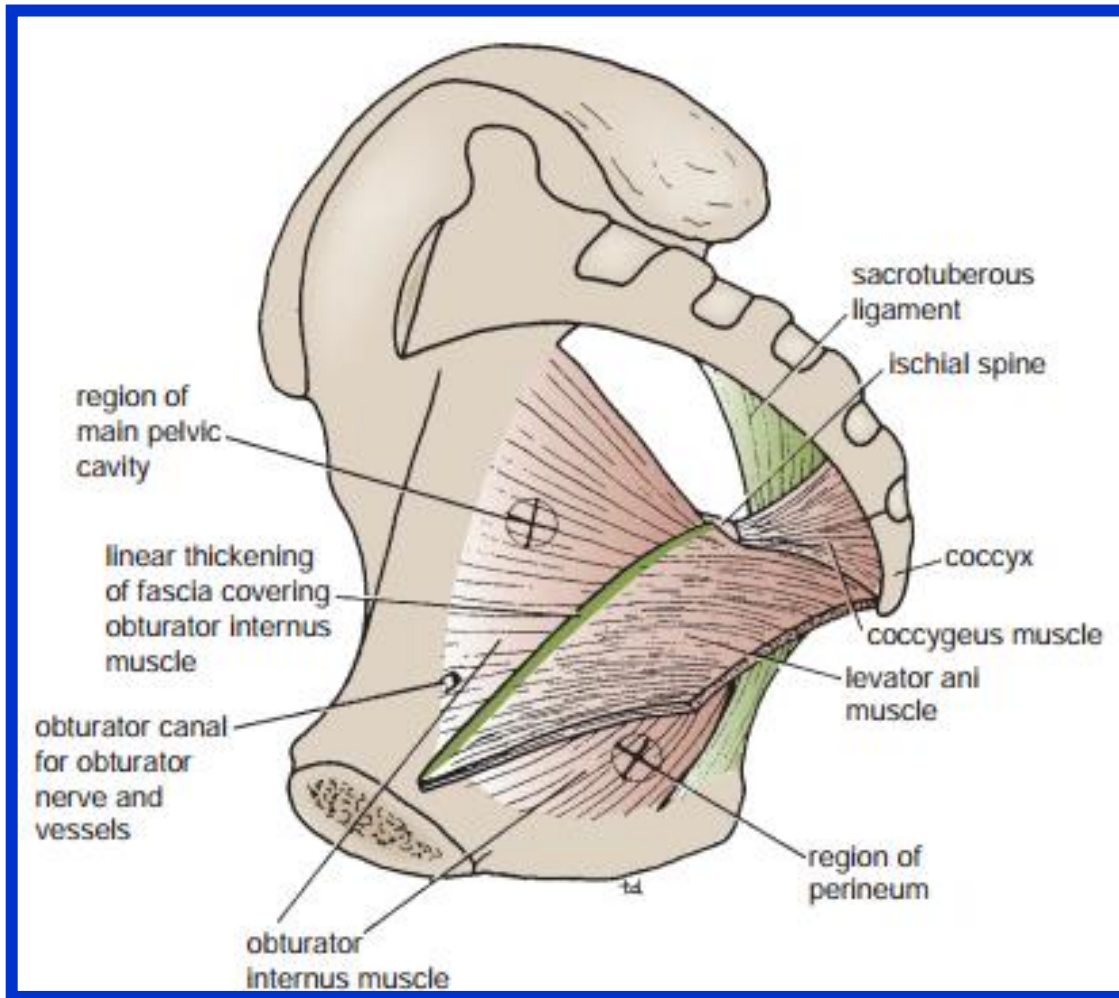
Dr. Aiman Qais Afar
Surgical Anatomist

College of Medicine /University Of Mutah

Tuesday 8 May 2023

The Perineum

❖ The cavity of the pelvis is divided by **the pelvic diaphragm** into **the main pelvic cavity** above and **the perineum** below .



The Perineum

The perineum is diamond shaped and is bounded:

Anteriorly: The symphysis pubis

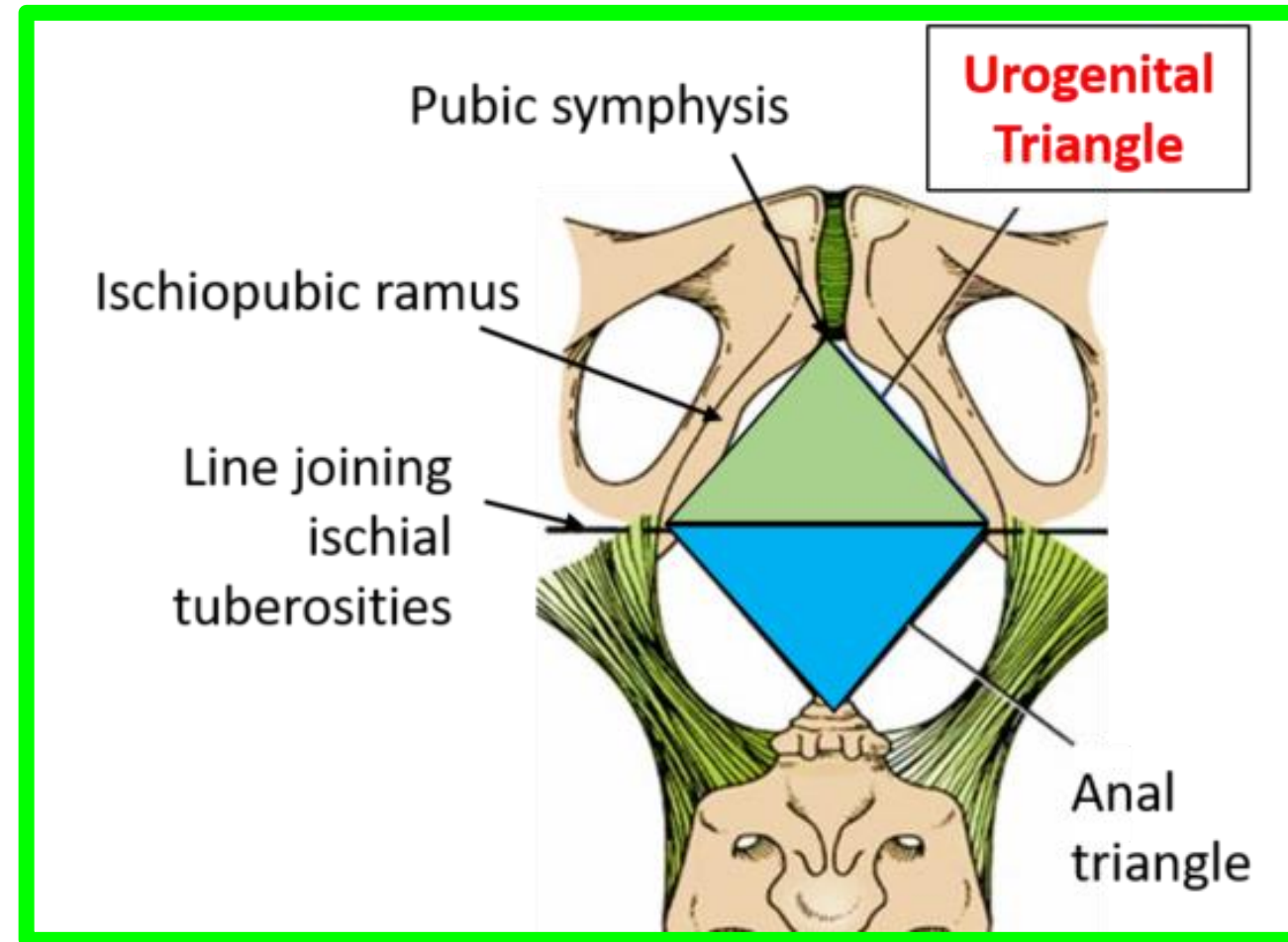
Posteriorly: the tip of the coccyx

Laterally: The ischial tuberosities

❖ **Diamond-shaped perineum** divided by a broken line into the:

❖ **Urogenital triangle**

❖ **Anal triangle.**



The Urogenital triangle is bounded in front by the pubic arch and laterally by the ischial tuberosities

Urogenital Triangle

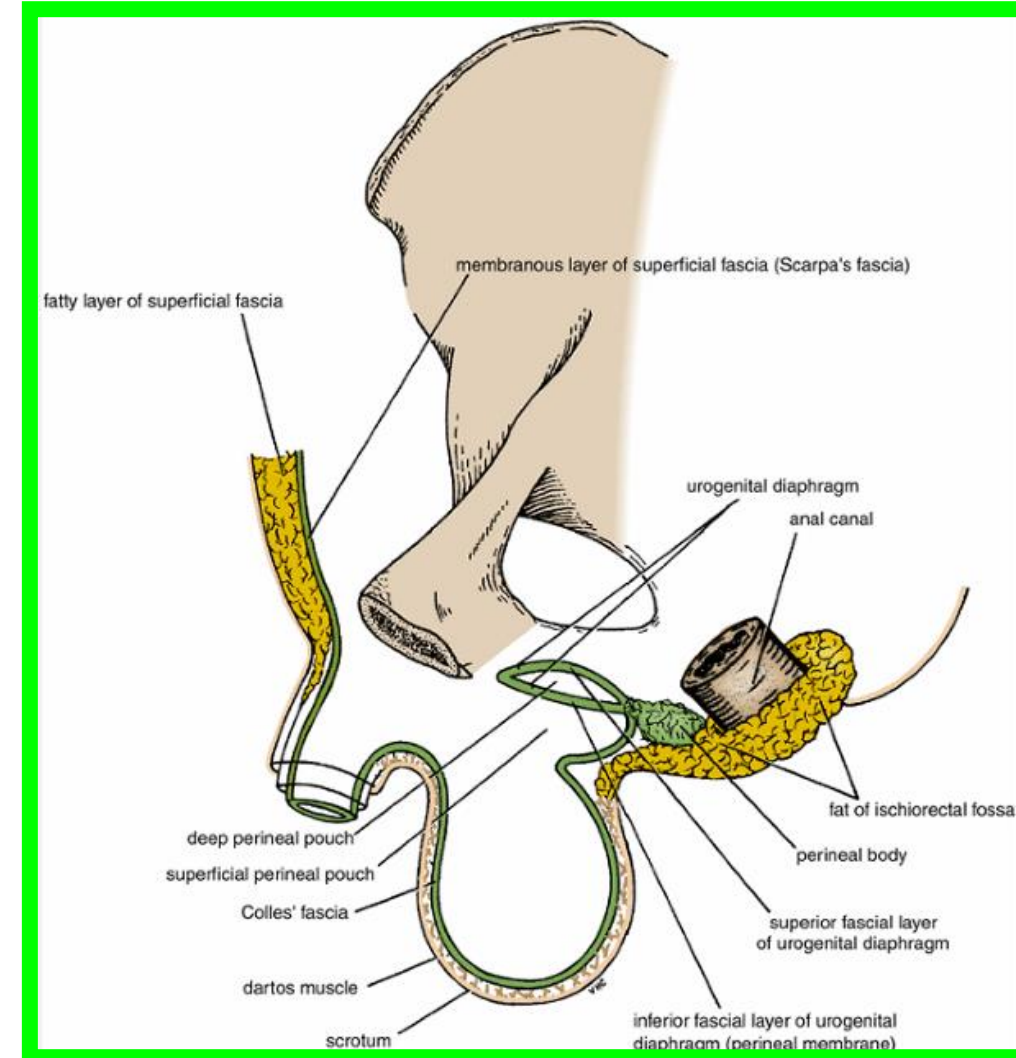
Superficial Fascia

Can be divided into a fatty layer and a membranous layer.

❖ The fatty layer (fascia of Camper) is continuous with the fat of **the ischiorectal fossa** and the superficial fascia of the thighs

❖ **In the scrotum**, the fat is replaced by smooth muscle **the dartos muscle**.

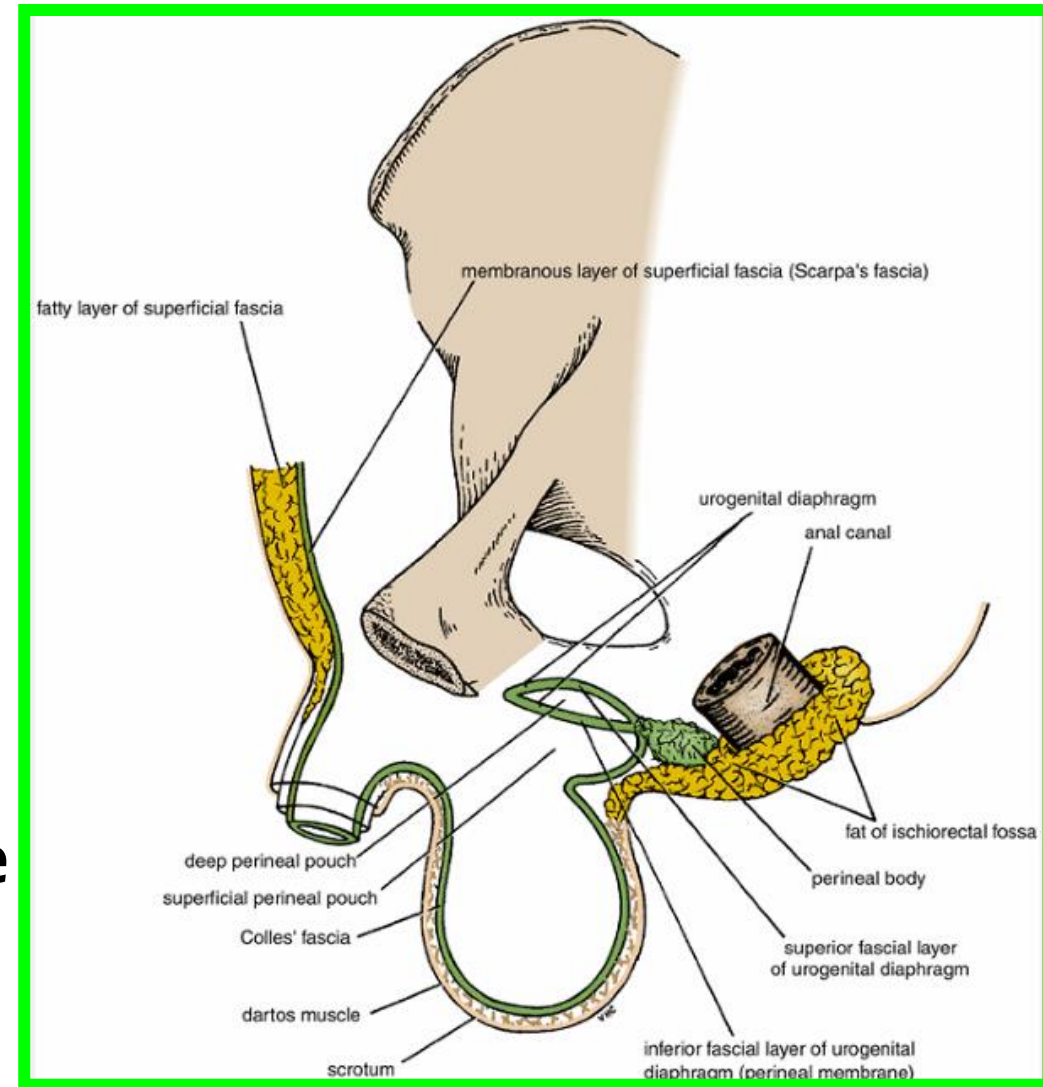
❖ **The dartos muscle** contracts in response to cold and **reduces the surface area of the scrotal skin**



Urogenital Triangle

Superficial Fascia

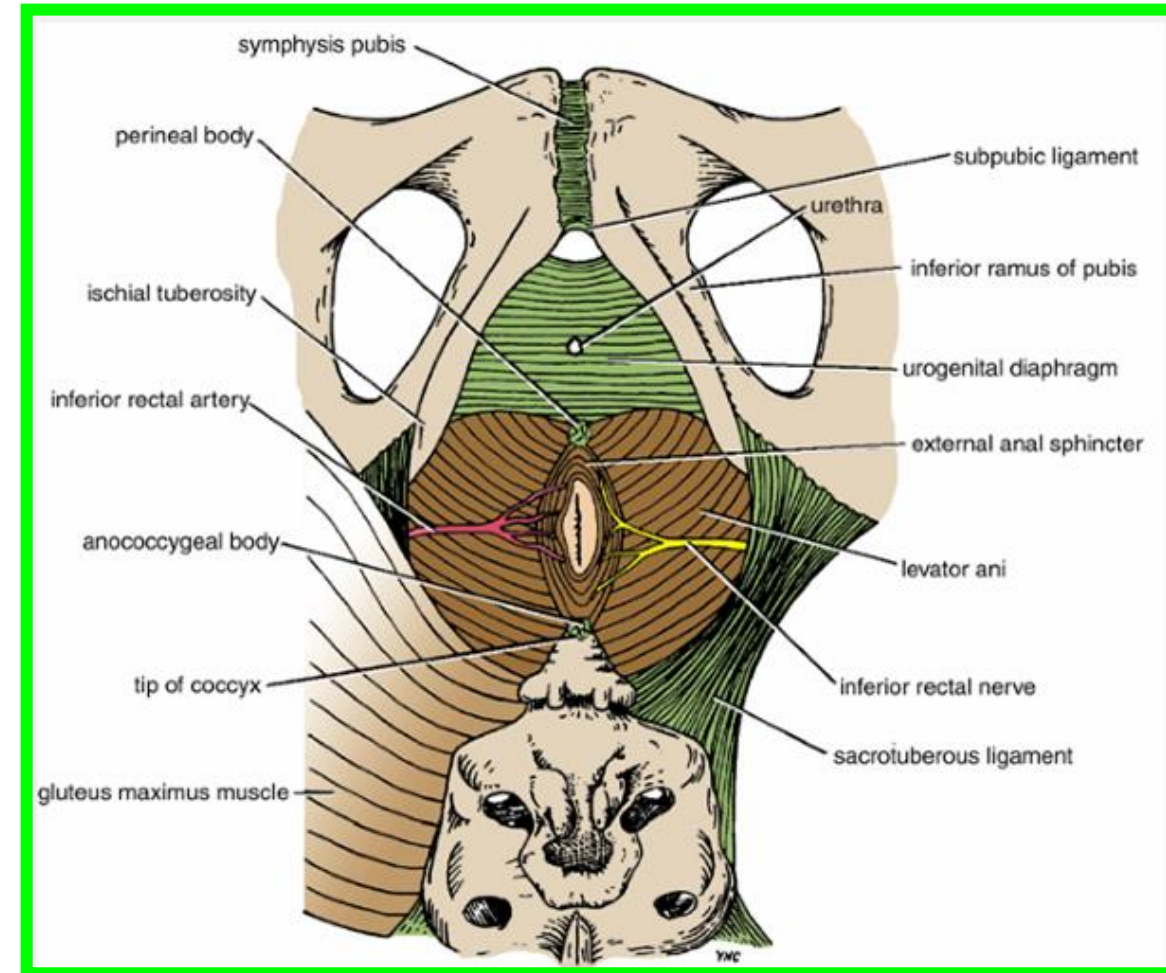
- ❖ The membranous layer (Colles' fascia) is attached:
 - ✓ **Posteriorly** to the posterior border of the urogenital diaphragm
 - ✓ **Laterally** to the margins of the pubic arch
 - ✓ **Anteriorly** it is continuous with the membranous layer of superficial fascia of the anterior abdominal wall (**Scarpa's fascia**).



