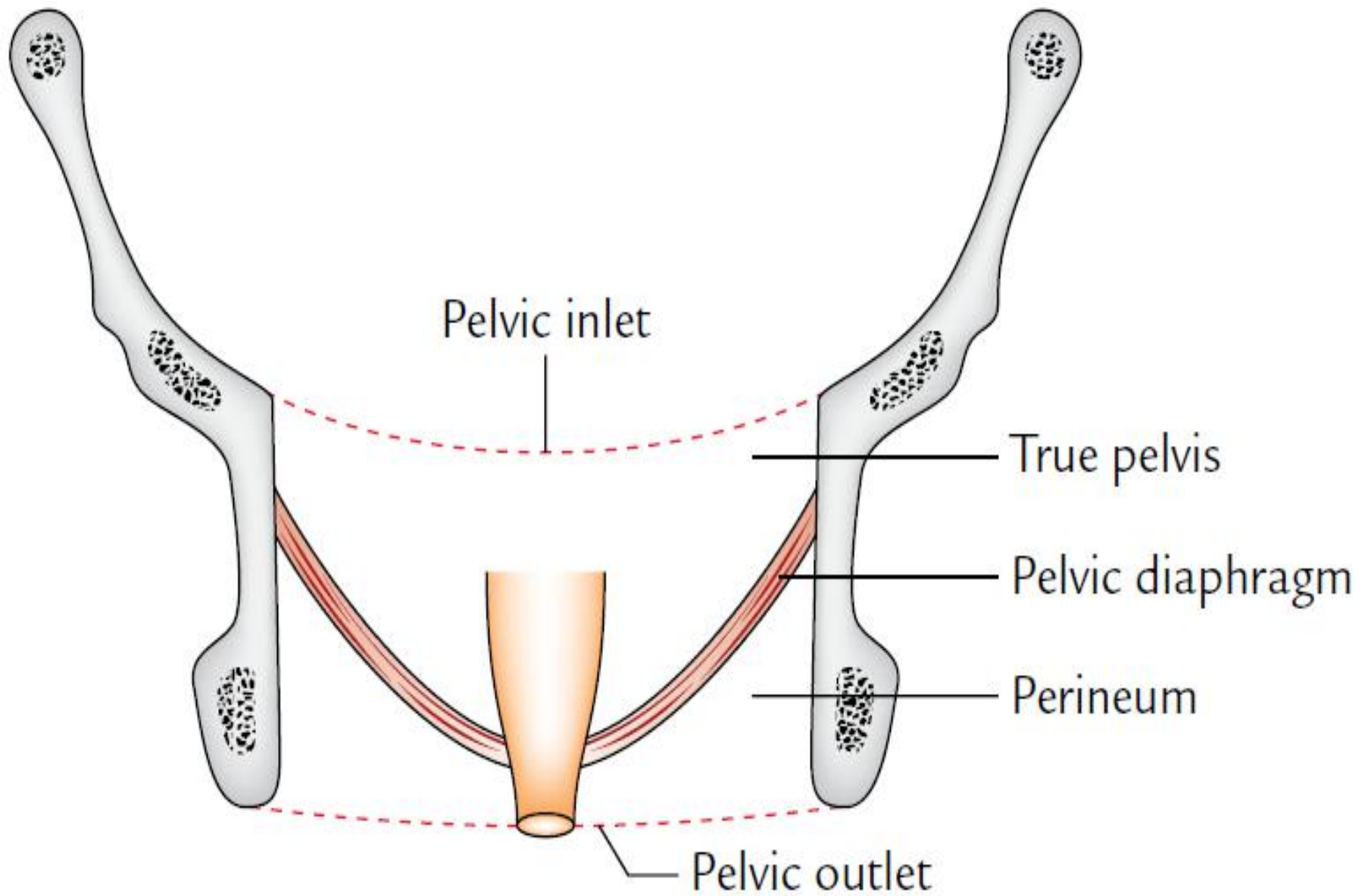
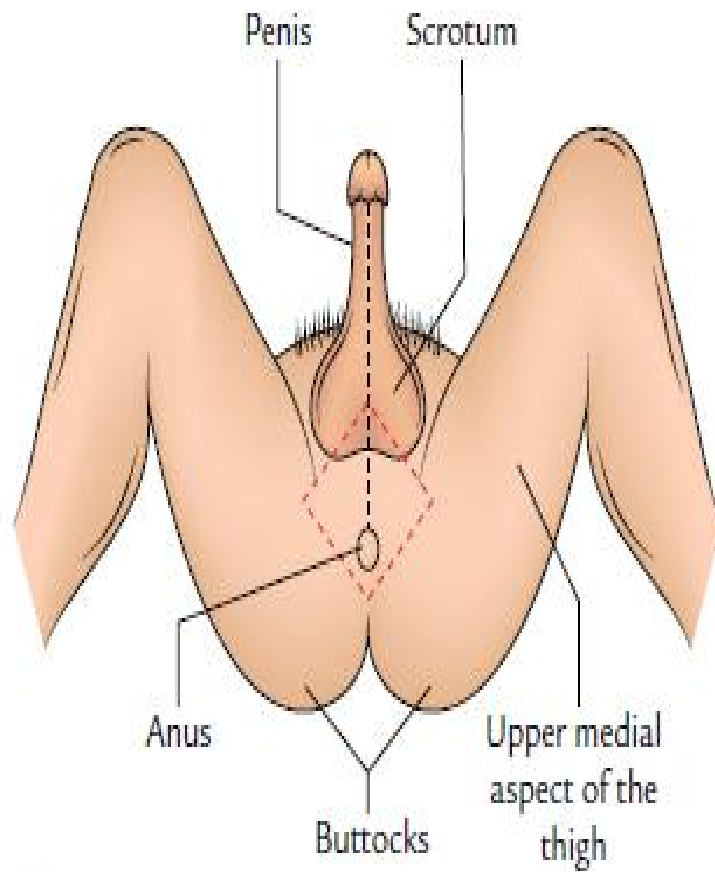