- ✓ The fascia is continued over the **penis** (or clitoris) as a tubular sheath (**Buck's fascia**) and **Colle's Fascia** in **the scrotum**

Urogenital Diaphragm

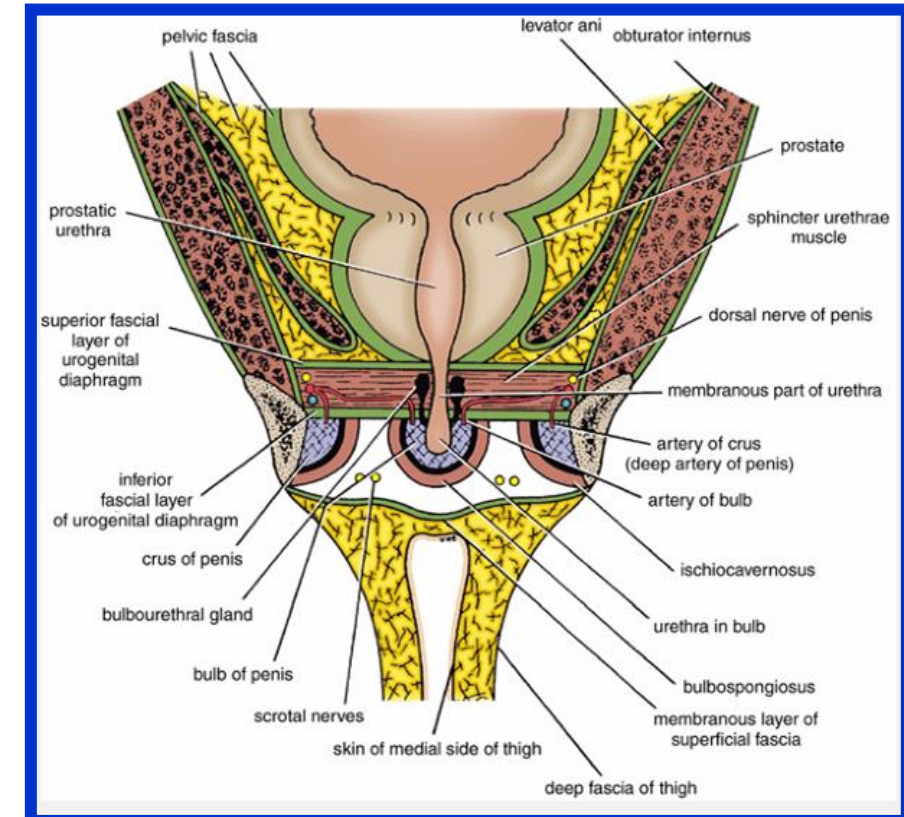
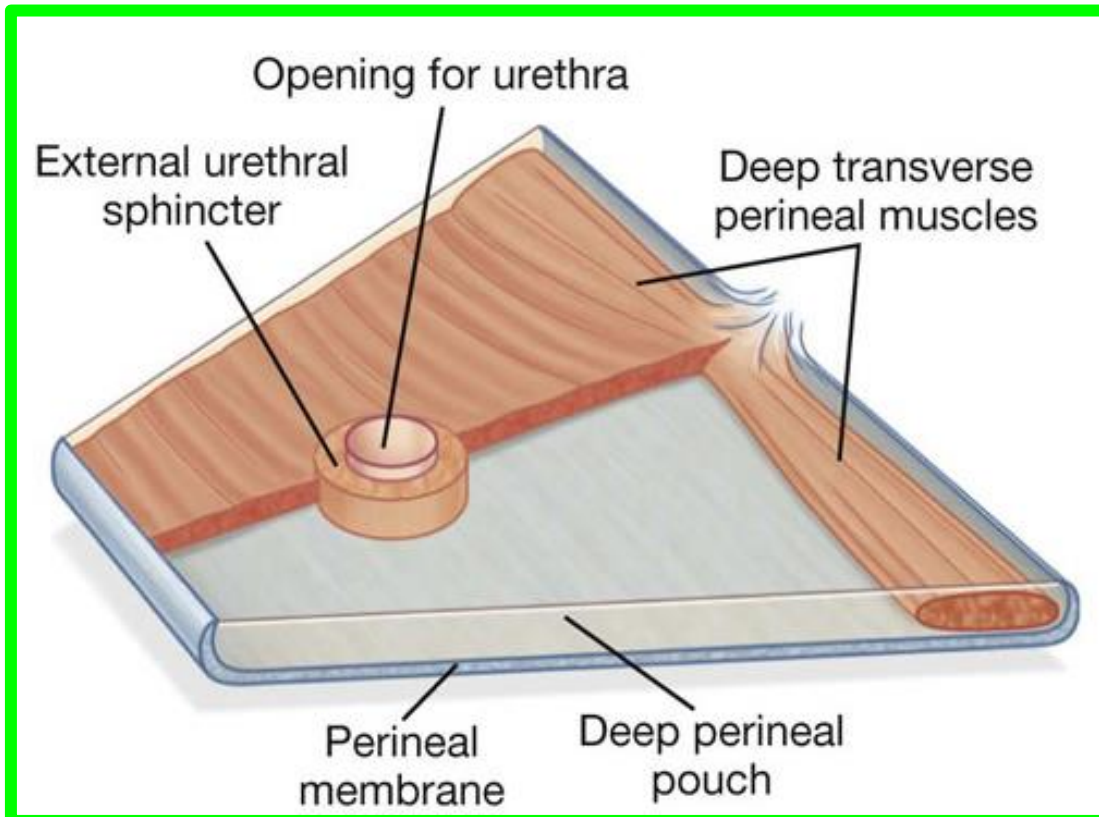
- Is a **triangular musculofascial diaphragm** situated in the anterior part of the perineum
- filling in the gap of the pubic arch



Urogenital Diaphragm

❖ It is formed by the sphincter urethrae and the deep transverse perineal muscles, which are enclosed between a **superior and an inferior layer of fascia** of the Urogenital diaphragm.

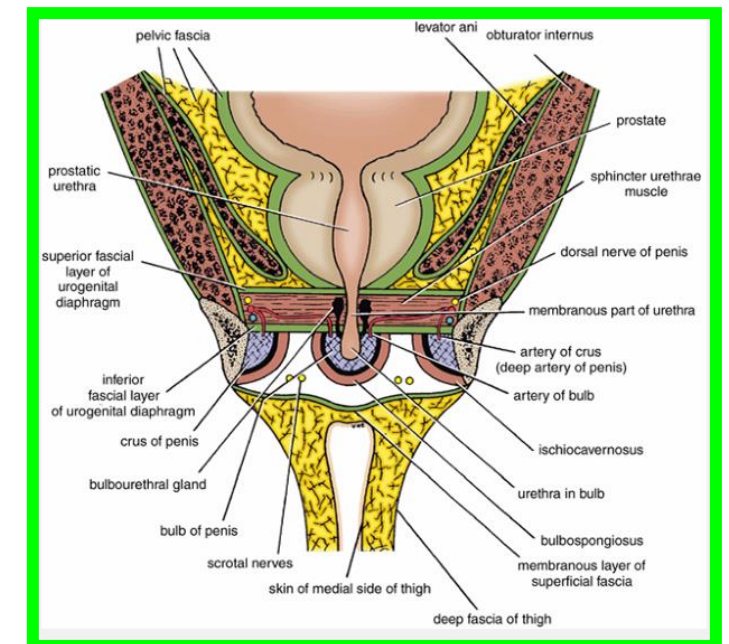
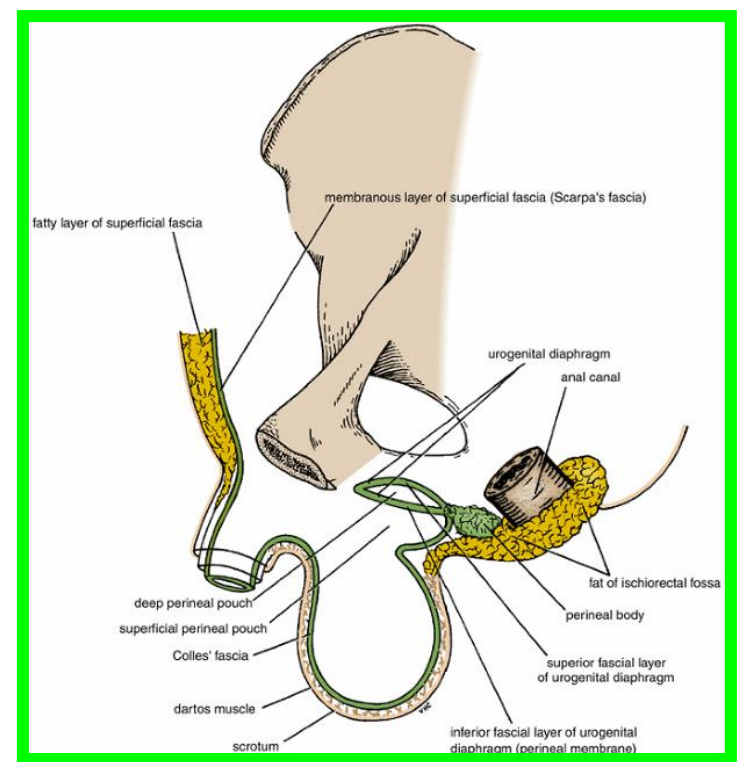
❖ The **inferior layer of fascia** is often referred to as **the perineal membrane**.



Urogenital Diaphragm

- ❑ **Anteriorly:** the **two layers of fascia fuse**, leaving a small gap beneath the symphysis pubis.
- ❑ **Posteriorly:** the two layers of fascia fuse with the membranous layer of the superficial fascia and **the perineal body**
- ❑ **Laterally,** the layers of fascia are attached to **the pubic arch.**

❖ The **closed space** that is contained between the superficial and deep layers of fascia is known as:
The deep perineal pouch.

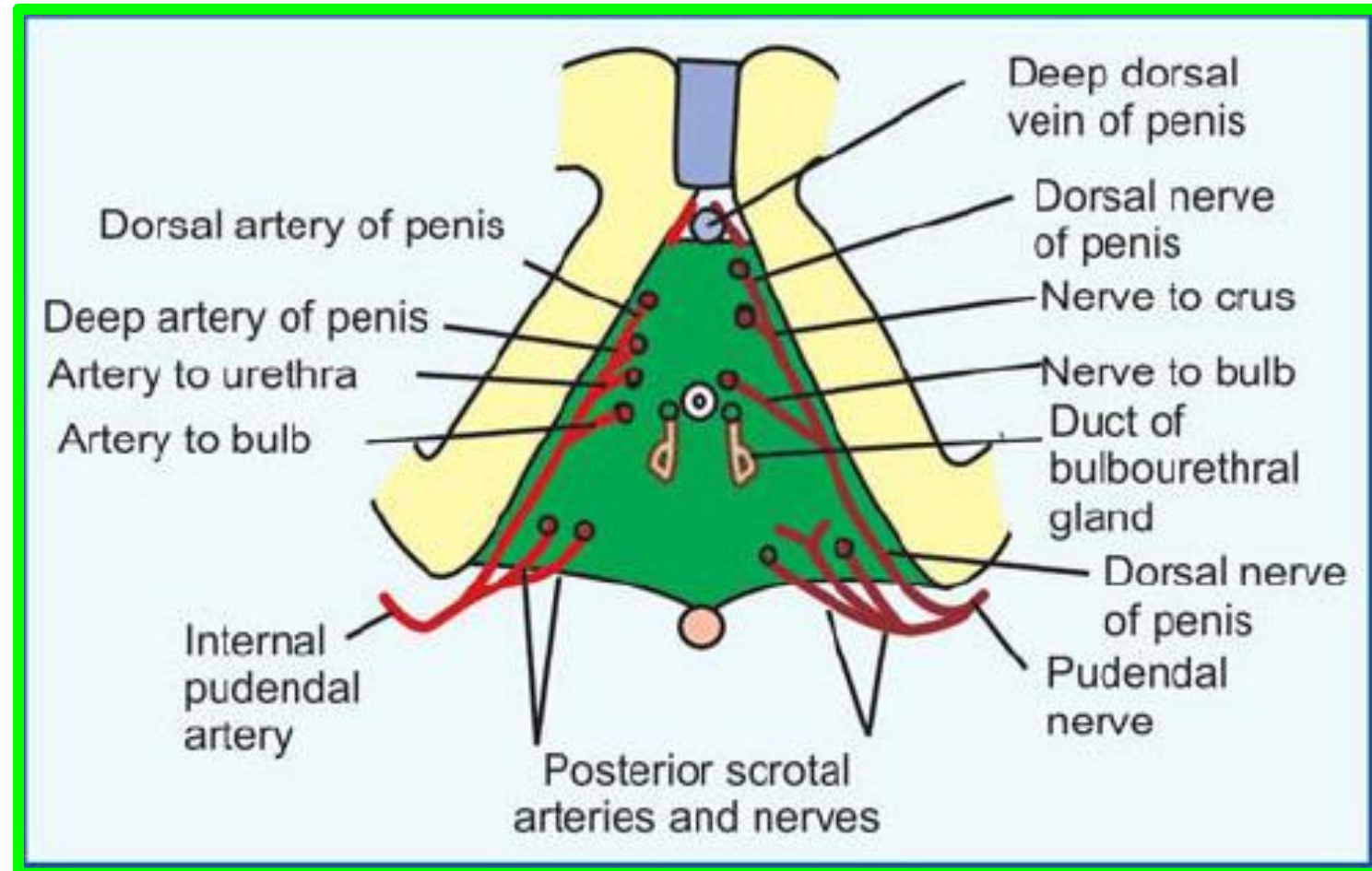


** The structures piercing the perineal membrane.

Dr. Aiman Al Maathidy
Tuesday 8 May 2023

In male

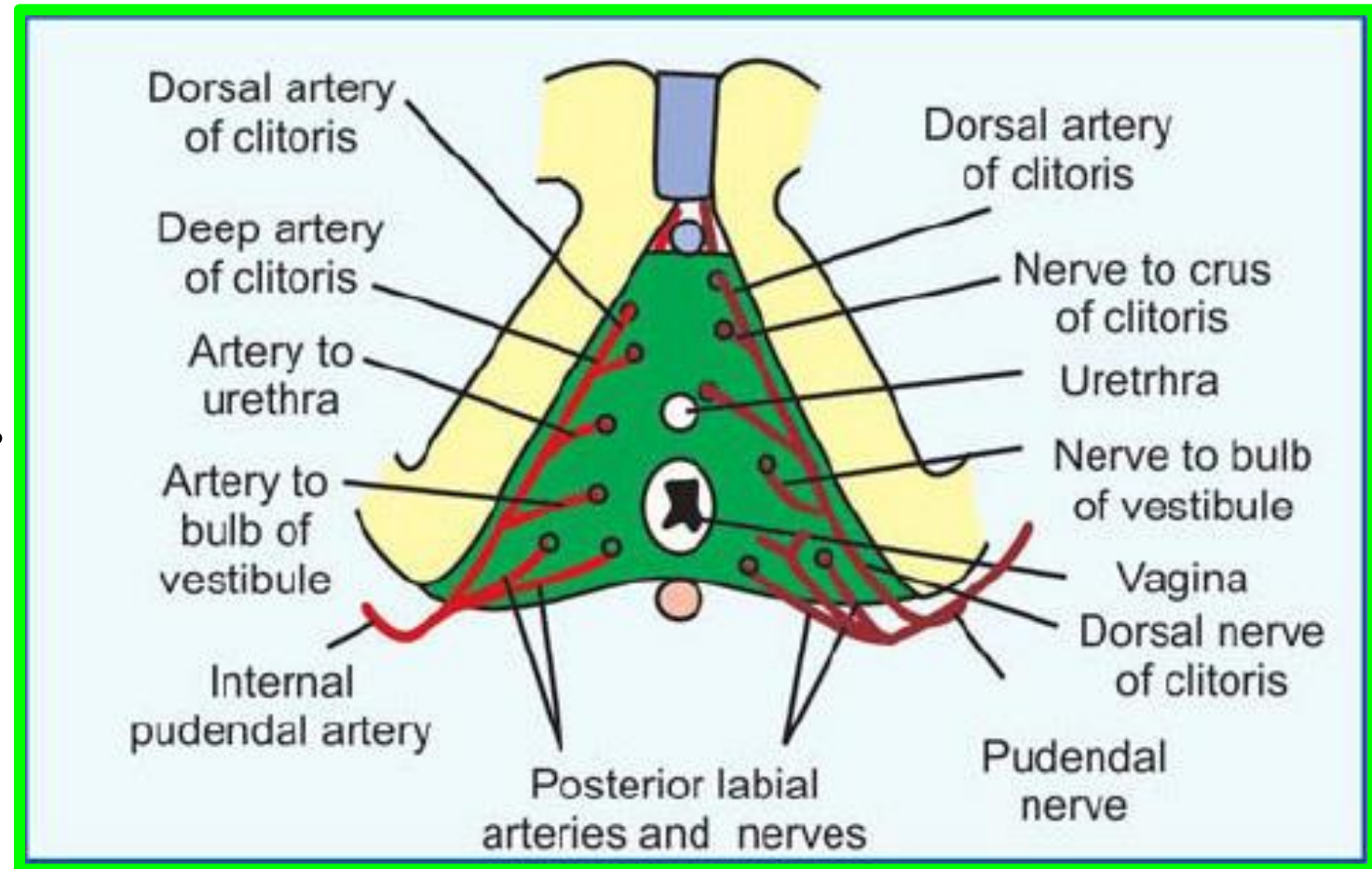
- 1- Membranous Urethra.
- 2- Ducts of the bulbo-urethral glands
- 3- **Artery of the urethra.**
- 4- **Artery of the bulb.**
- 5- **Deep artery of the penis.**
- 6- **Dorsal artery of the penis.**
- 7- **Dorsal nerve of the penis**



**** The structures piercing the perineal membrane.**

In female

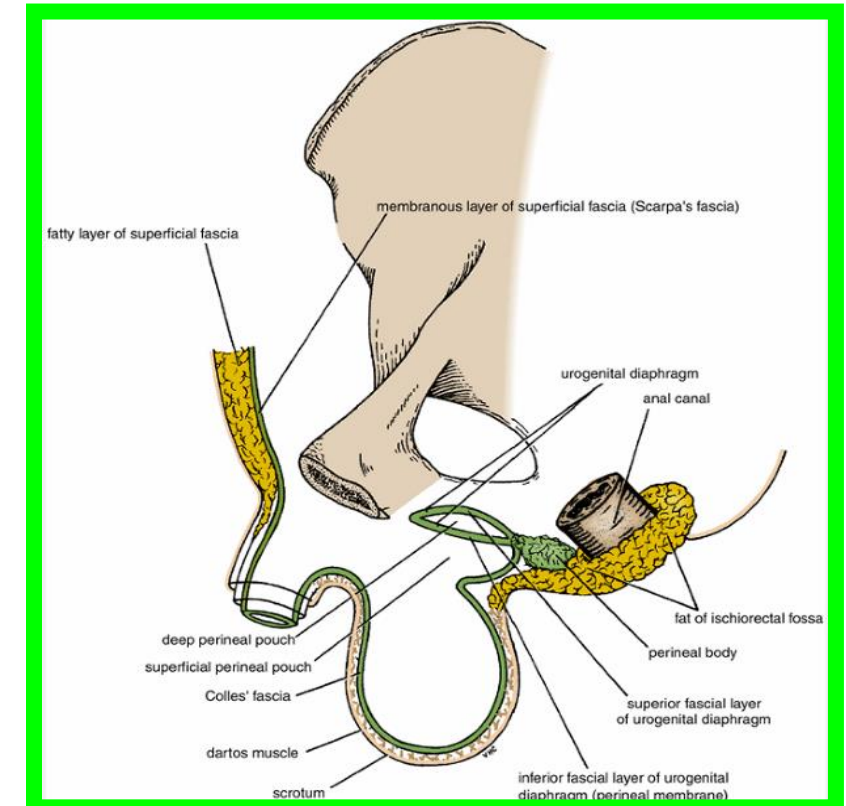
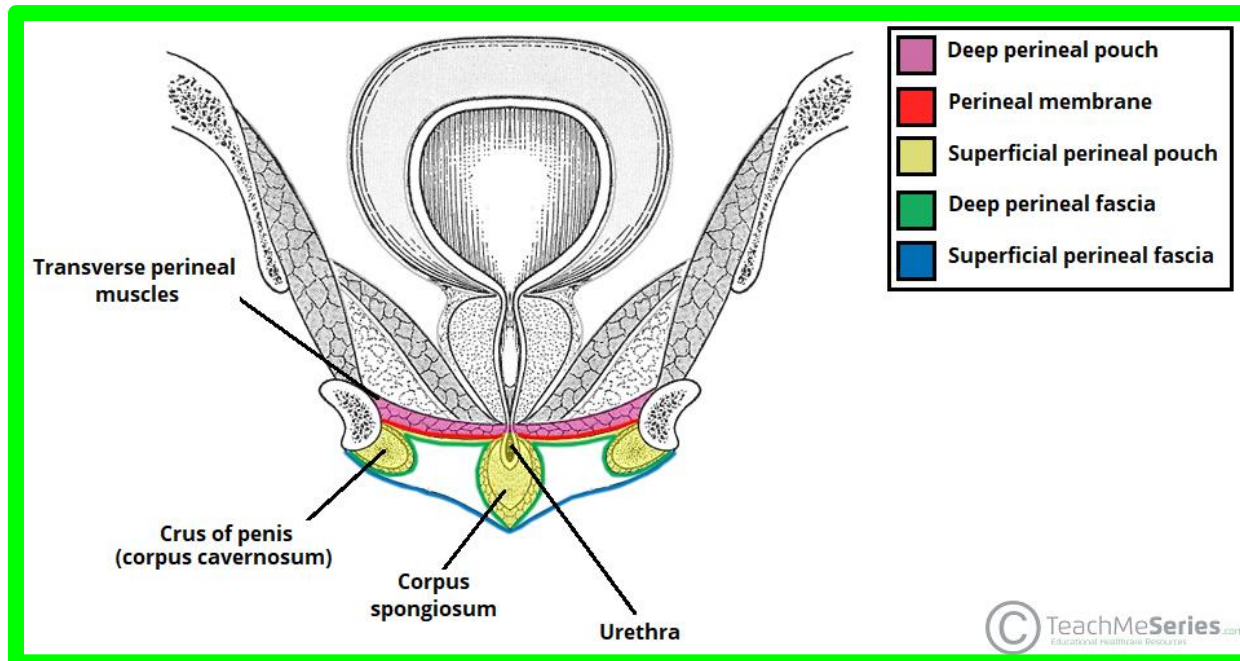
- 1- Urethra.
- 2- Vagina behind the urethra.
- 3- Artery of the urethra.
- 4- Artery of the bulb.
- 5- Deep artery of the clitoris.
- 6- Dorsal artery of the clitoris.
- 7- Dorsal nerve of the clitoris.



• Superficial Perineal Pouch

** Boundaries

- 1- **Floor:** membranous layer of superficial fascia (Colle's fascia).
- 2- **Roof:** perineal membrane.
- 3- **On each side:** pubic arch.
- 4- **Posteriorly:** closed by the attachment of the roof and floor.
- 5- **Anteriorly:** opened.



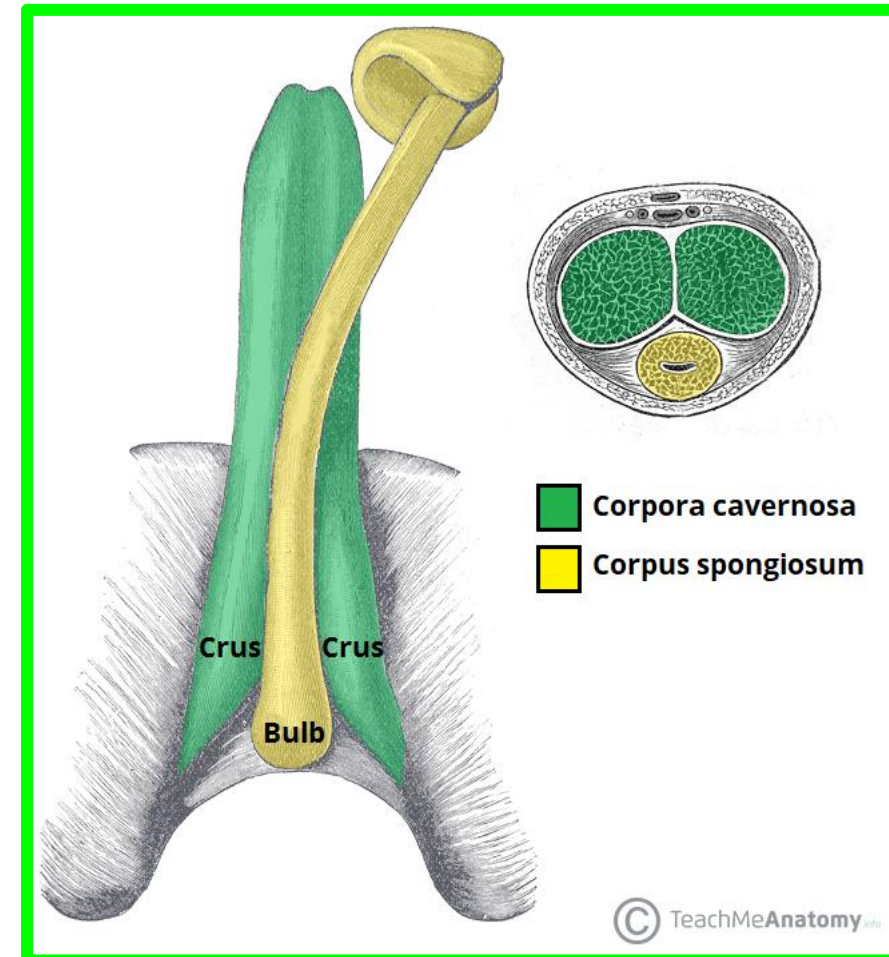
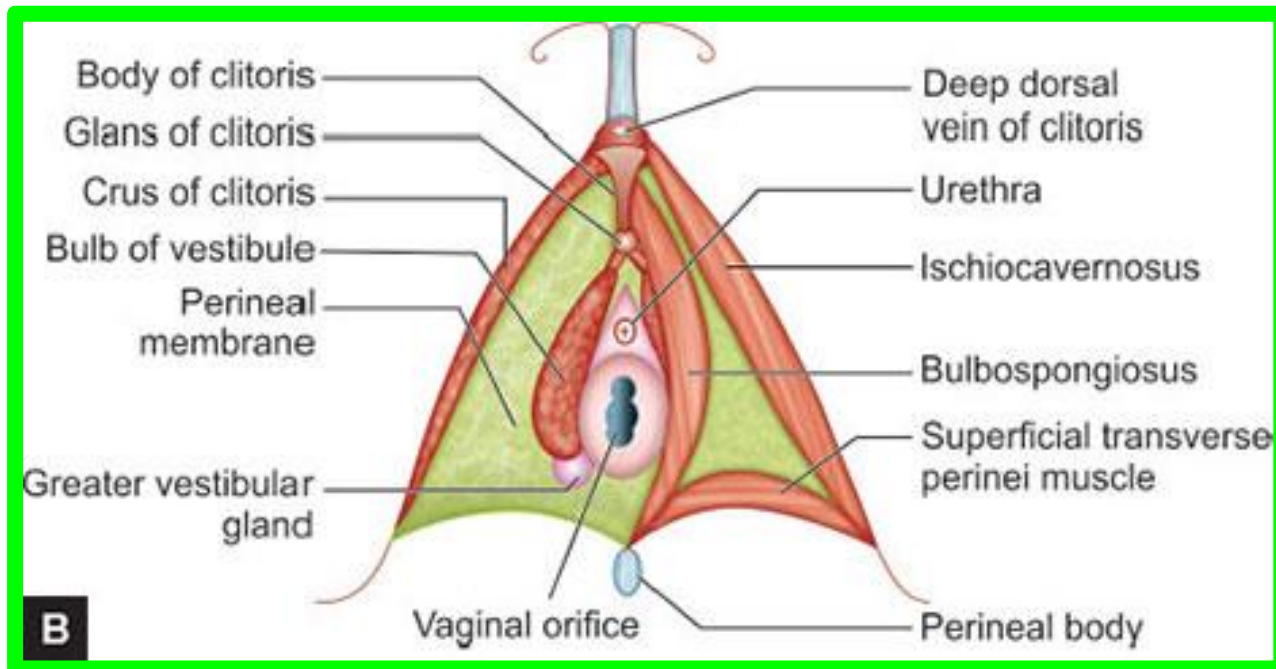
• Contents of Superficial Perineal Pouch

A- Root of the penis

- 1- **Bulb of the penis:** is the posterior part of **the corpus spongiosum**.
- 2- **2 Crura of the penis:** is the posterior part of **the corpora cavernosum**.
- 3- **Penile urethra** inside the bulb of the penis.

N.B- In Female

- 1- **Root of the clitoris.**
- 2- **Vestibule of the vagina and greater vestibular glands**



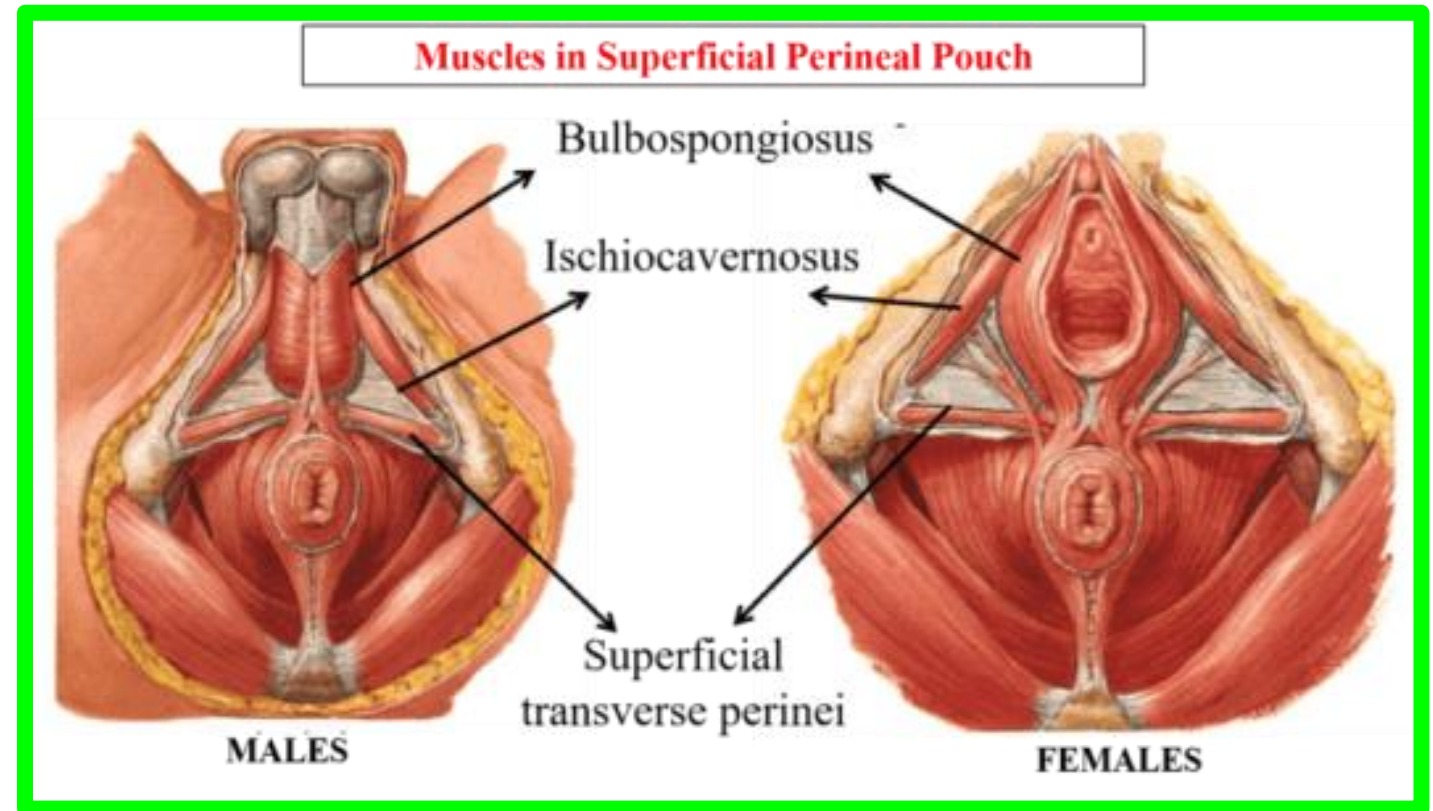
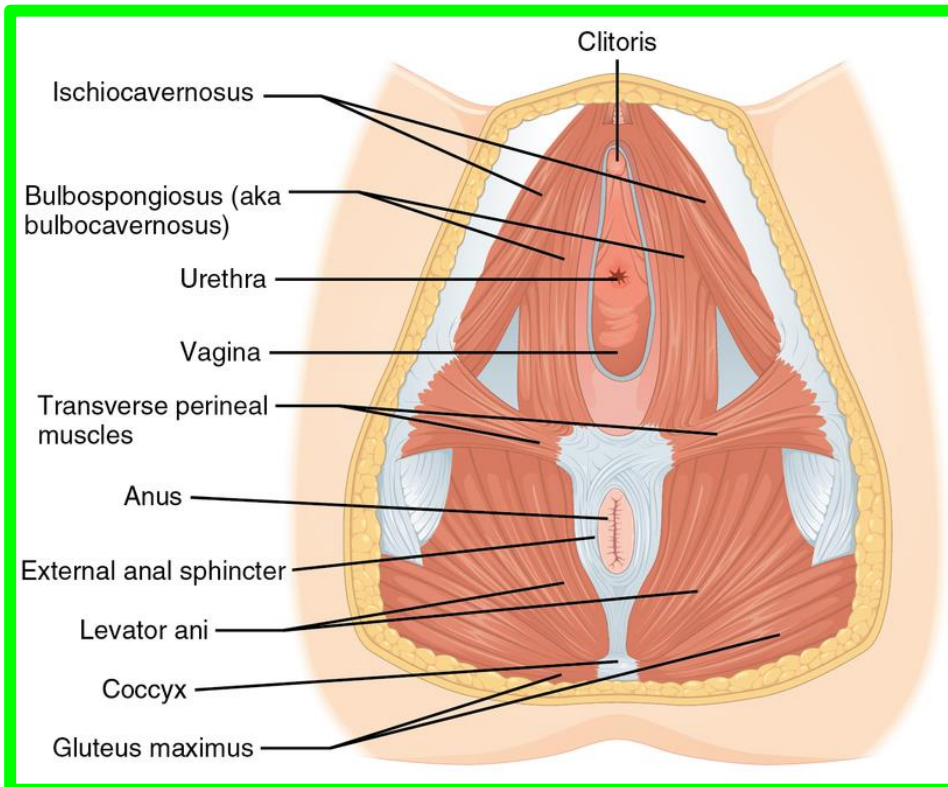
• Contents of Superficial Perineal Pouch

B- Superficial perineal muscles (right and left)

1- **Superficial transversus perinei muscles.** (** Action: fixation of the perineal body.)

2- **Bulbospongiosus muscles.** ** Action; Empty the urethra (contract at the end of micturition or ejaculation).

3- **Ischiocavernosus muscles.** ** Action, maintain erection of the penis and clitoris

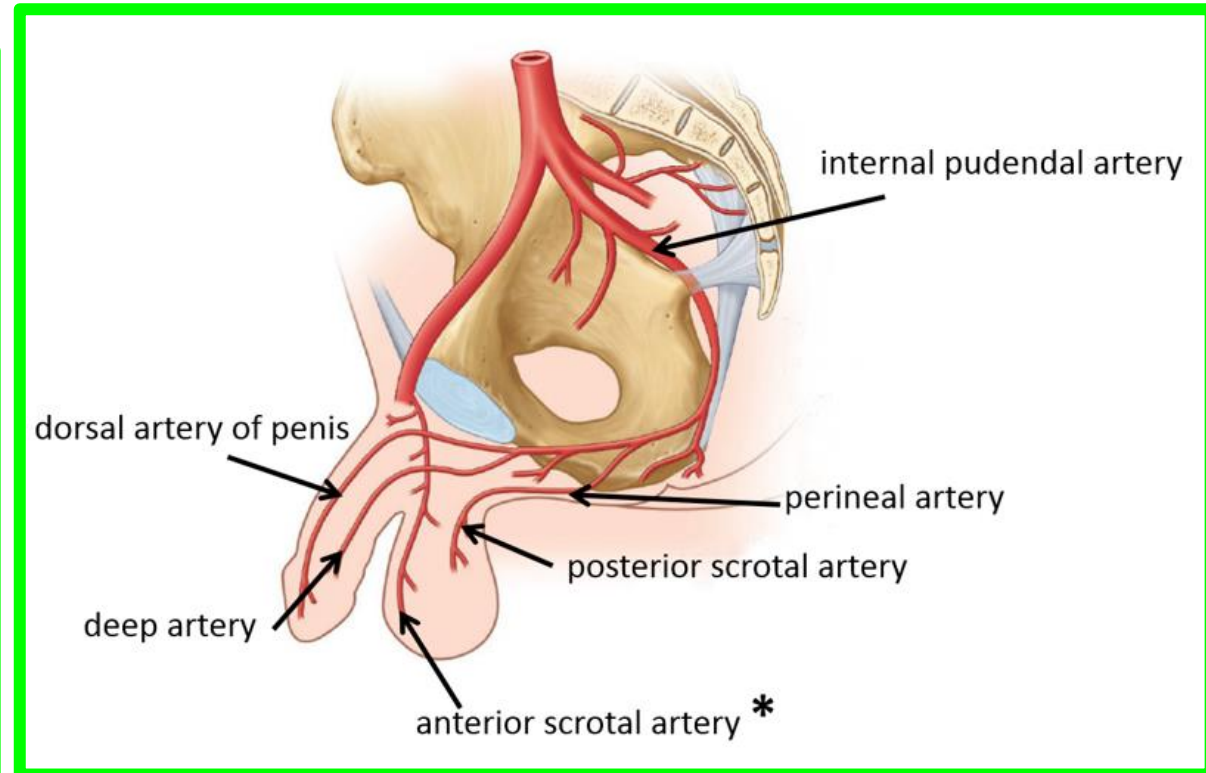
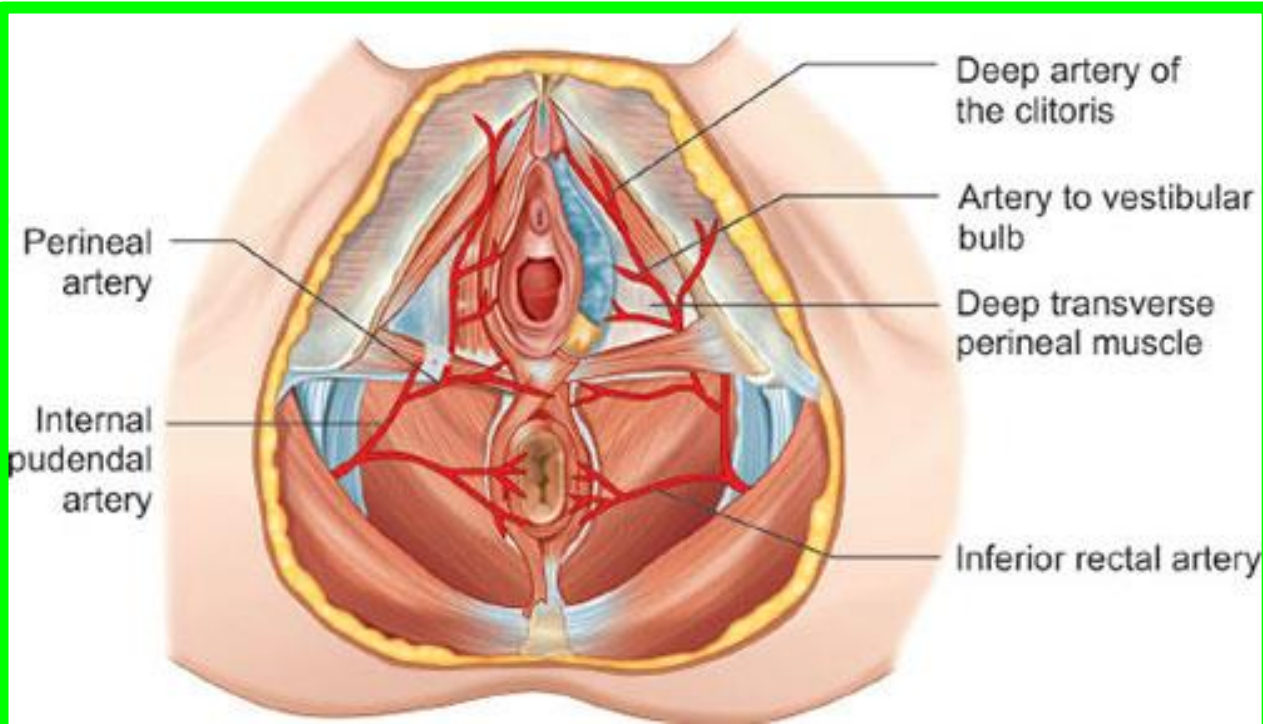


• Contents of Superficial Perineal Pouch

C- Nerves and vessels

1- **Posterior scrotal (male) or labial (female) arteries**, from the perineal branch of the internal pudendal artery.