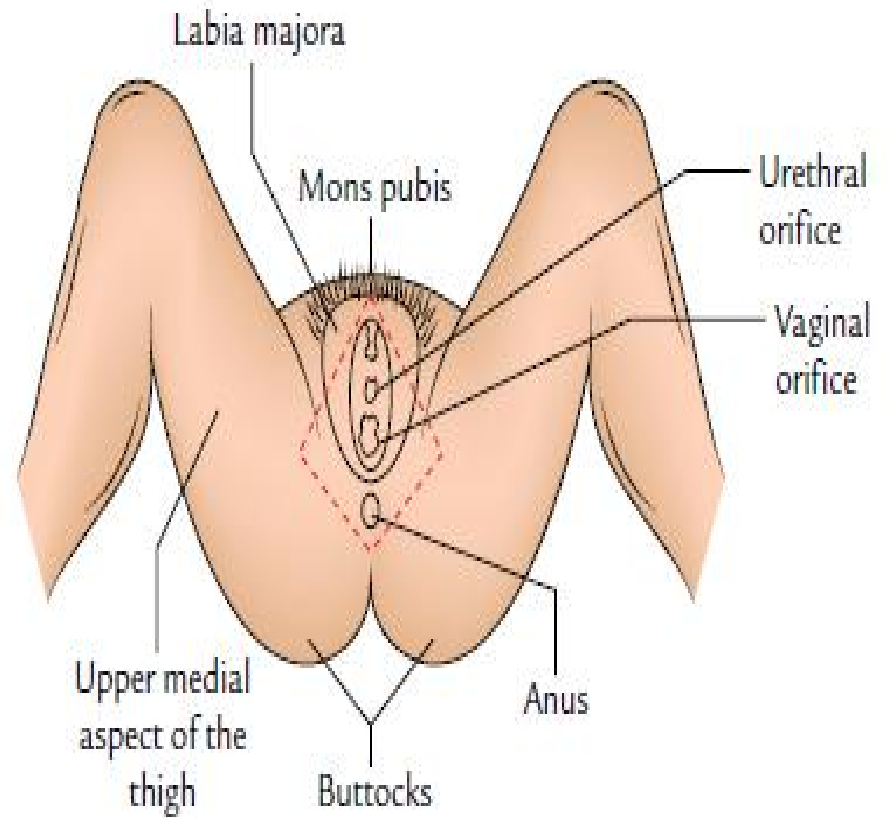


General Boundaries

- Where is it?
- The perineum lies inferior to the pelvic outlet.
- It is physically separated from the pelvic cavity by the pelvic diaphragm.
- In the anatomical position, it is the narrow region between the proximal thighs.
- In the lithotomy position, its a diamond shaped area.
- It is a diamond-shaped area extending from
 - The mons pubis anteriorly,
 - The medial surfaces (insides) of the thighs laterally,
 - The gluteal folds and superior end of the intergluteal (natal) cleft posteriorly .



A



B

Definitions

The perineum is the specific portion of the pelvic region that contains the external genitalia and the anal opening.

The perineum (perineal compartment) is bounded by the pelvic outlet and is separated from the pelvic cavity by the pelvic diaphragm, which is formed by the levator ani and coccygeus muscles.

The perineum consists of structures that fill inferior aperture of pelvis.

The pelvic outlet is diamond-shaped and can be divided into 2 triangles: The **anal triangle** and the **urogenital triangle**.

The superficial part of this region is called the perineum including the external genitalia (in the urogenital triangle) and the anus (in the anal triangle). It is also called the pudendal region, being supplied by the pudendal nerves and vessels.

Specific Deep Boundaries/Fibrosseous

Landmarks that can be palpated: 4 angles & 4 sides

Anterior angle: Pubic Symphysis, arcuate pubic ligament.

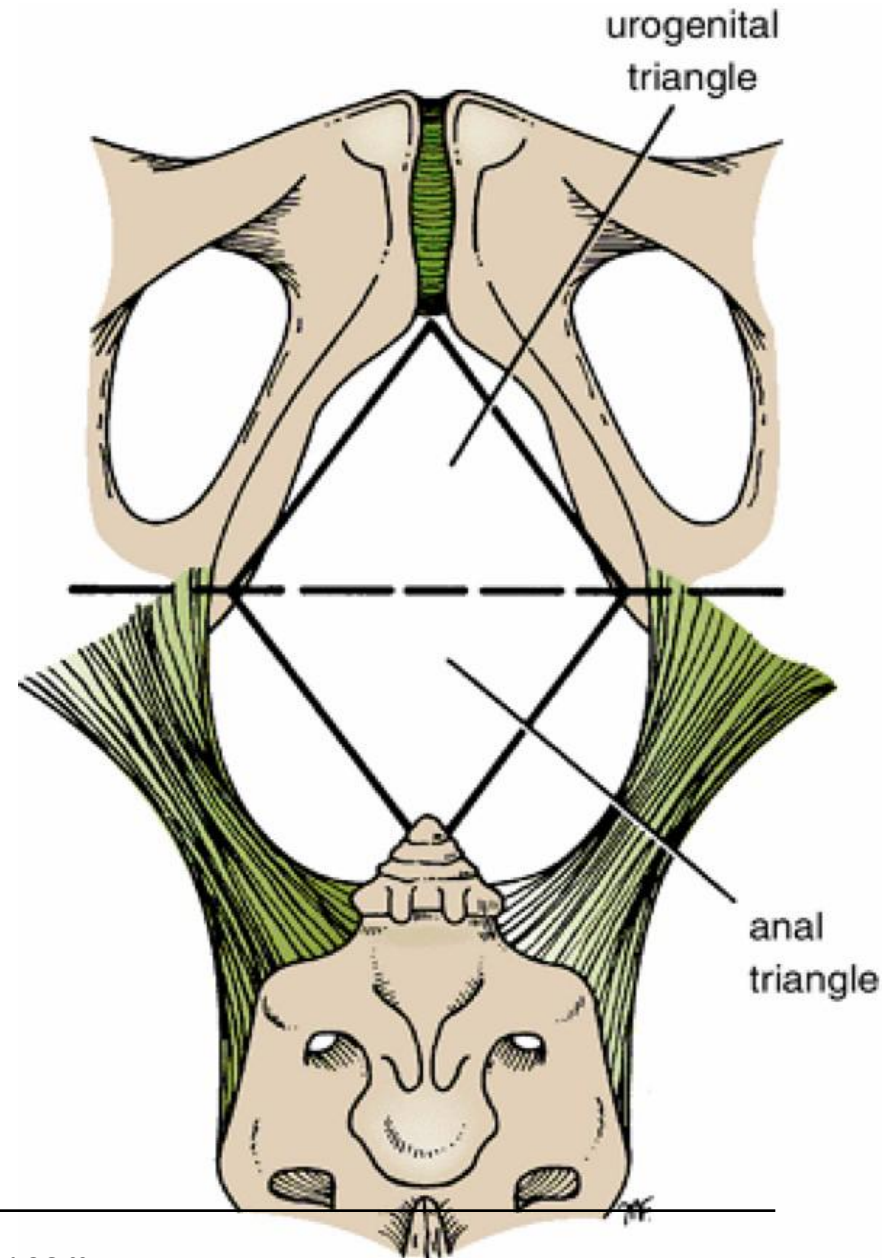
- Note the acute angle in male
- Note wider angle in females causing more flaring of ischial tuberosities