2- **Deep artery of the penis or clitoris** (one of the two terminal branch of internal pudendal artery).

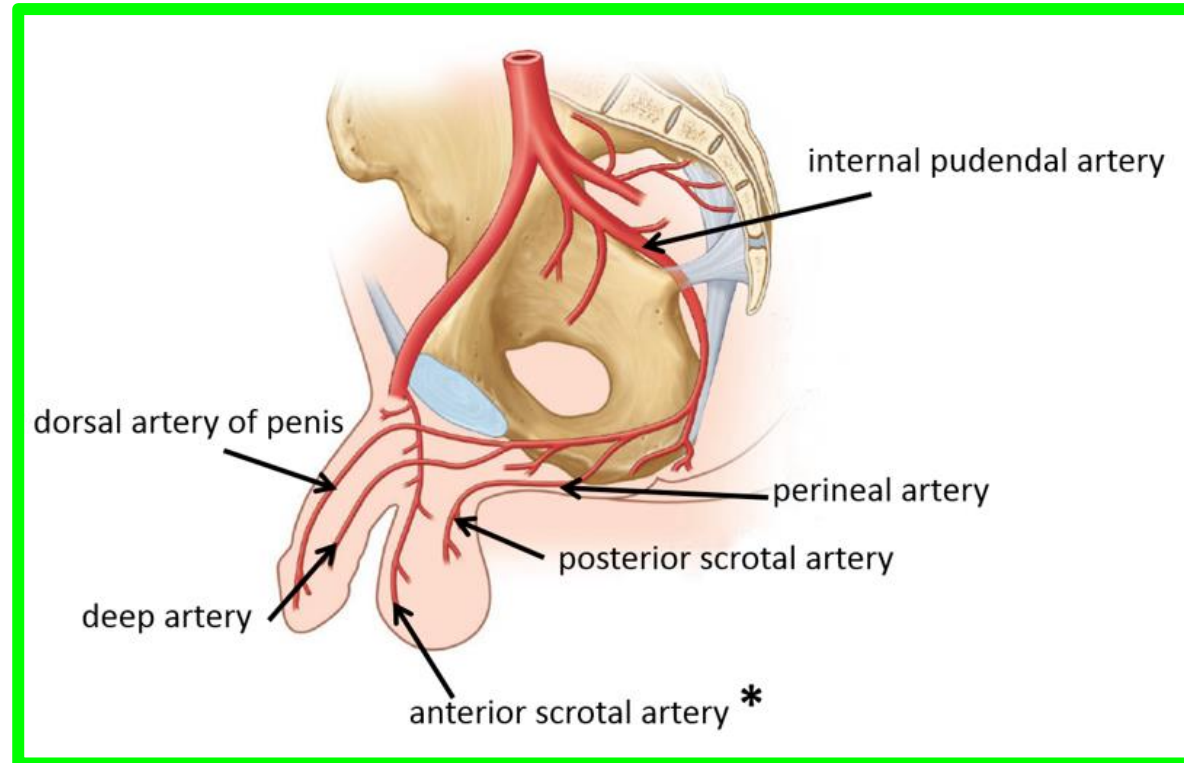
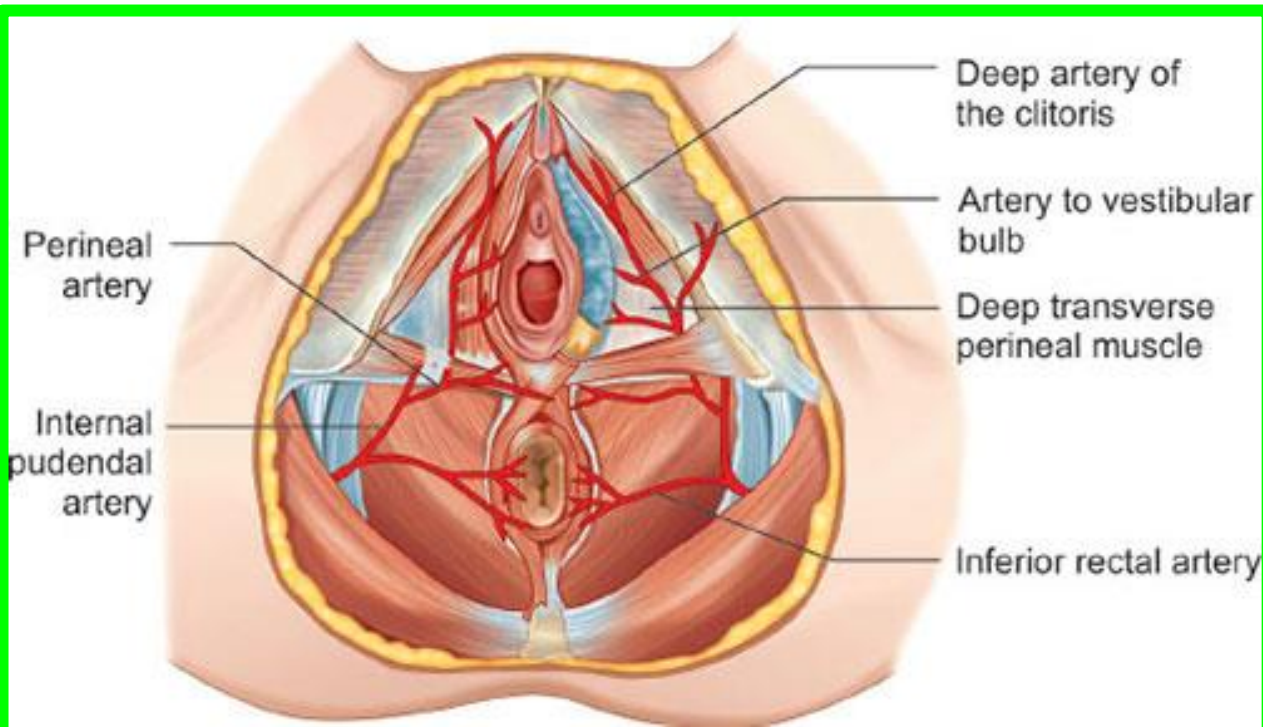


• Contents of Superficial Perineal Pouch

C- Nerves and vessels

3- **Dorsal artery of the penis or clitoris** (one of the two terminal branch of internal pudendal artery).

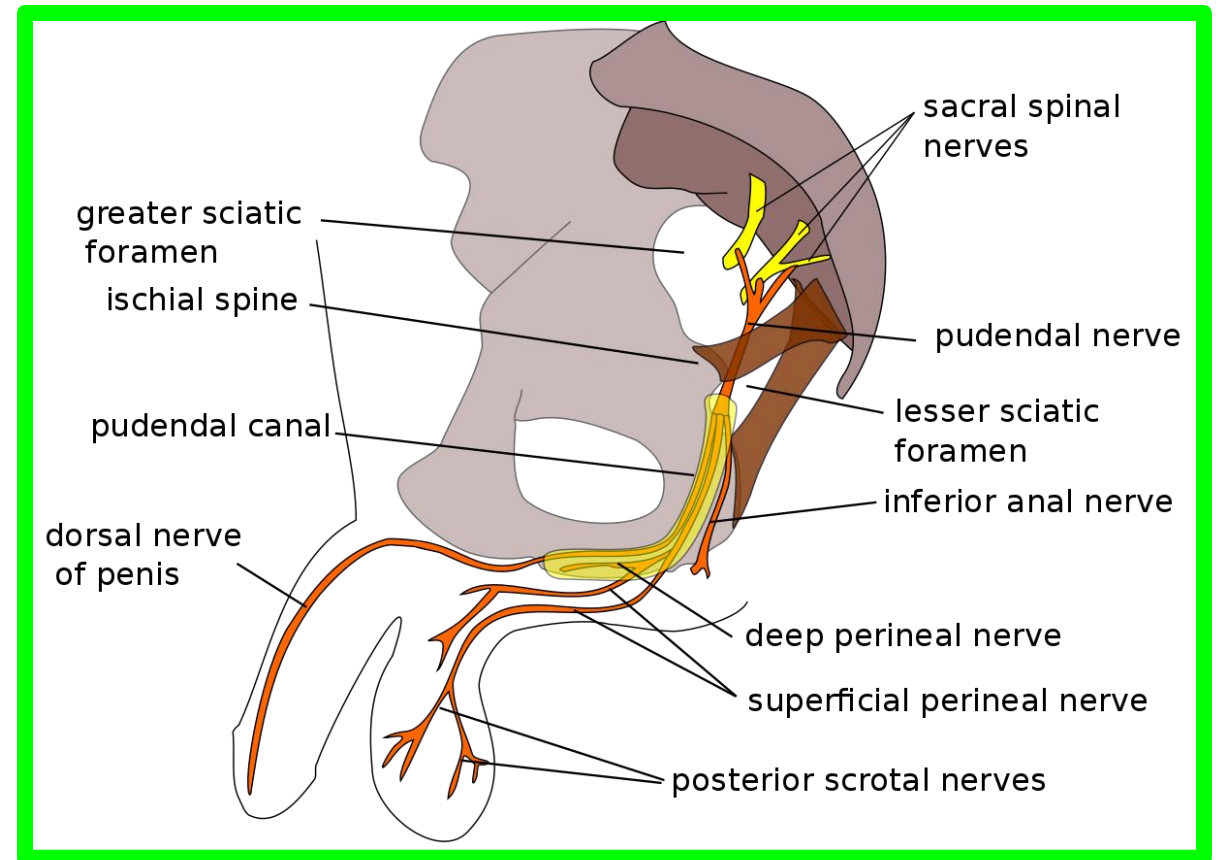
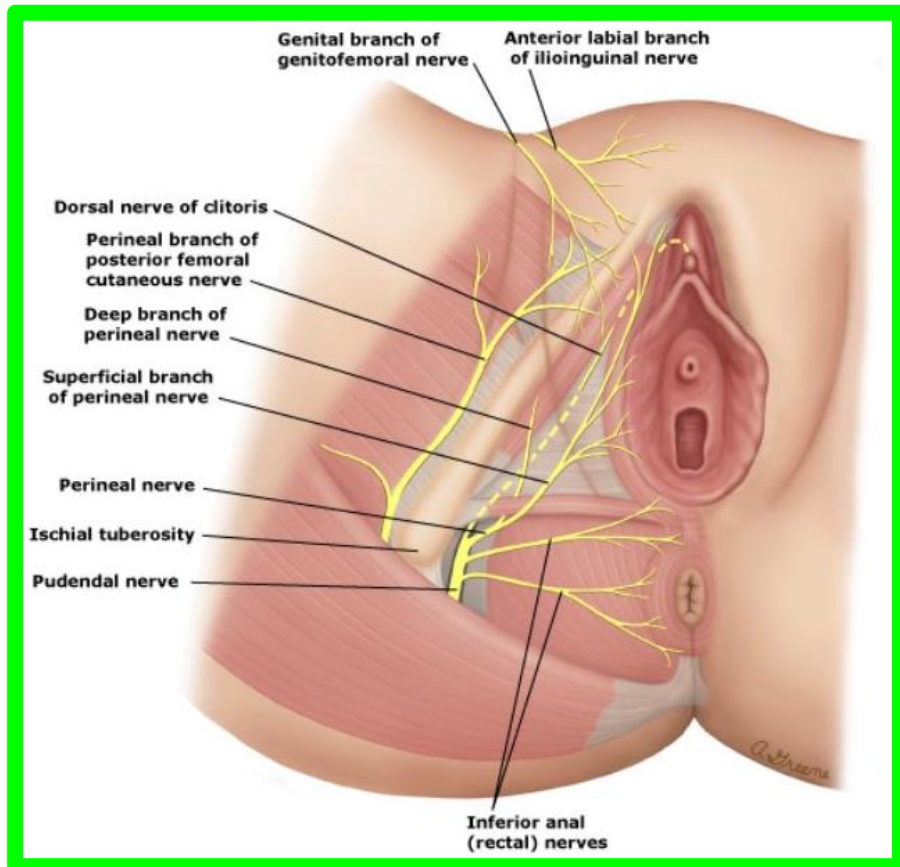
4- **Artery of the bulb of the penis (male) or vestibule of the vagina (female).**



• Contents of Superficial Perineal Pouch

C- Nerves and vessels

- 1- **Posterior scrotal (male) or labial (female) nerves:** They arise from the perineal branch of **pudendal nerve** to the scrotum or labia majora
- 2- **Dorsal nerve of the penis or clitoris:** (one of the two terminal branch of **pudendal nerve**).

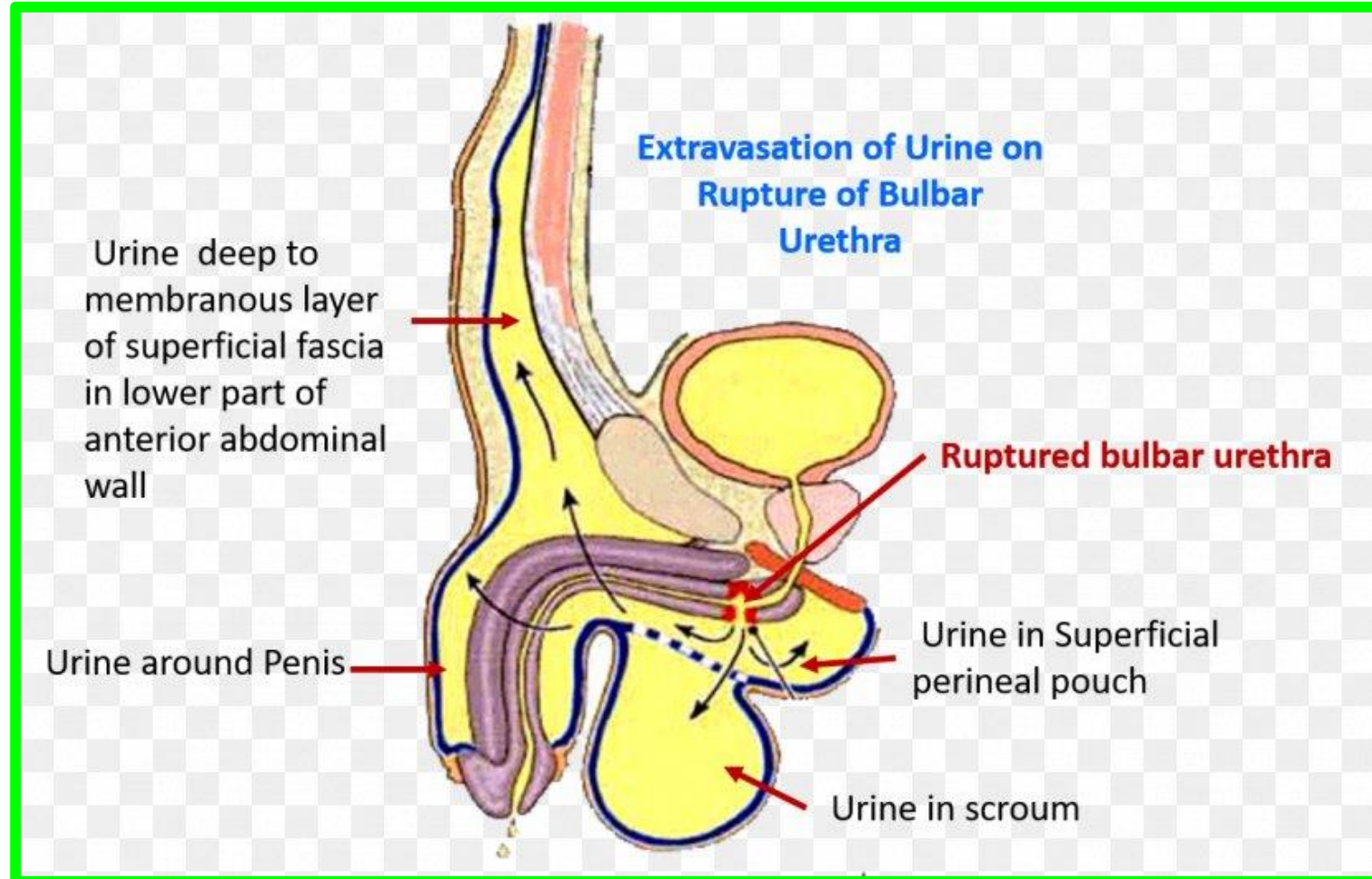


• Superficial Perineal Pouch

- **Superficial perineal pouch** is opened anteriorly where it is continuous with the space deep to the membranous layer of the superficial fascia of the anterior abdominal wall.

Rupture of the urethra leading to **extravasations of urine** into the superficial perineal pouch → to the anterior abdominal wall.