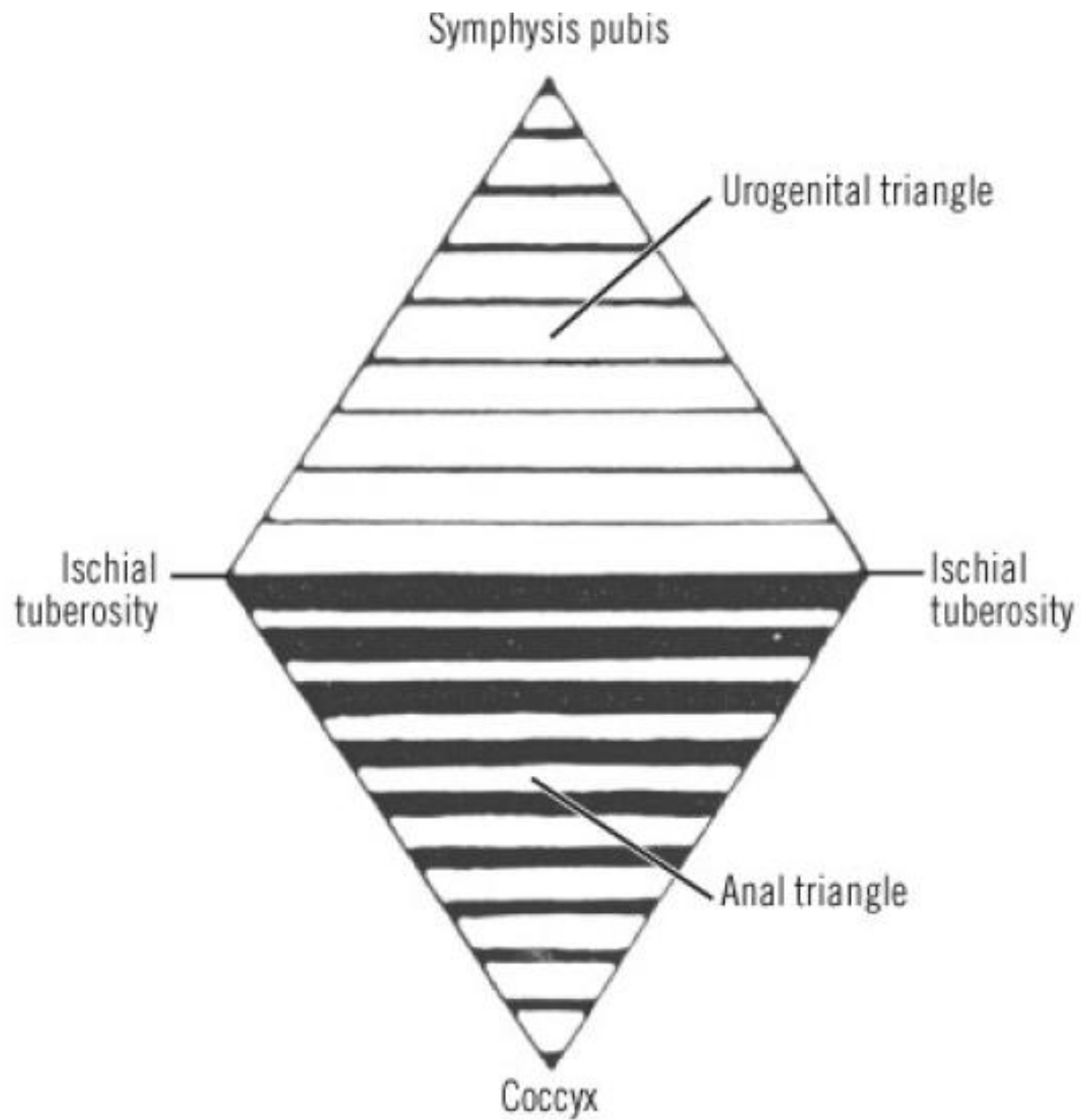
Anterolateral sides: Ischiopubic rami.