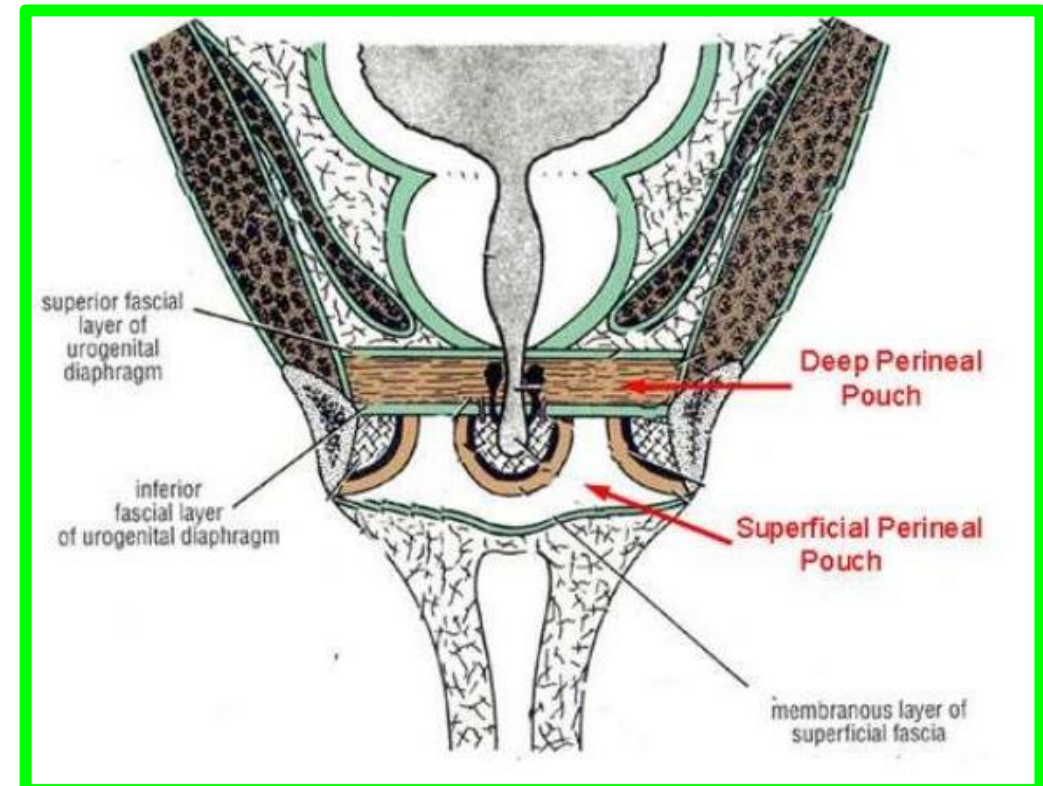
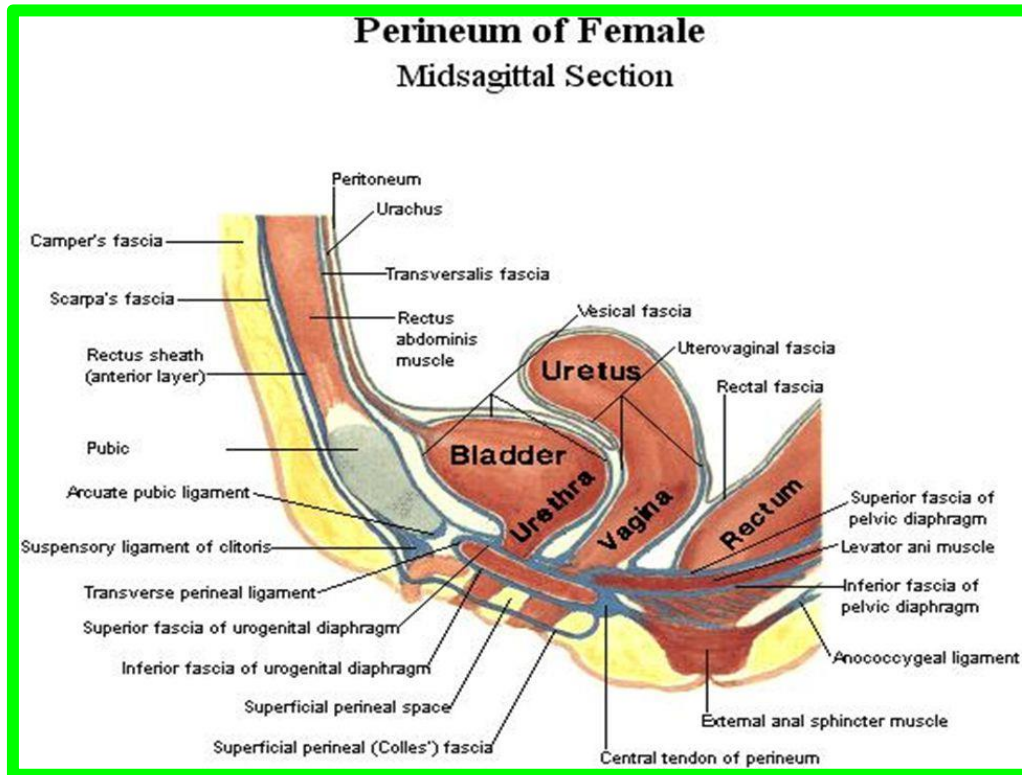
The urine also desends to the front of the thigh till the fusion of membranous layer of superficial fascia with the deep fascia.



• Deep Perineal pouch

** Boundaries

- 1- **Roof:** superior fascia of the pelvic diaphragm.
- 2- **Floor:** perineal membrane (inferior fascia of the pelvic diaphragm).
- 3- **On each side:** pubic arch.
- 4- **Anteriorly and posteriorly:** closed by the fusion of the roof and floor.



** Contents of the deep perineal pouch

A- Contents in male

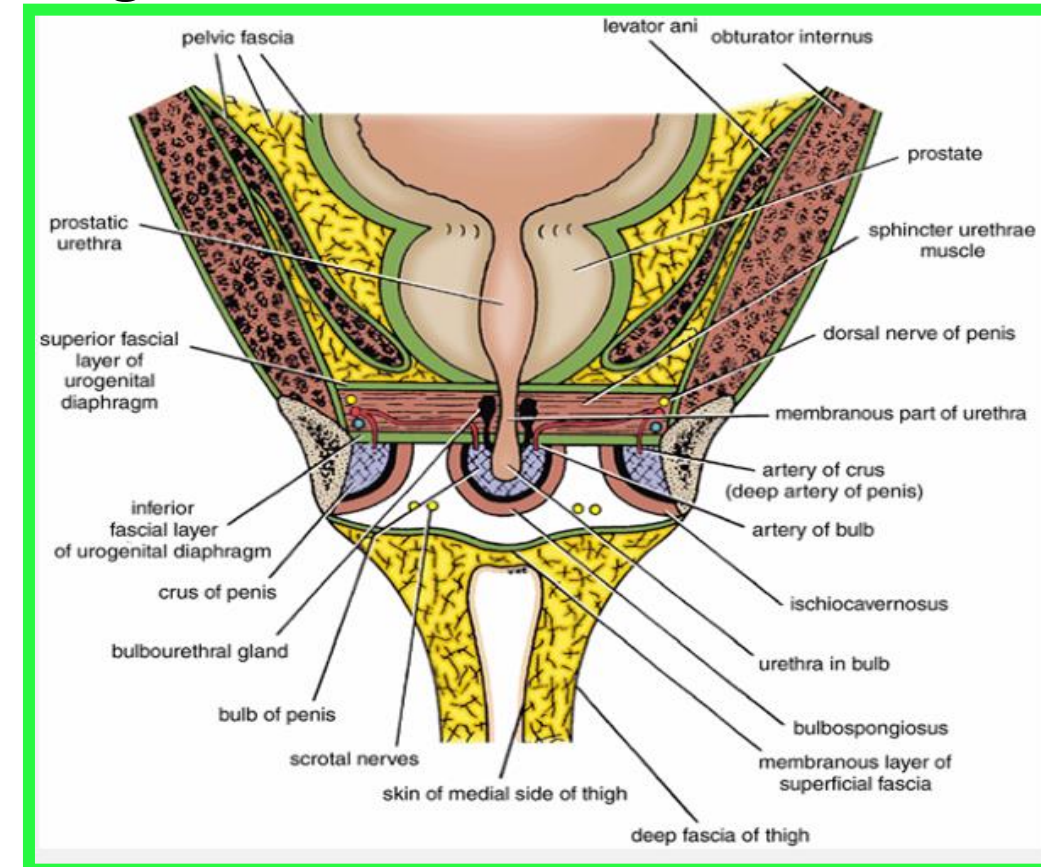
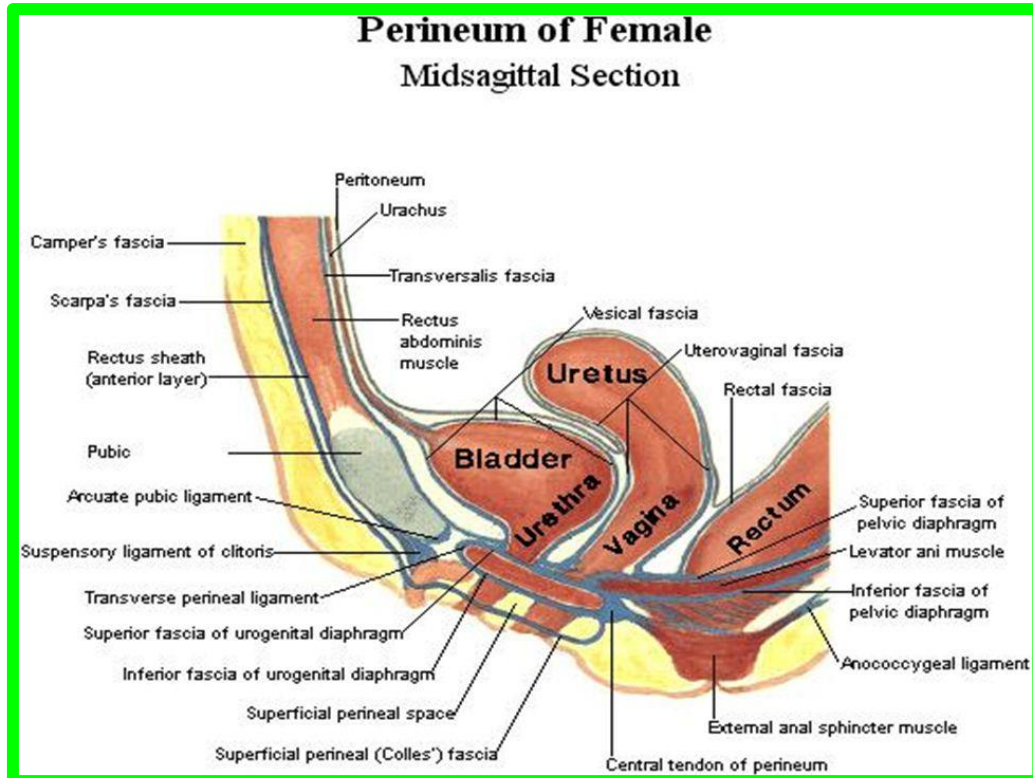
1- Membranous urethra.

2- Bulbourethral glands and their ducts open into the spongy urethra.

B- Contents in female

1- Urethra: In the median plane closely anterior to the vagina.

2- Vagina: in the median plane.



** Contents of the deep perineal pouch

C- Contents in both male and female

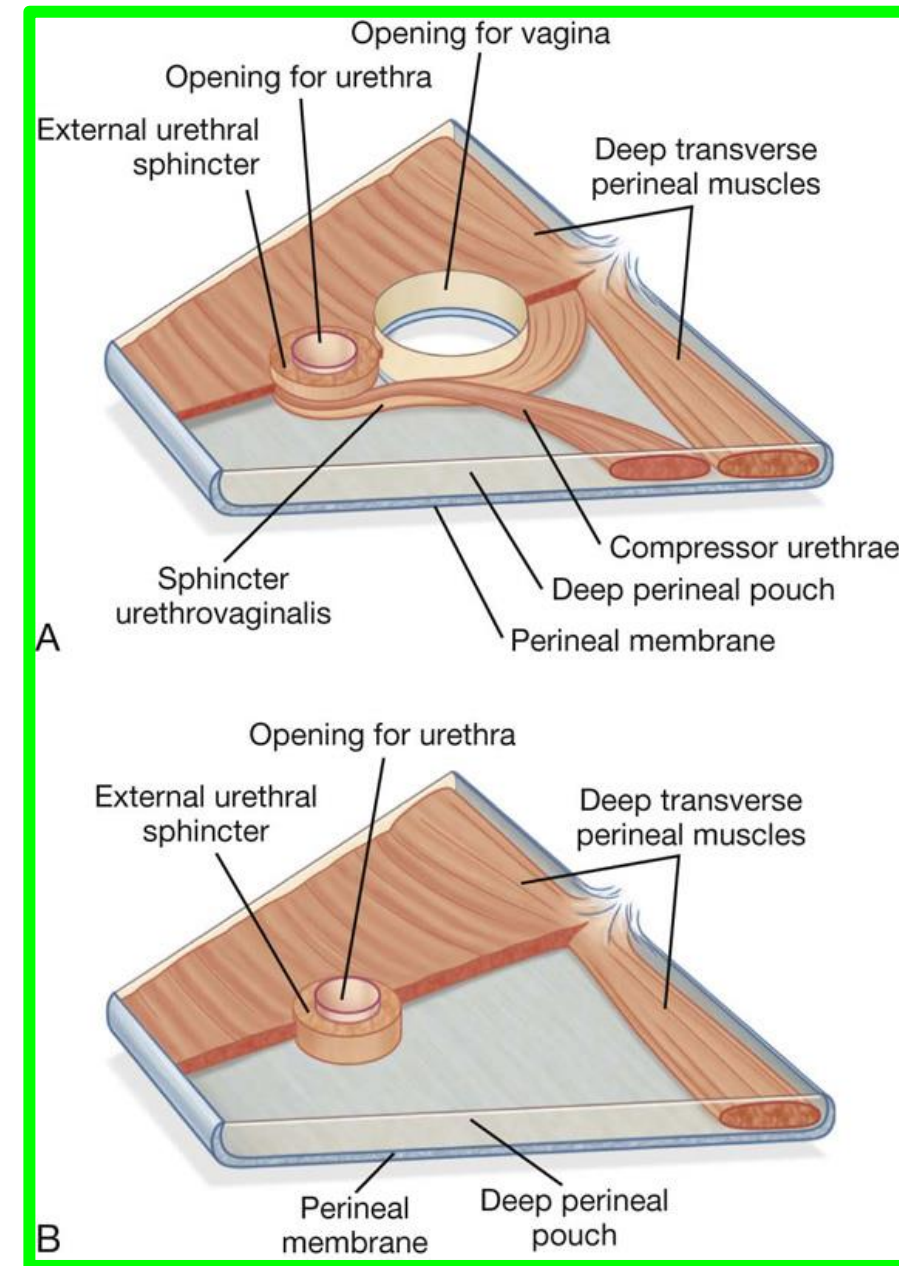
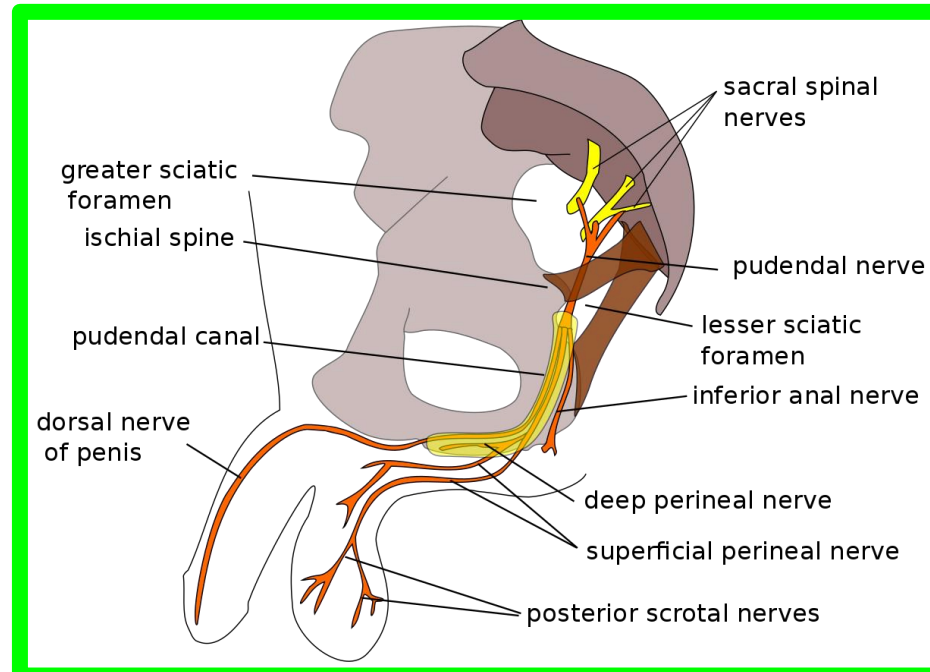
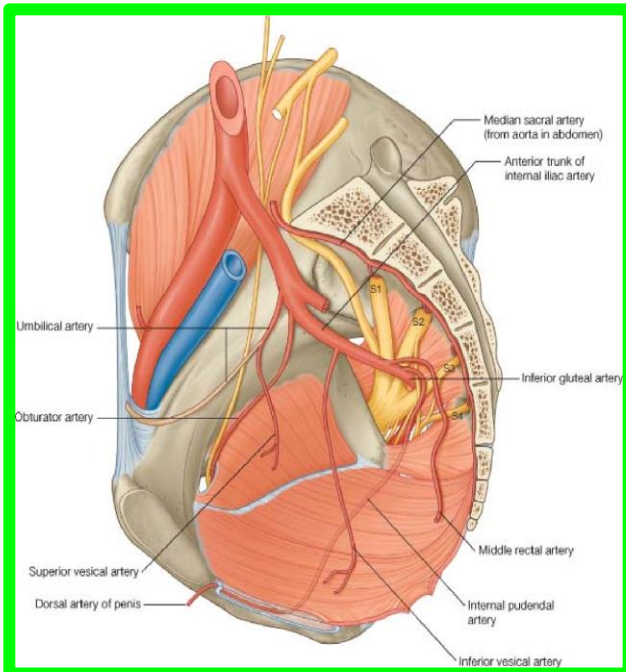
1- Sphincter urethrae.

2- Deep transversus perinei muscles: one on each side.

D- Nerves and vessels;

- Dorsal nerve of the penis or clitoris.

- Internal pudendal artery.



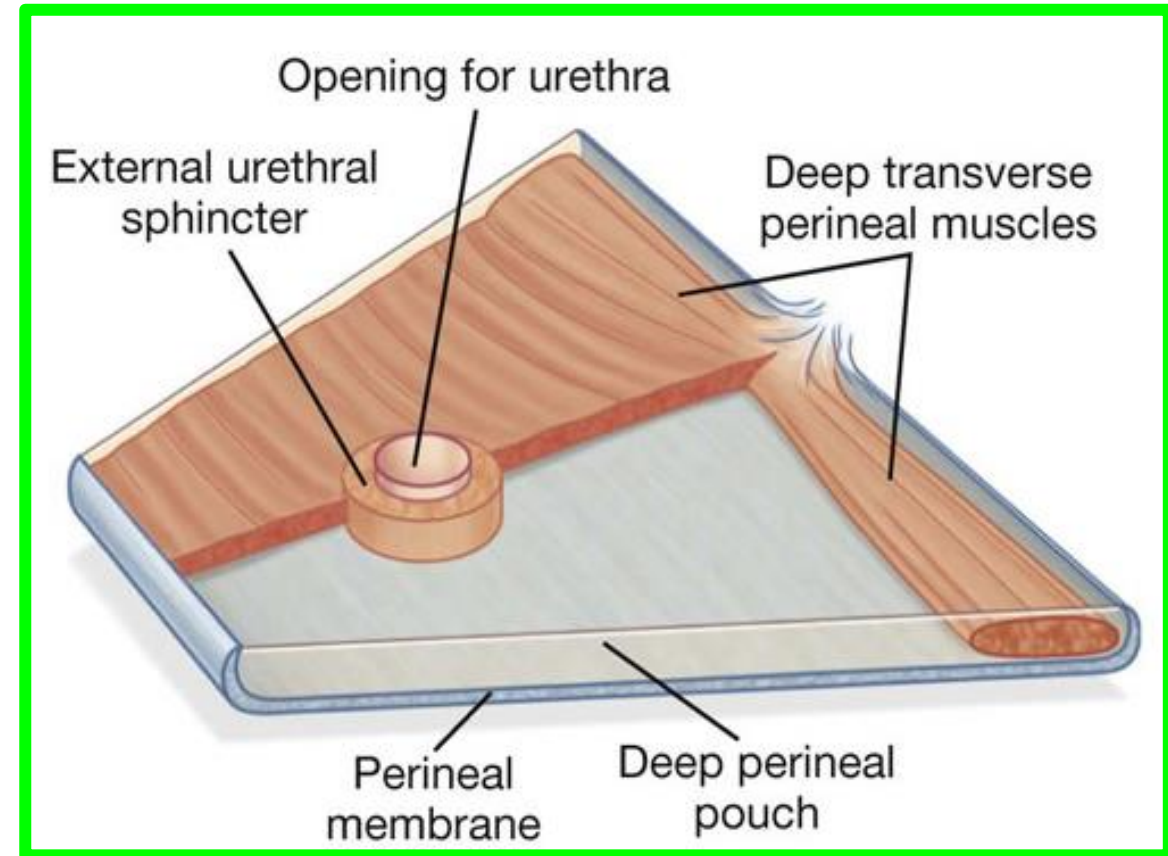
❖ Sphincter Urethrae Muscle

Surrounds the urethra in **the deep perineal pouch**. It arises from the pubic arch on the two sides and passes medially to encircle the urethra

Action

The muscle compresses the membranous part of the urethra and relaxes during **micturition**.