Lateral angles : Two Ischial tuberosities

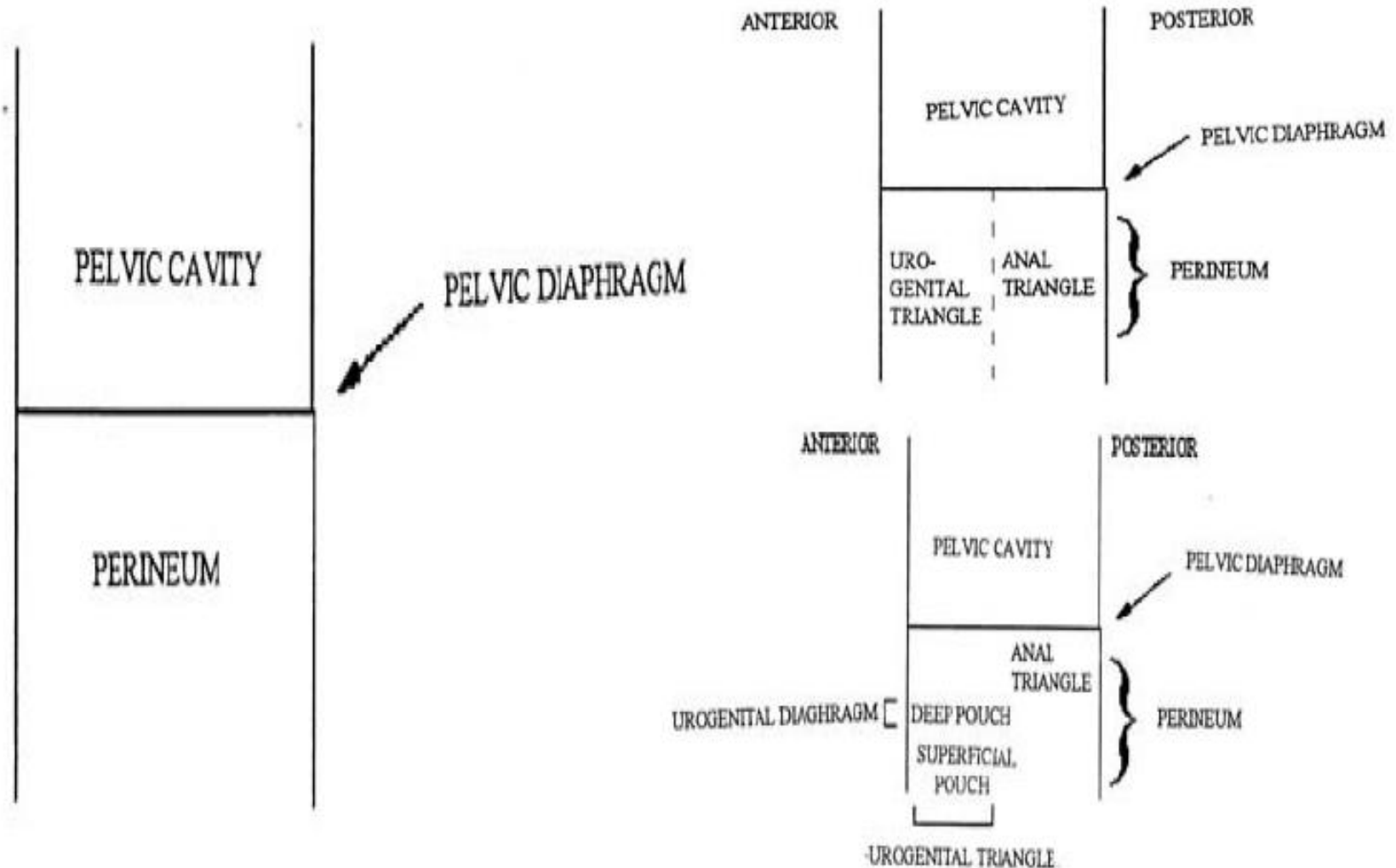
Posterolateral sides: Sacrotuberous ligaments on the right and left.

Posterior angle: Tip of coccyx - serving as a point of attachment for pubococcygeus muscle.