It is the means by which **micturition can be voluntarily stopped**



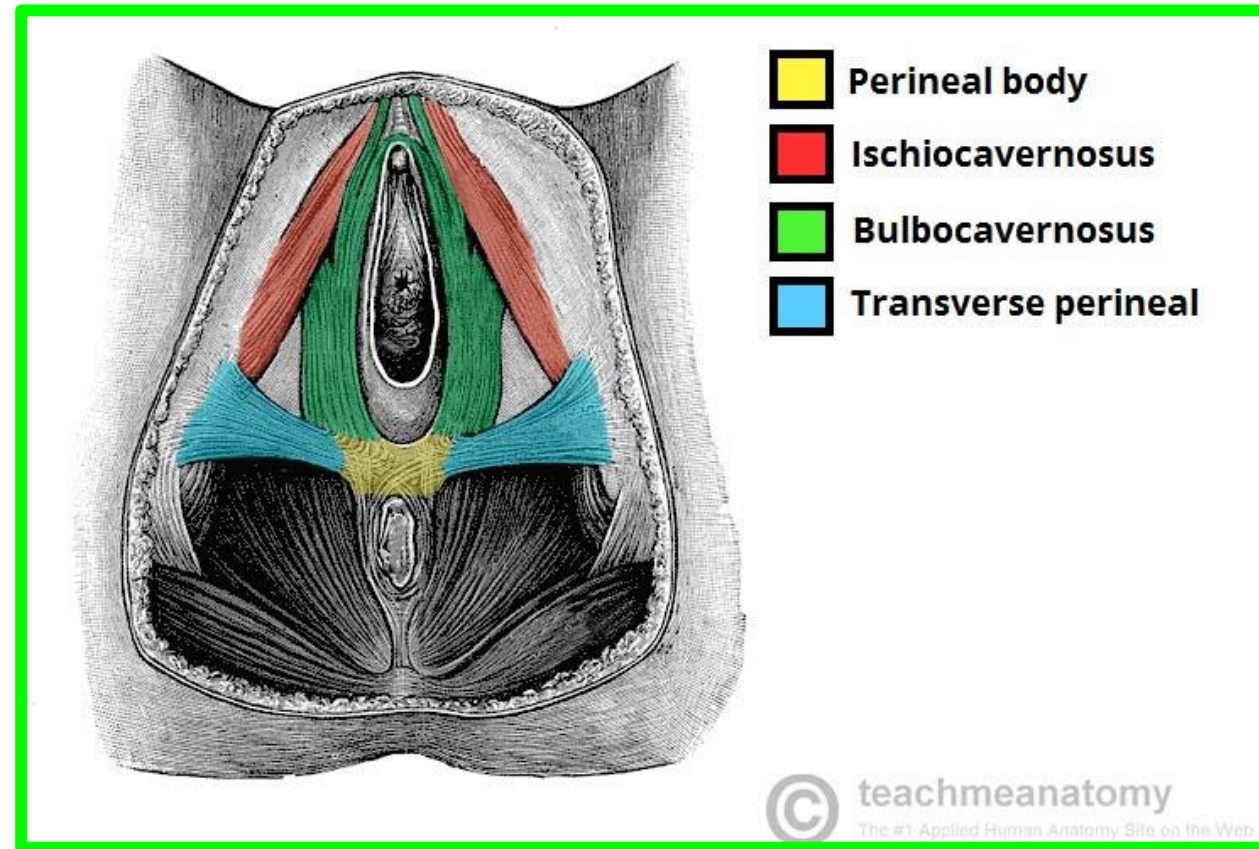
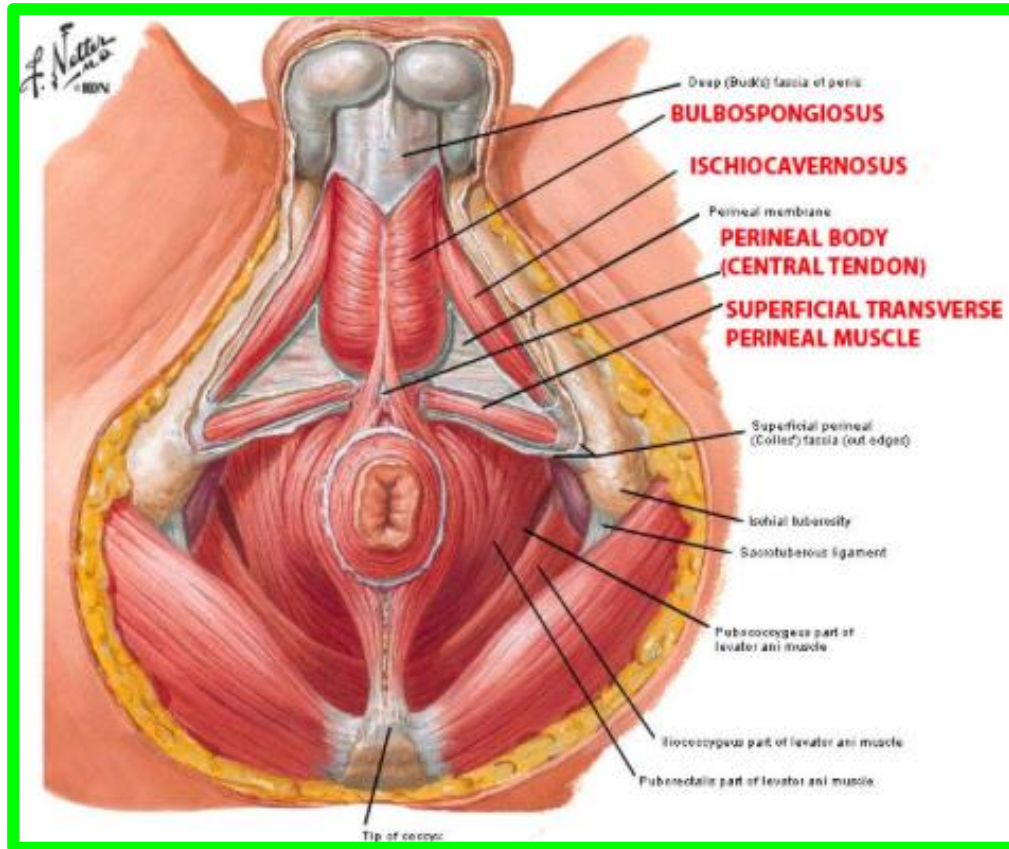
• Perineal Body

- The perineal body is a median fibromuscular pyramidal mass.

** Site:

1) In male: between the anal canal and bulb of the penis.

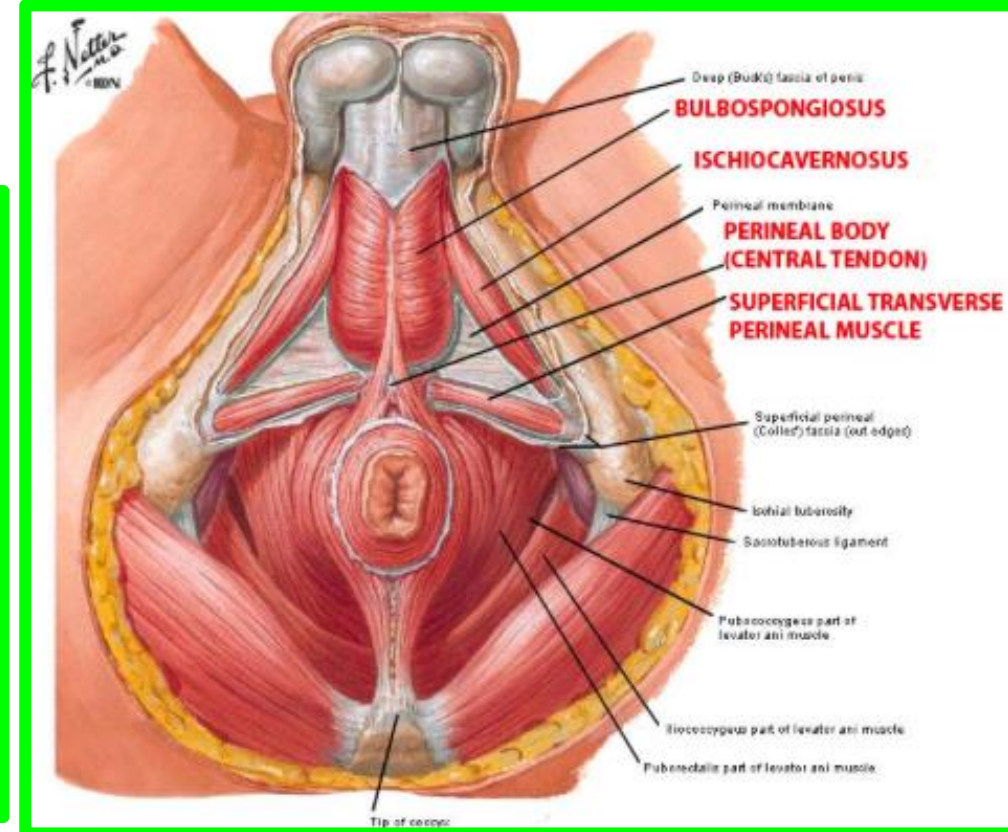
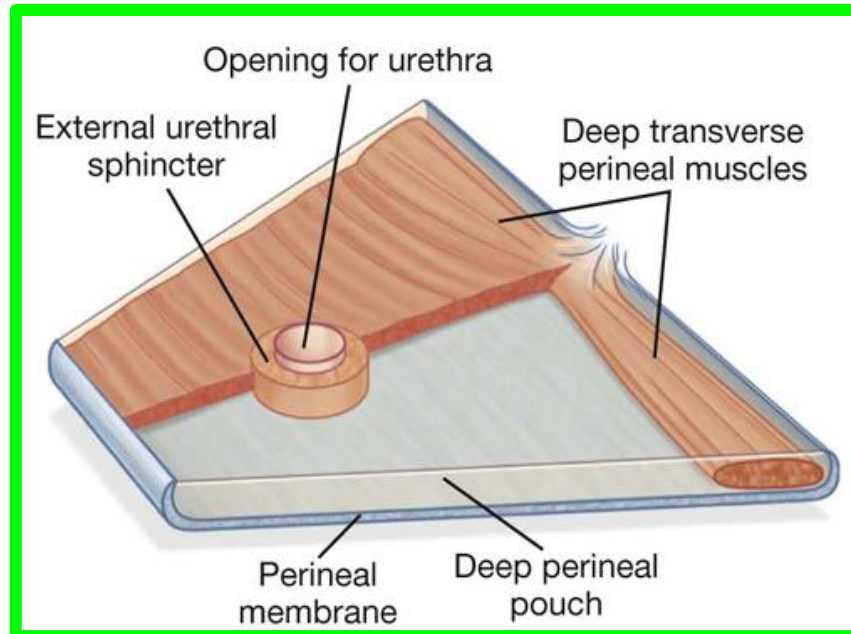
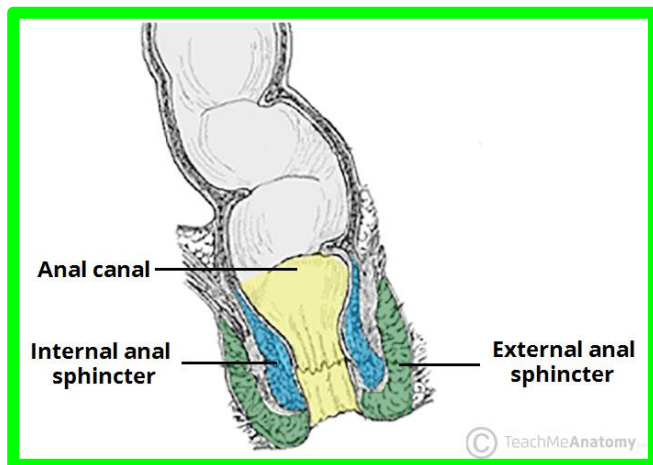
2) In female: between the anal canal and lower part of the vagina.



● Perineal Body

** Muscles attached to the perineal body:

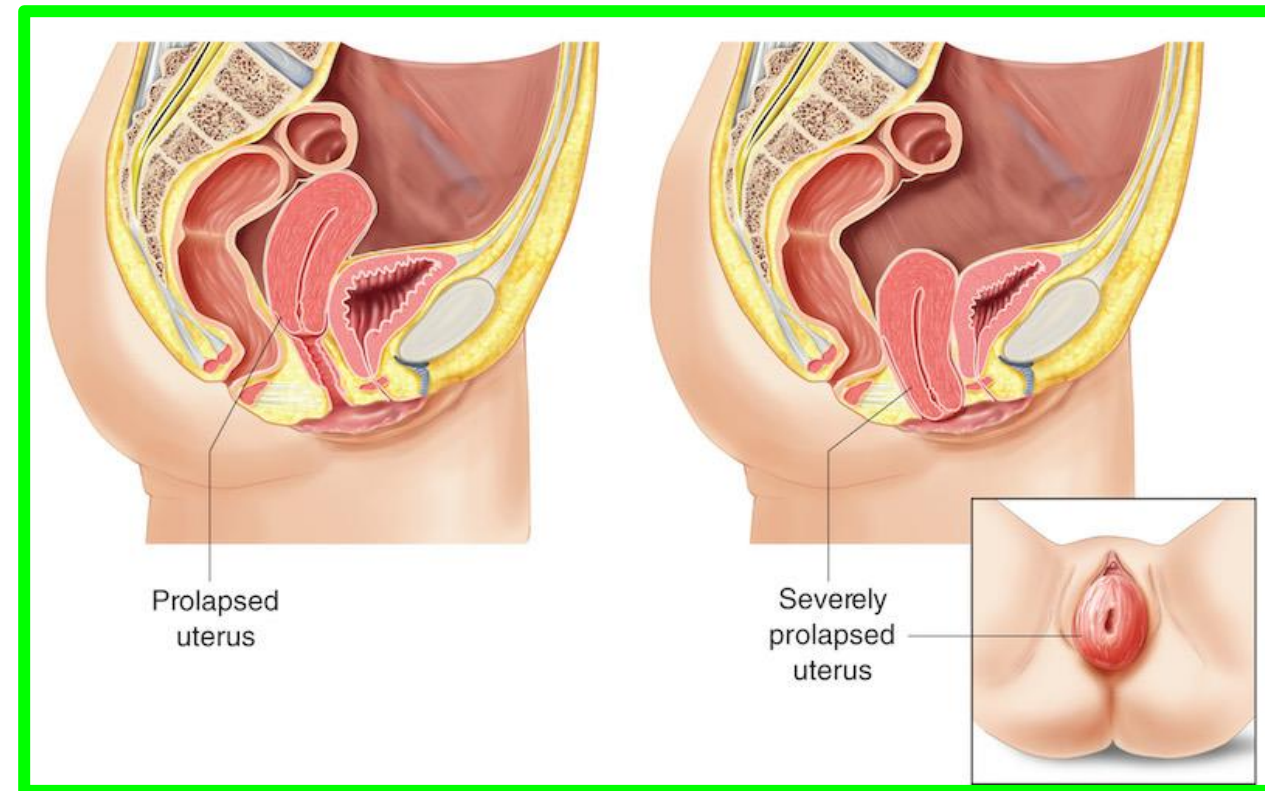
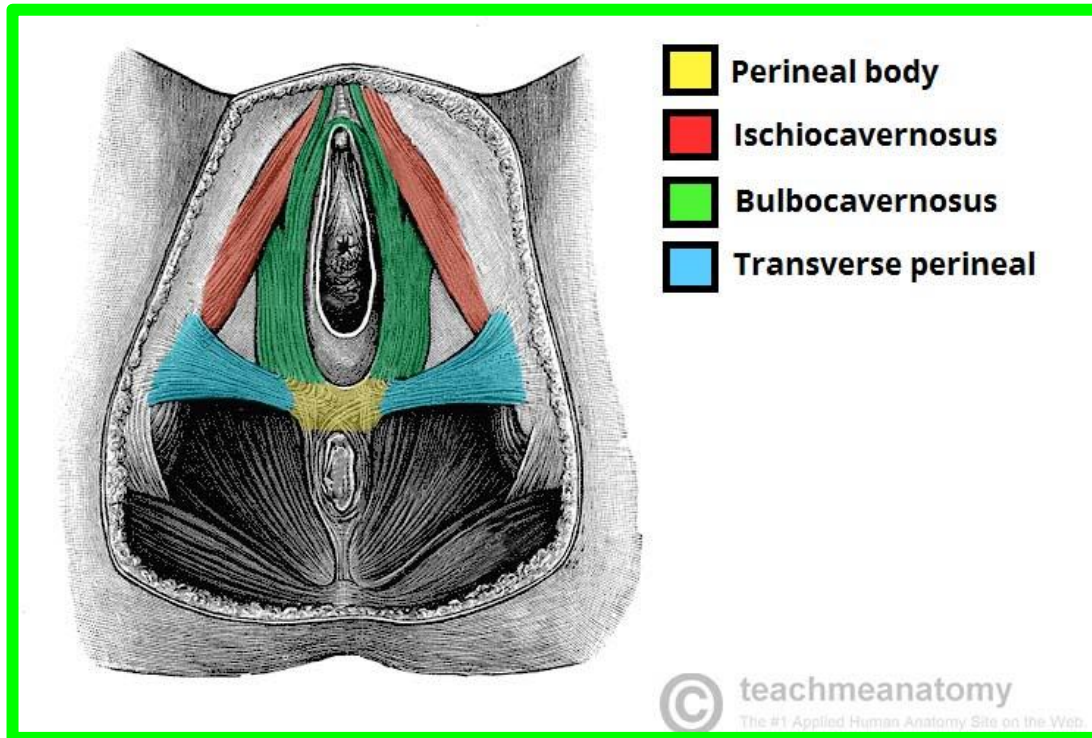
- 1- External anal sphincter.
- 2- Sphincter of the urethra.
- 3- **Superficial transversus perinei muscles** (of both sides).
- 4- **Deep transversus perinei muscles** (of both sides).
- 5- Anterior parts of the levator ani (of both sides).
- 6- **Bulbospongiosus.**



● Perineal Body

** Applied anatomy:

- The perineal body is **essential to the integrity of the pelvic floor.**
- **Rupture of the perineal body** leads to widening of the gap between the anterior borders of the levator ani muscles. **This predisposes to the prolapse of the uterus.**



Ischiorectal Fossa

** Shape: a wedge-shaped

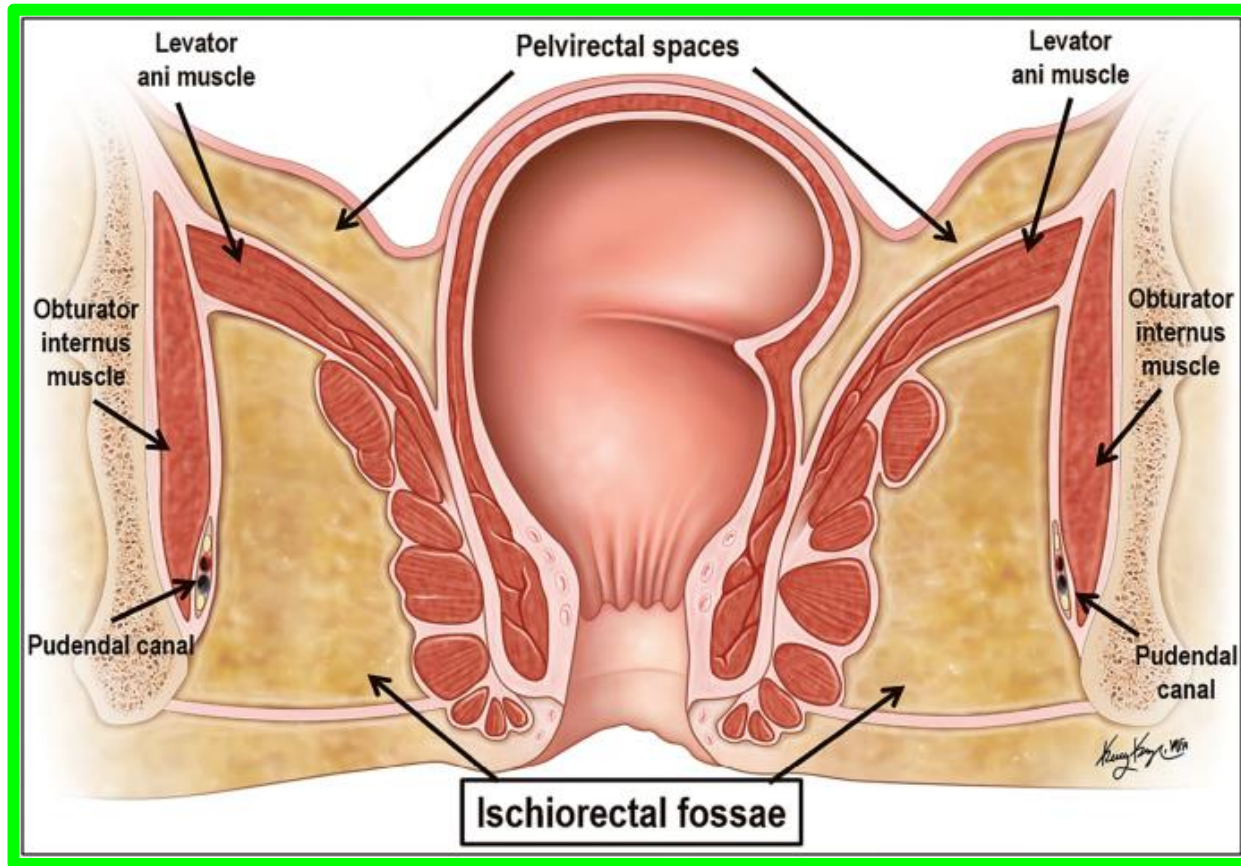
** Position: space on each side of the anal canal.