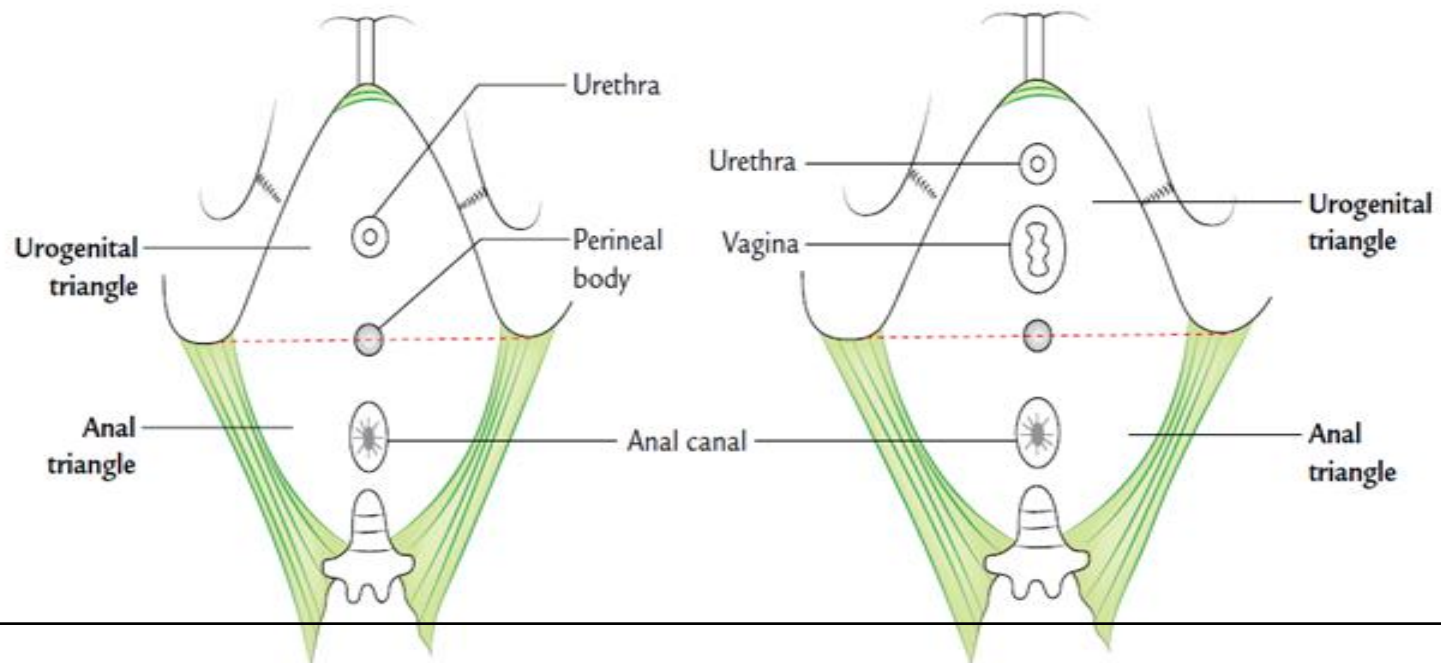


Schematic division of the perineum



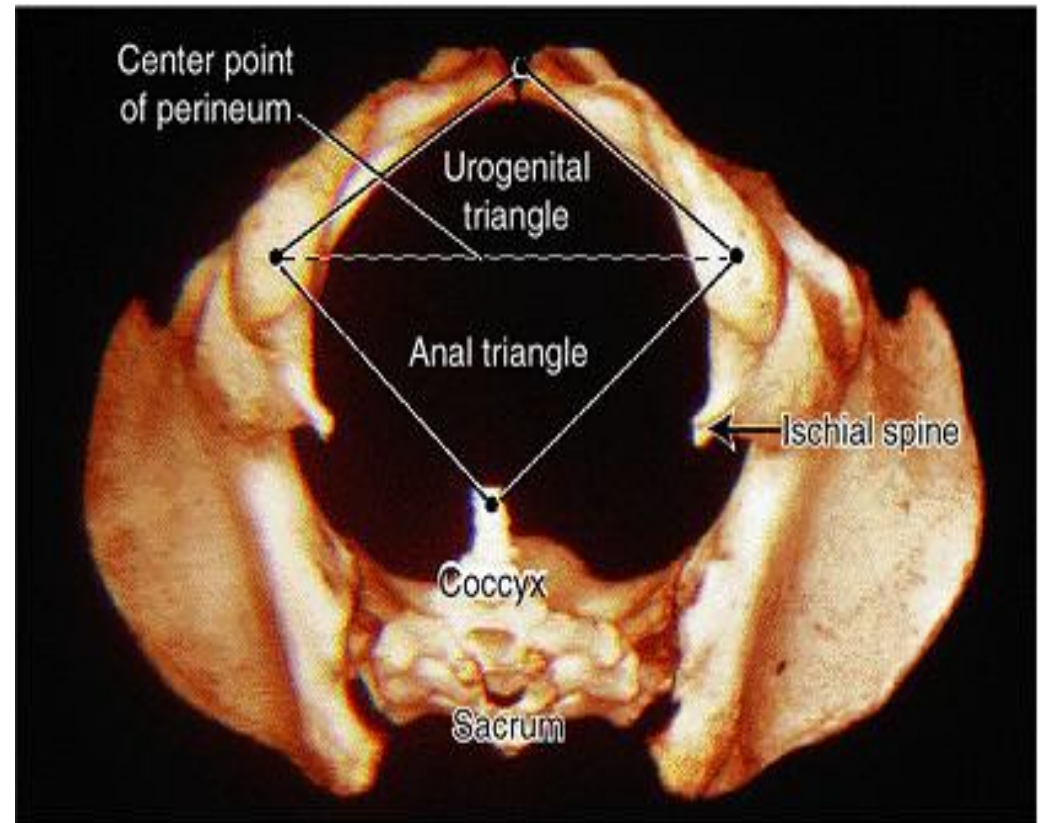
Divisions of the Superficial Perineal Region

- A line joining the two ischial tuberosities divides the perineum into:
 - Urogenital Triangle - the anterior area
 - Anal Triangle - the posterior area
- In the anatomical position, these two triangles are positioned at an angle to each other.



Urogenital triangle(Anterium Perineum)

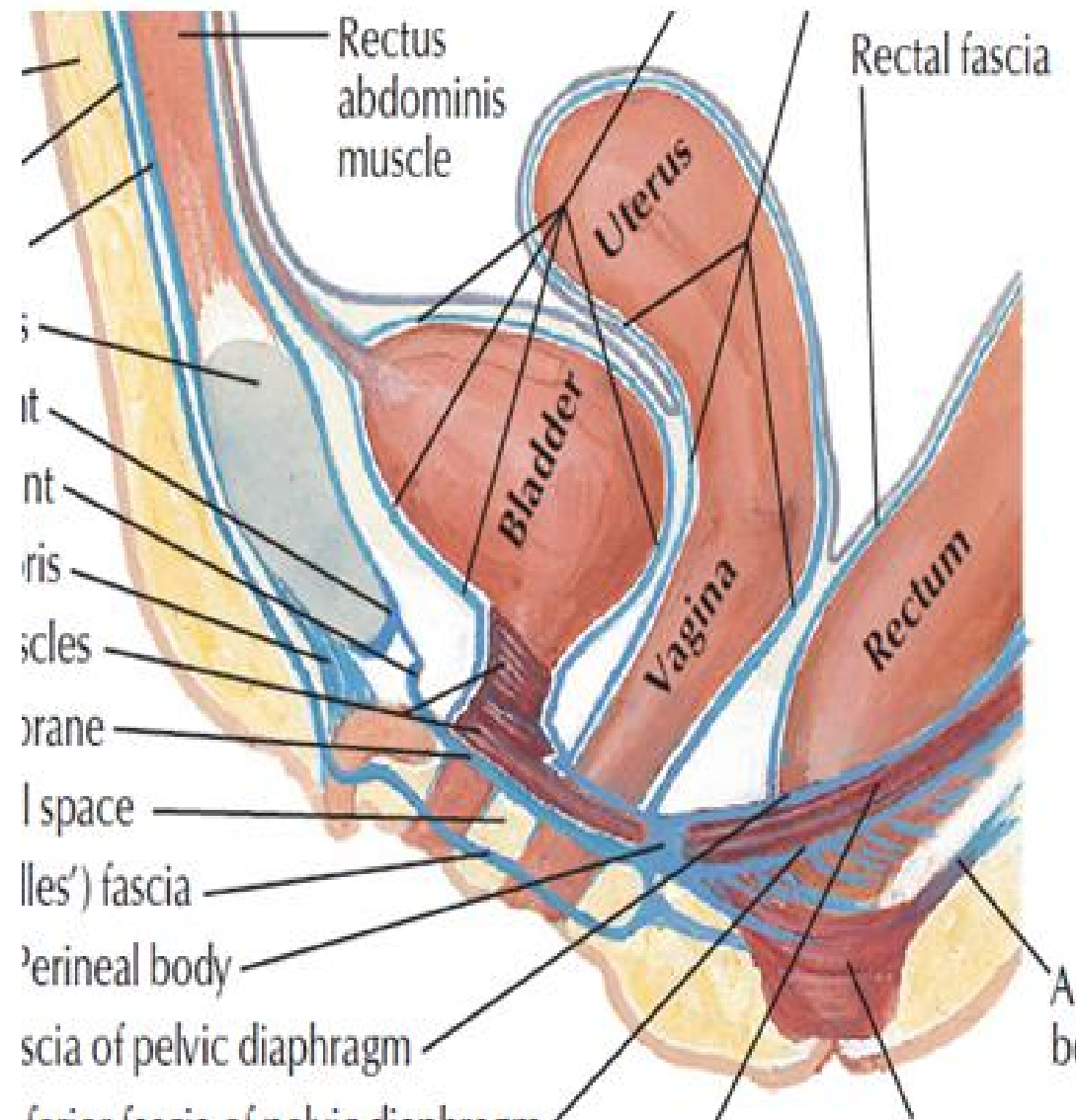
- **Laterally** by the ischiopubic rami.
- **Posteriorly** by an imaginary line between the ischial tuberosities.
- **Anteriorly** by the inferior margin of the pubic symphysis