** Boundaries (walls):

1. **Lateral wall:** vertical.

❖ It is formed by the obturator internus, obturator fascia and ischial tuberosity.

❖ The obturator fascia is split to form **the pudendal canal** (its contents pudendal nerve and internal pudendal vessels).



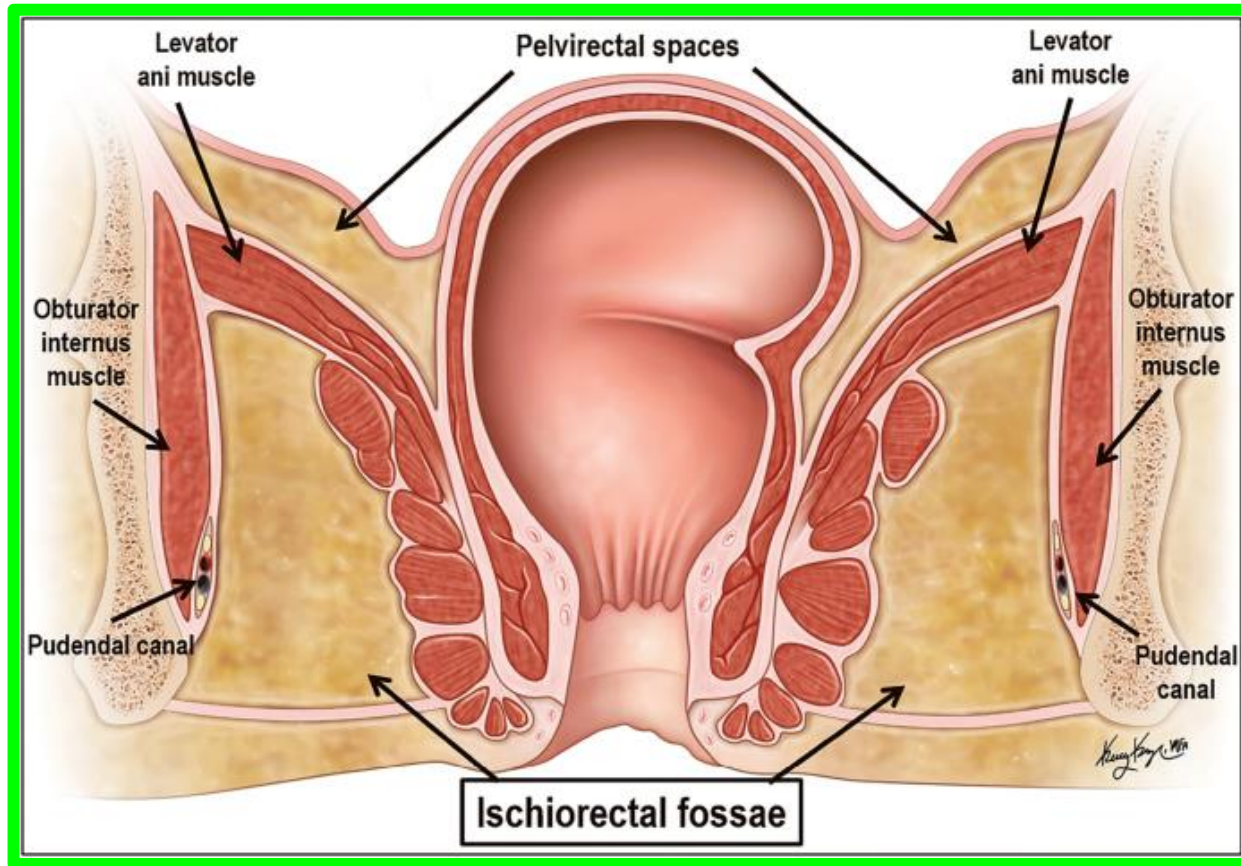
Ischiorectal Fossa

2- Medial wall: sloping

- Upper part: the levator ani muscle.
- Lower part: the external anal sphincter.

3- The base: is directed downward and is formed by the peri-anal skin and fascia.

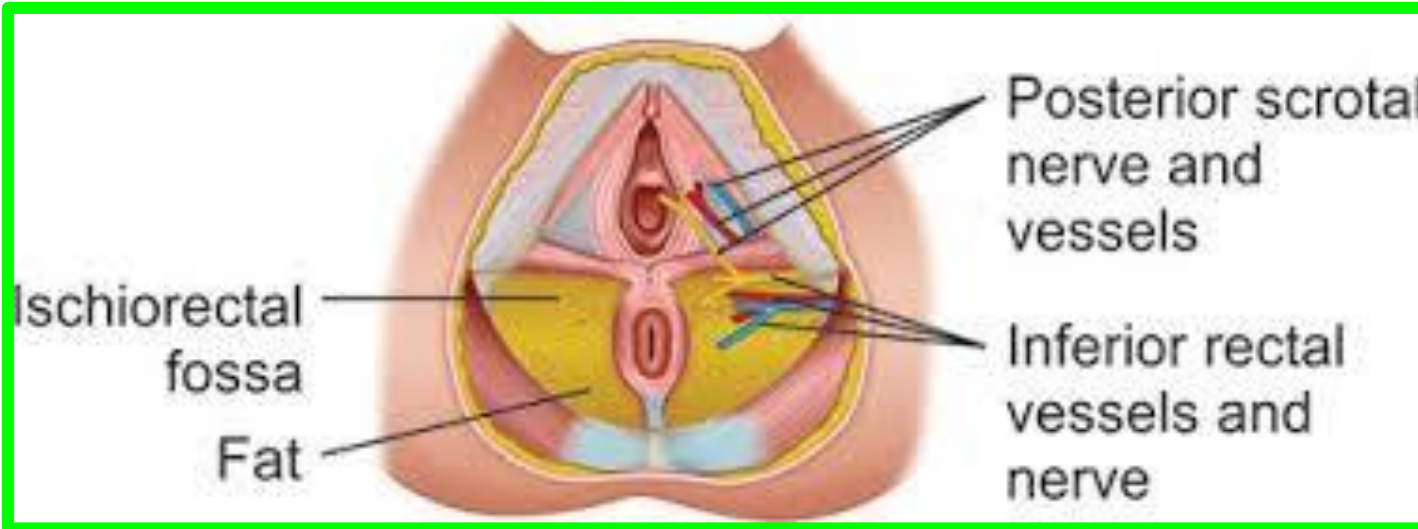
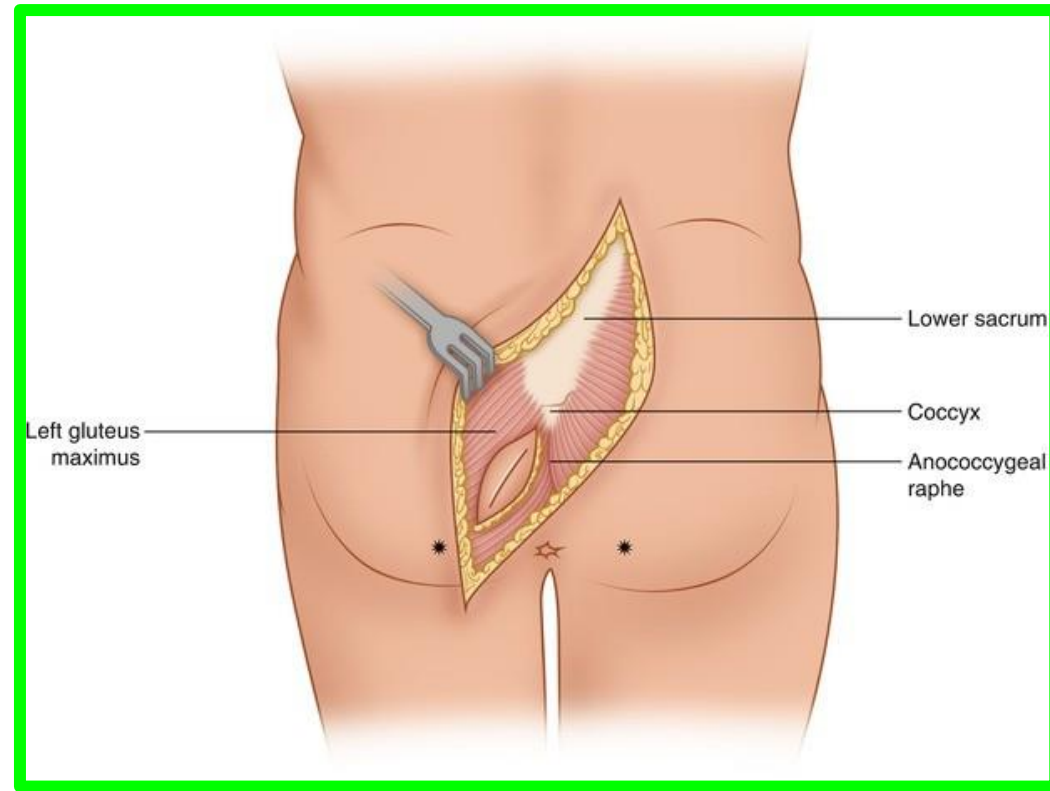
4- The apex: is directed upward and is formed by the meeting obturator internus and levator ani muscles.



Ischiorectal Fossa

5- Anterior boundary: superficial and deep perineal pouches and their contents.

6- Posterior boundary: sacrotuberous ligament and gluteus maximus muscle.

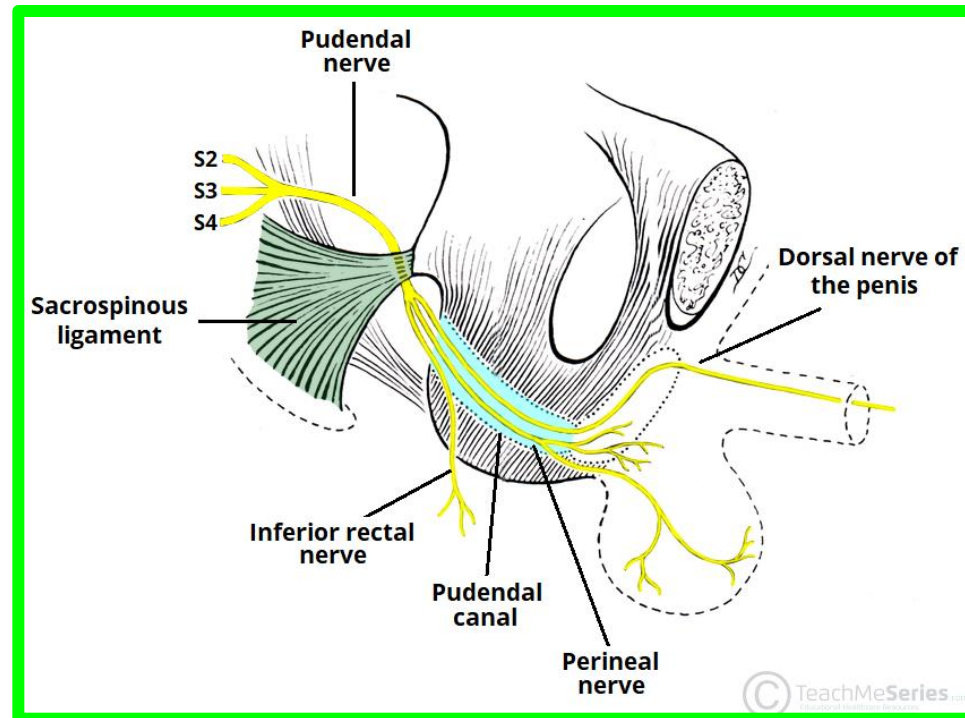
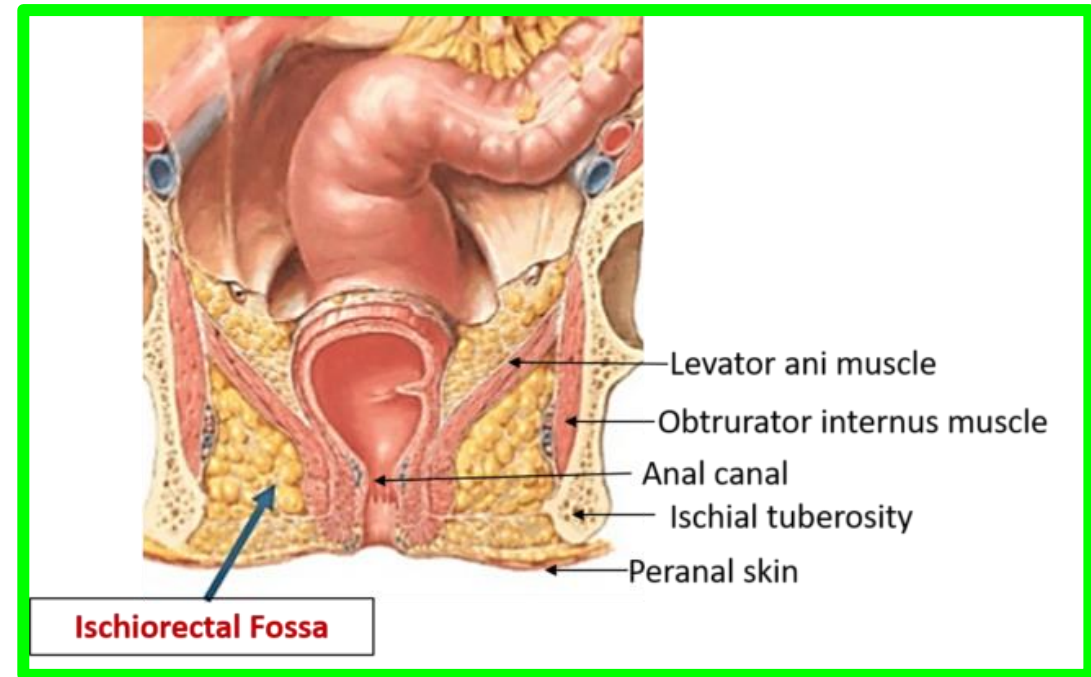


Ischiorectal Fossa

** Contents:

1- Ischiorectal pad of fat: allows distension of the anal canal during defecation.

2- Pudendal canal and its contents (pudendal nerve and internal pudendal vessels).

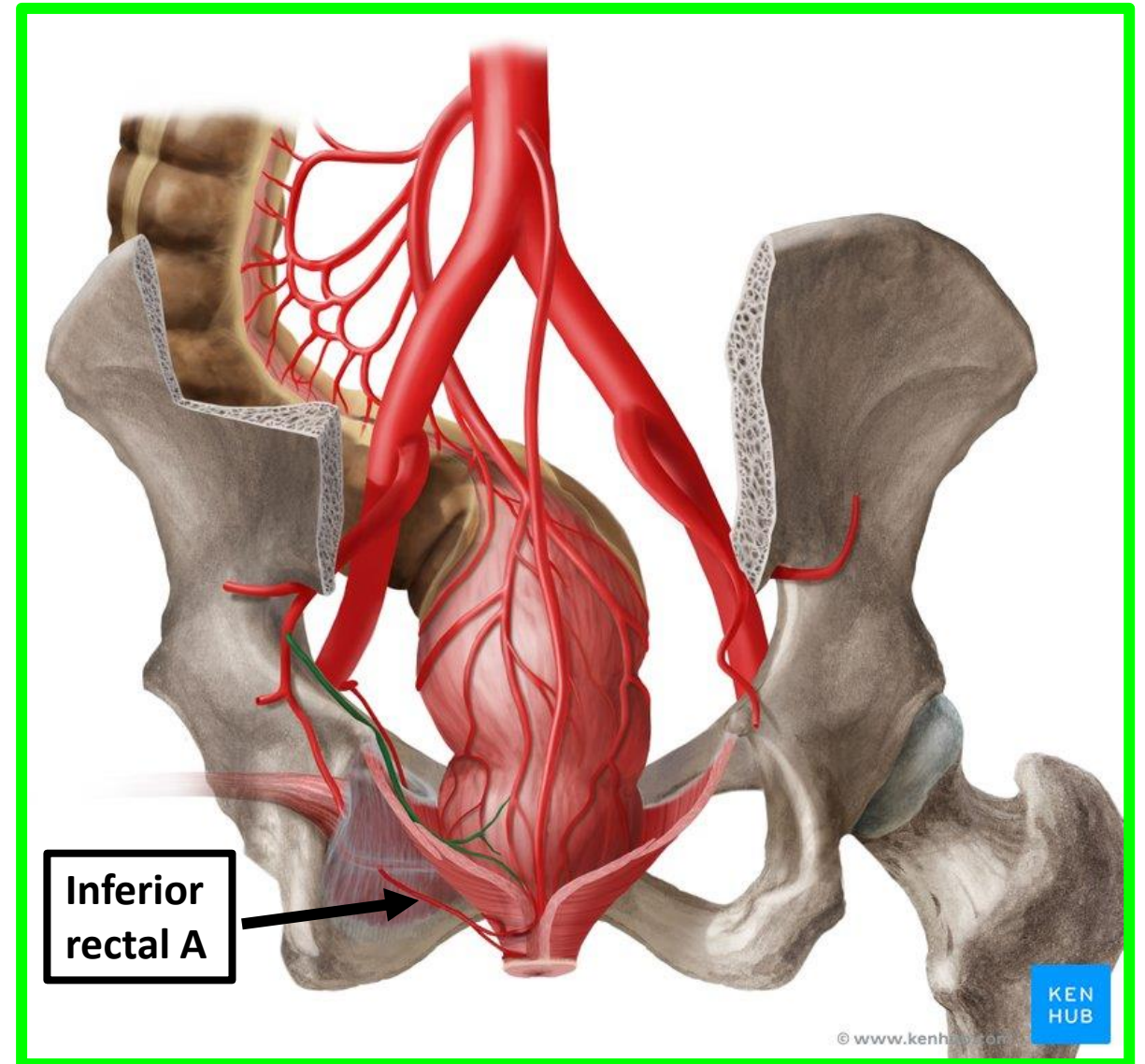


Ischiorectal Fossa

** Contents:

3- Inferior rectal vessels:

- ❖ The artery arises from the **internal pudendal artery** in the **pudendal canal**.
- ❖ It crosses the fossa to reach the anal canal.