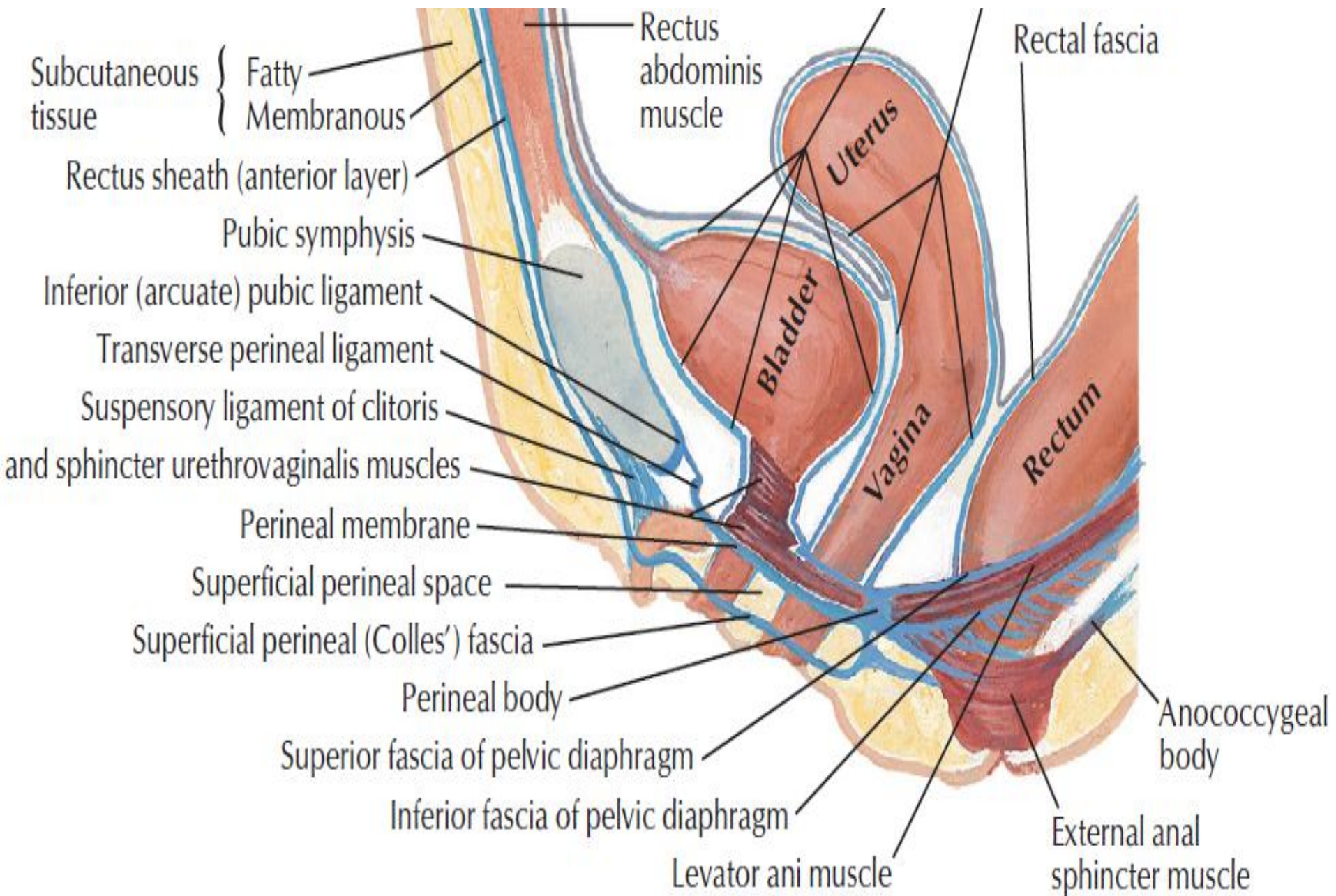


Membranes in Urogenital Triangle

3 membranes in this region stretching across the rami. From above downwards

1. Superior fascia of UGD. i.e. part of pelvic fascia
2. Inferior fascia of UGD. i.e. perineal membrane.
3. The most superficial membrane is membranous layer of superficial fascia. i.e. **Colle's fascia.**





Perineal Fasciae

- The perineal fascia consists of superficial and deep layers.
- The subcutaneous tissue of the perineum, or ***superficial perineal fascia, like that of the inferior anterior abdominal wall***, consists of – **Superficial fatty layer and Deep membranous layer (Colles fascia)**.
- **In females, the fatty layer makes up the substance of the labia majora and mons pubis** and is continuous anteriorly and superiorly with the fatty layer of subcutaneous tissue of the abdomen (Camper fascia).
- In males, the fatty layer is greatly diminished in the urogenital triangle, being replaced altogether in the penis and scrotum with smooth (dartos) muscle. It is continuous between the penis or scrotum and thighs with the fatty layer of subcutaneous tissue of the abdomen.
- In both sexes, the fatty layer of subcutaneous tissue of the perineum is continuous posteriorly with the ischioanal fat pad in the anal region.