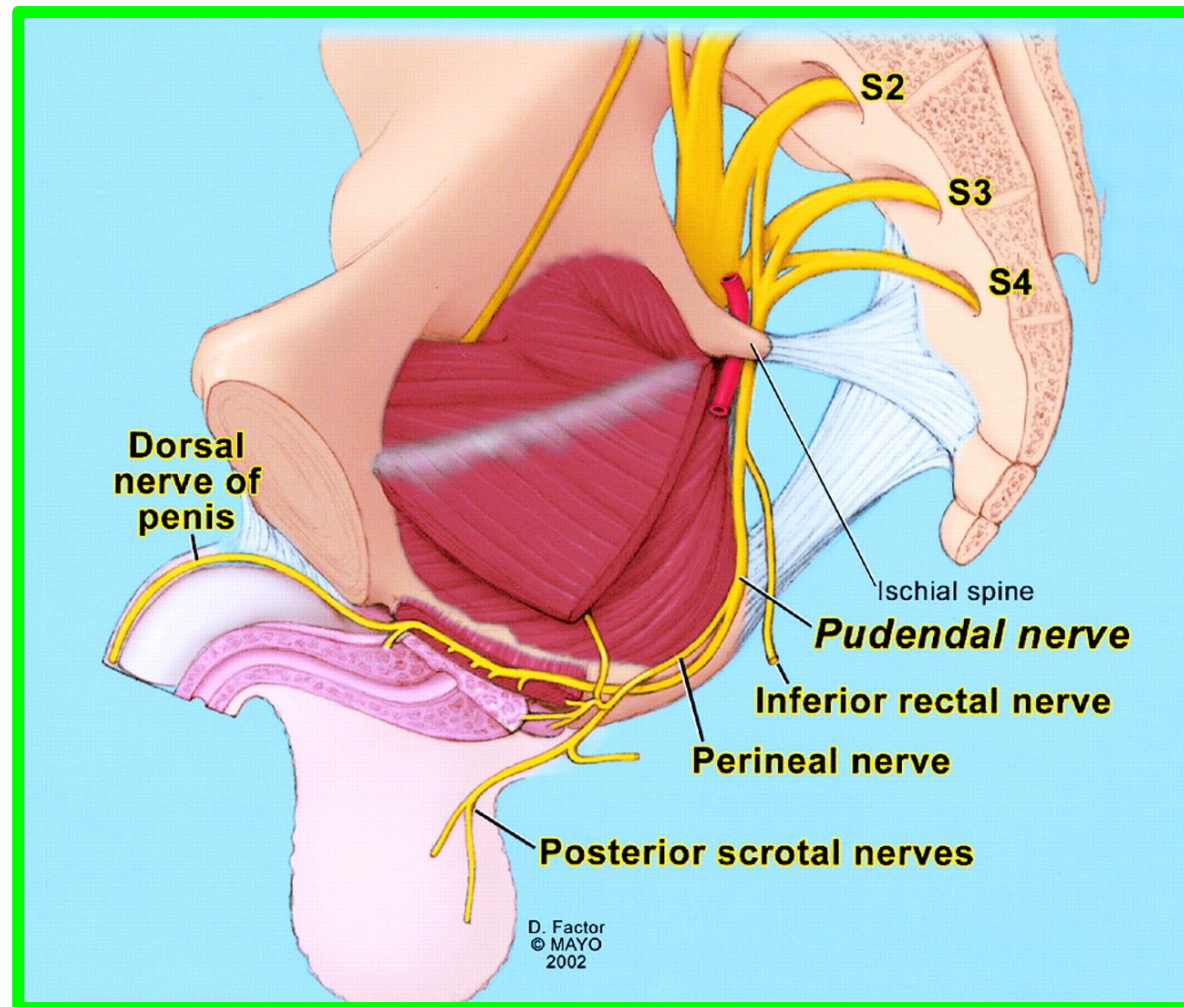
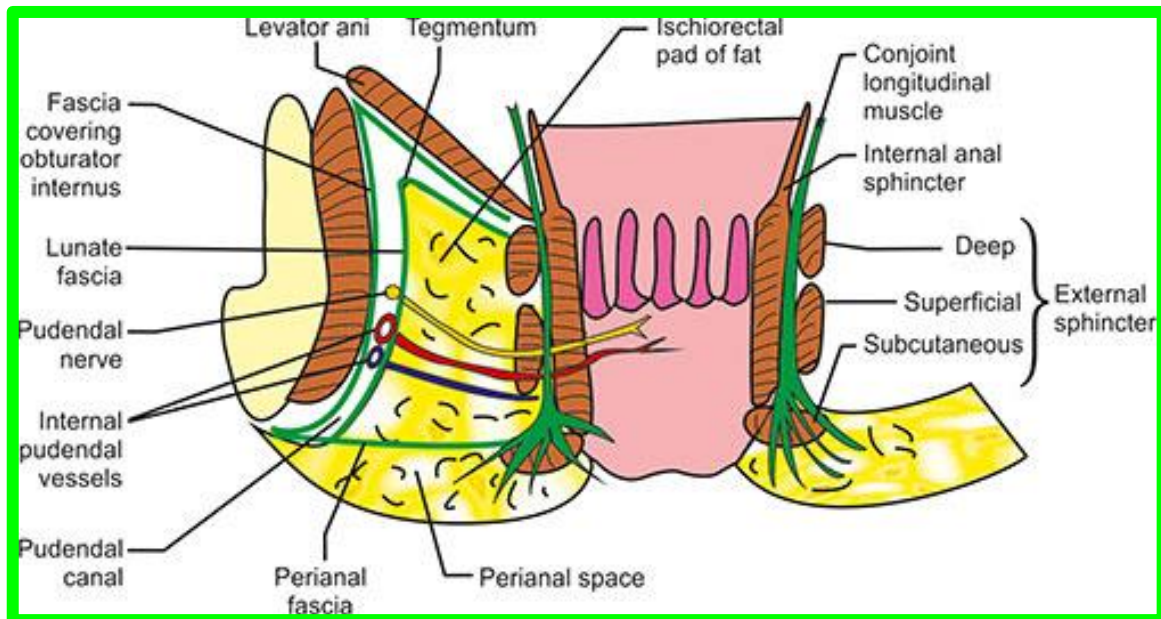
Ischiorectal Fossa

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**** Contents:**

4- Inferior rectal nerve:

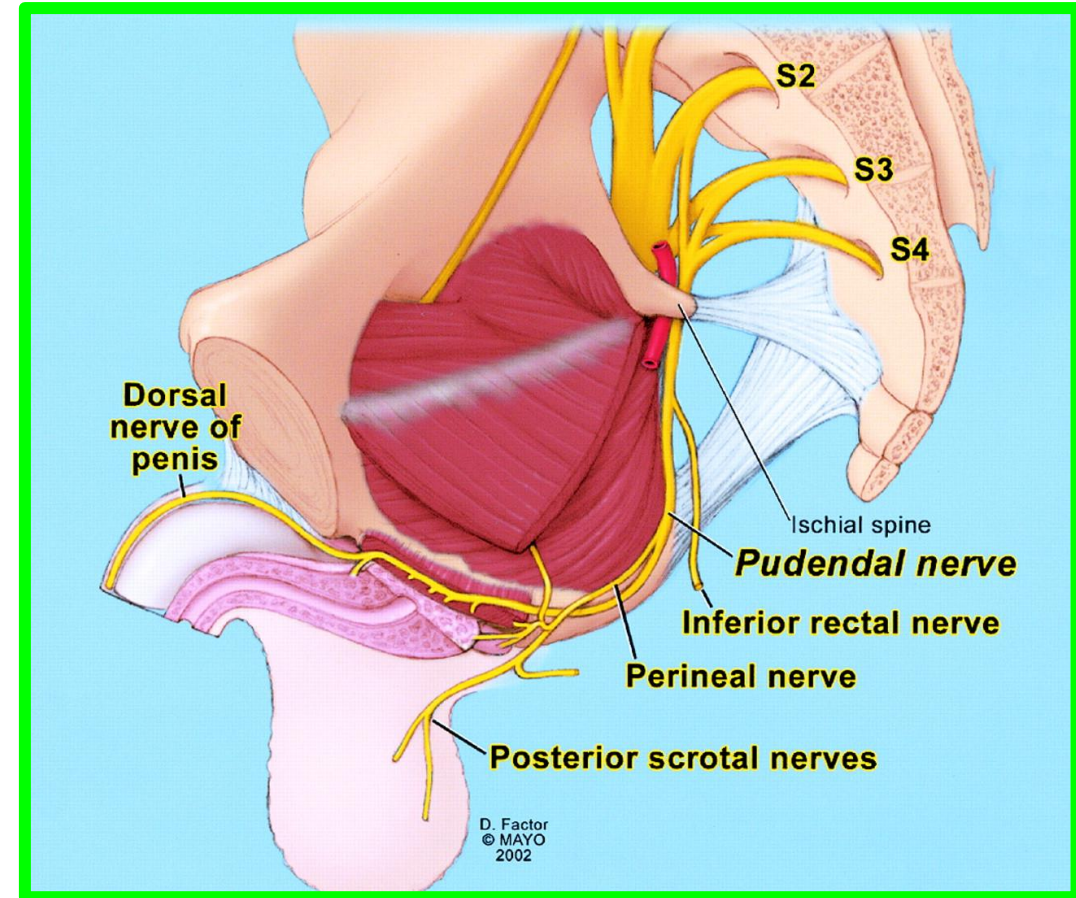
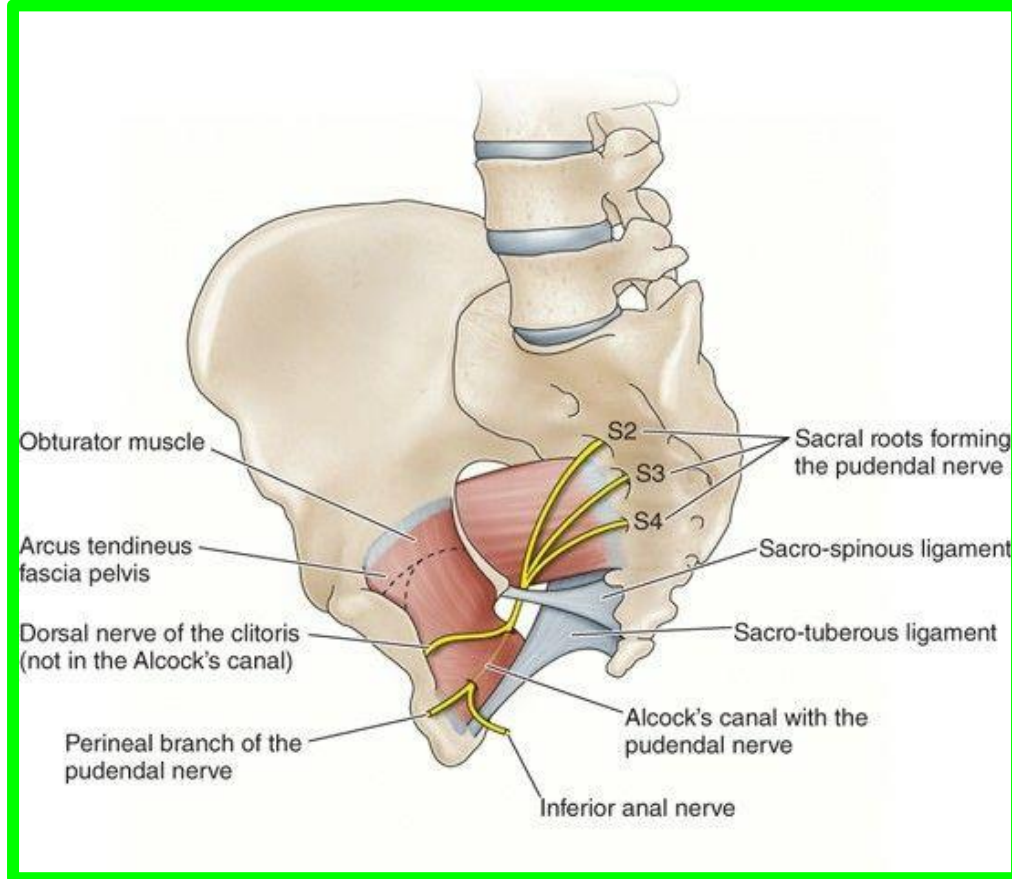
- It is a branch of the pudendal nerve in the pudendal canal.
- It crosses the fossa to supply the levator ani, and external anal sphincter.



Ischiorectal Fossa

** Contents:

- 5- Perineal branch of the 4th sacral nerve.
- 6- Posterior scrotal nerves and vessels: to the scrotum (in male)
- 7- Posterior labial nerves and vessels: to the labia majora (in female).



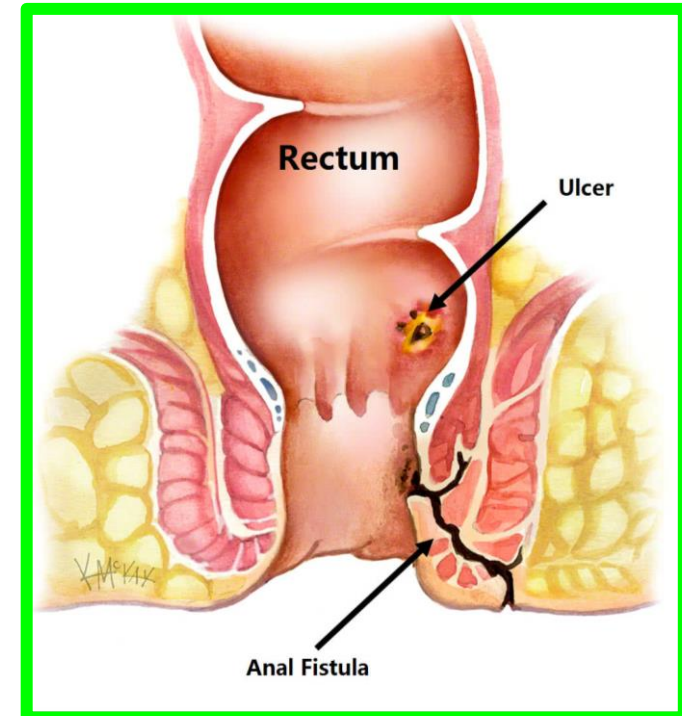
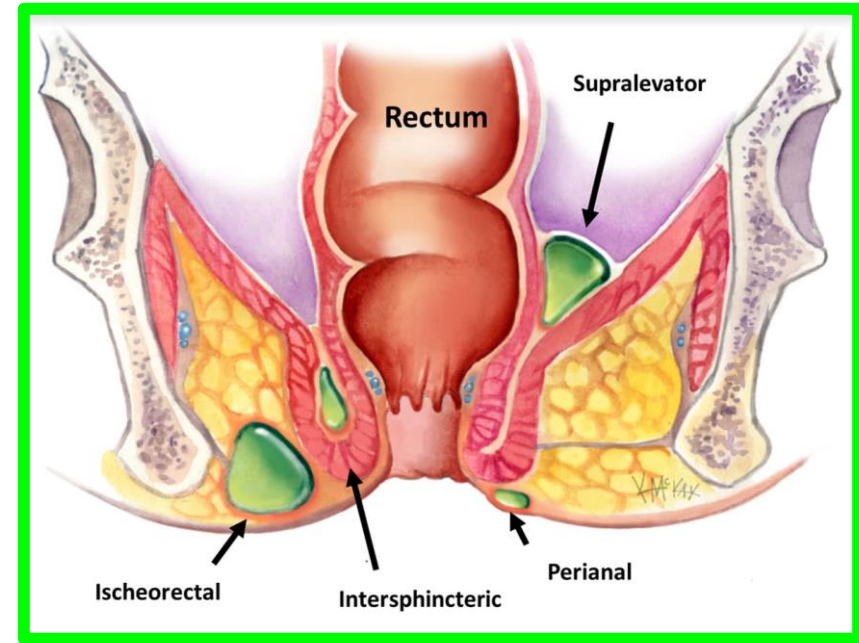
Ischiorectal Fossa

** Applied anatomy:

1- Infection of the ischiorectal fossa leading to an **ischiorectal abscess**.

2- If the abscess opens into the anal canal, it produces **anal fistula**.

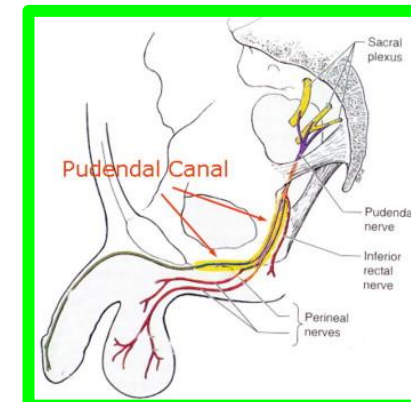
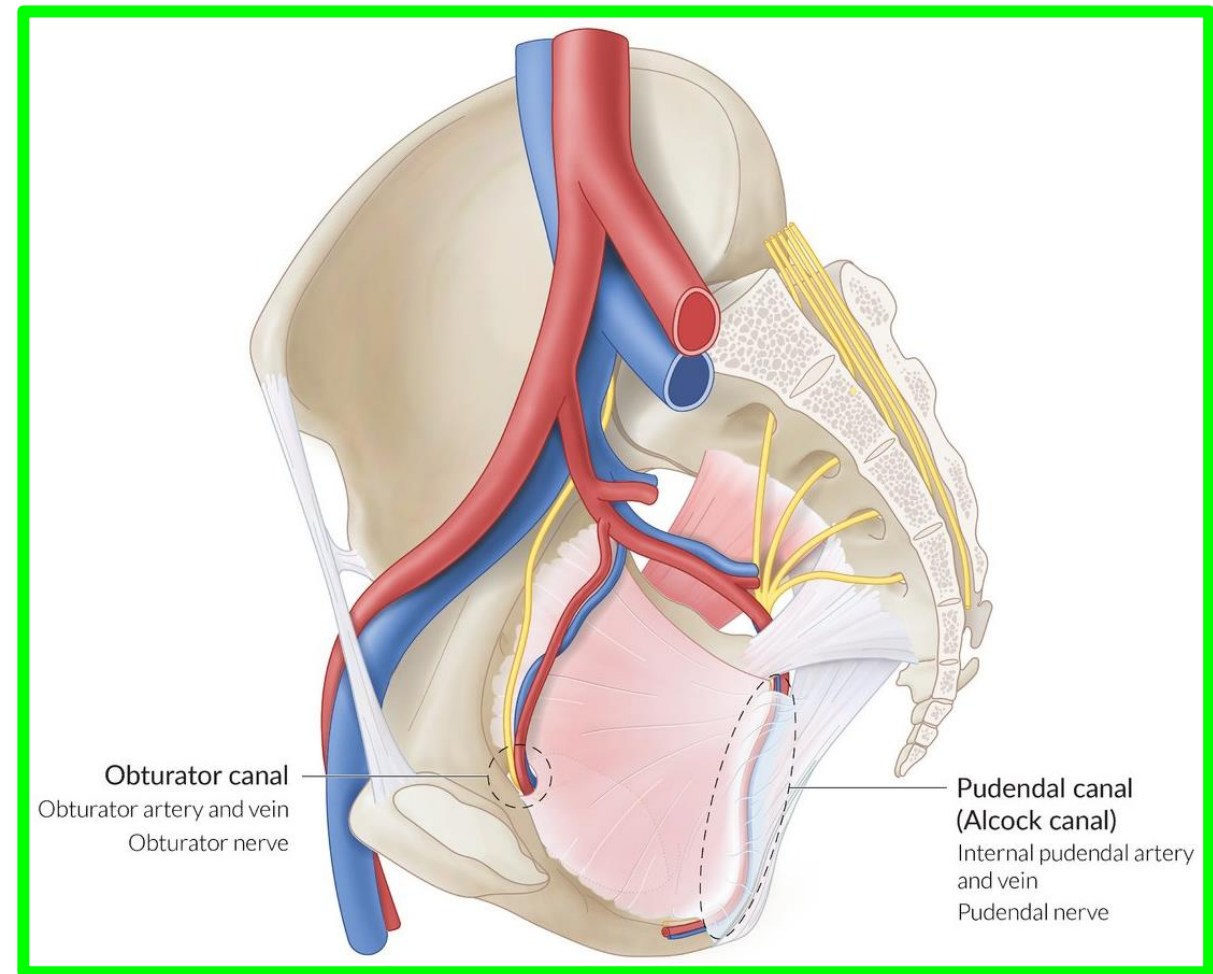
3- If the abscess opens into the skin, it produces **an external sinus**.



Ischiorectal Fossa

Pudendal canal

- ** Definition:** It is a tunnel in the lateral wall of the ischiorectal fossa.
- ** Formation:** It is formed by splitting of the obturator fascia.
- ** Begins:** at the lesser sciatic foramen.
- ** Ends into** the deep perineal pouch.
- ** Contents:** Pudendal nerve and internal pudendal vessels.



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