Membranes in Urogenital Triangle

- *Between upper & middle is **deep perineal space**.*
- *Between middle & lower is **superficial perineal space**.*
- *Posteriorly all 3 membranes are attached to each other & perineal body; thus closing superficial & deep spaces behind.*
- *Anteriorly superior & inferior fasciae of UGD fuse a little behind pubic symphysis & form transverse ligament of pubis=arcuate pubic ligament.*

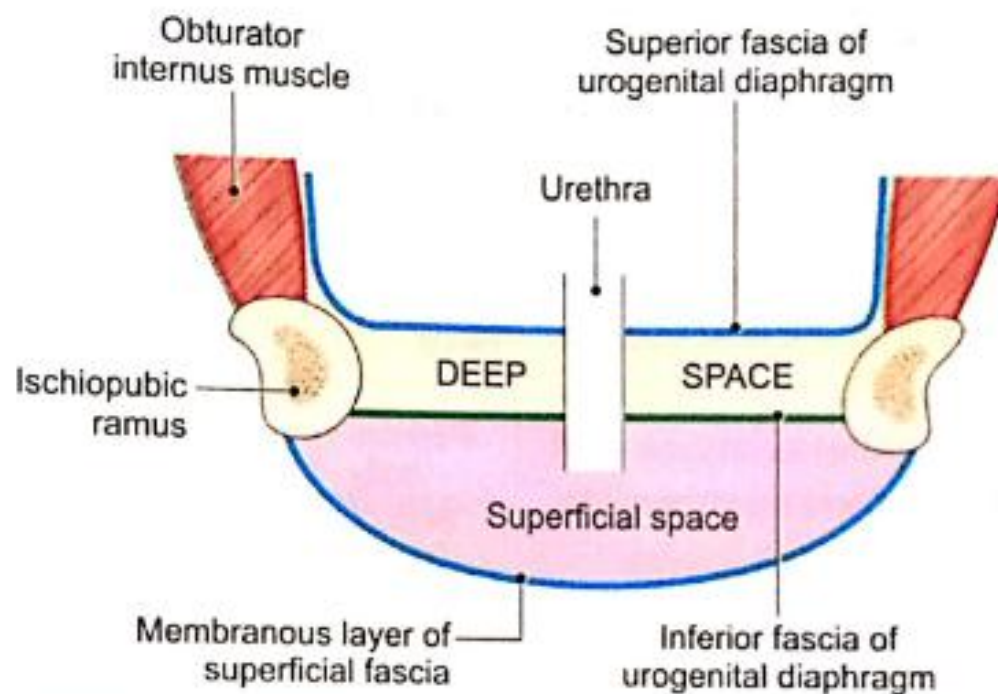
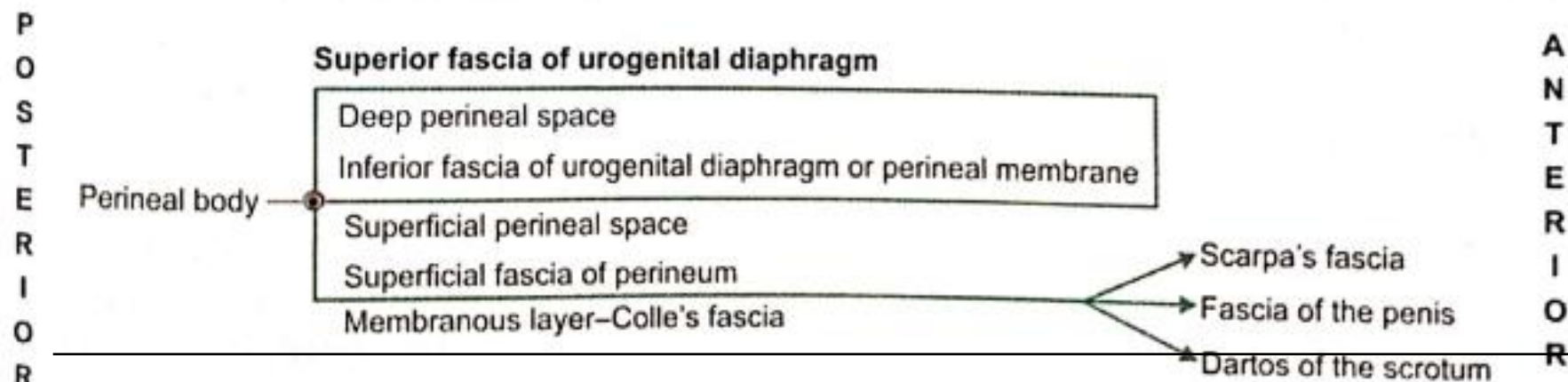
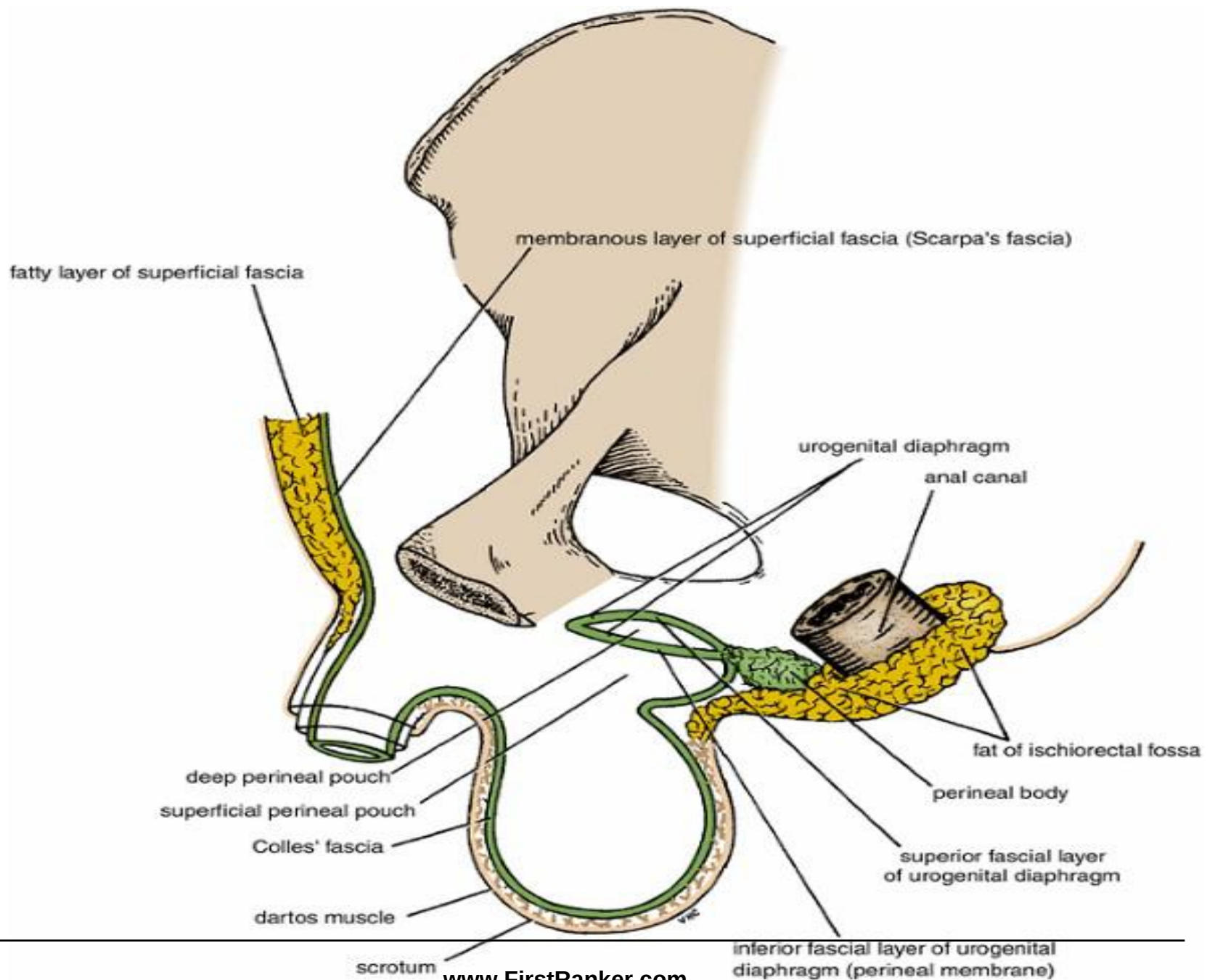
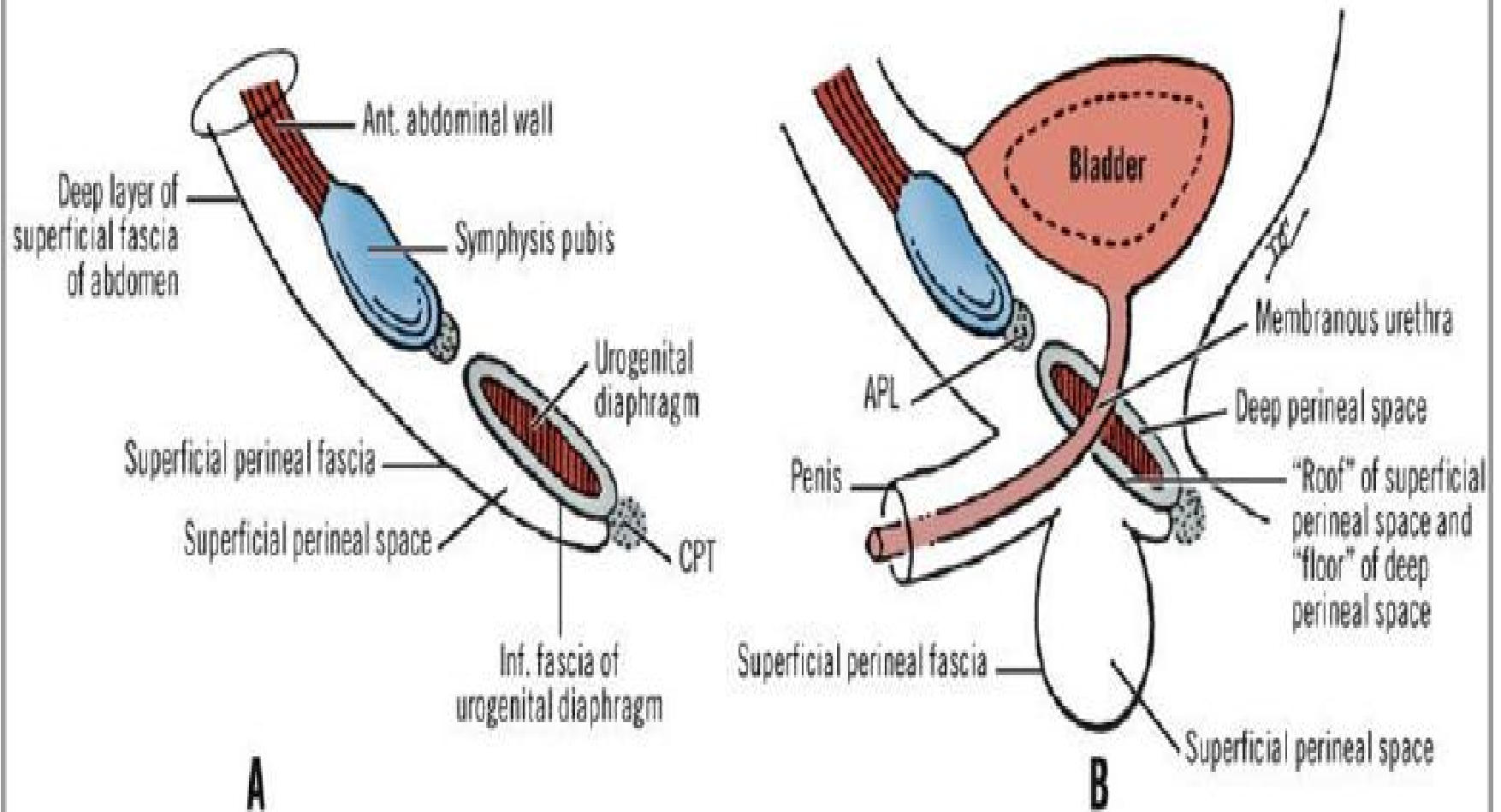


Fig. 16.13A: A schematic representation of coronal section through urogenital triangle to show formation of superficial and deep perineal spaces.

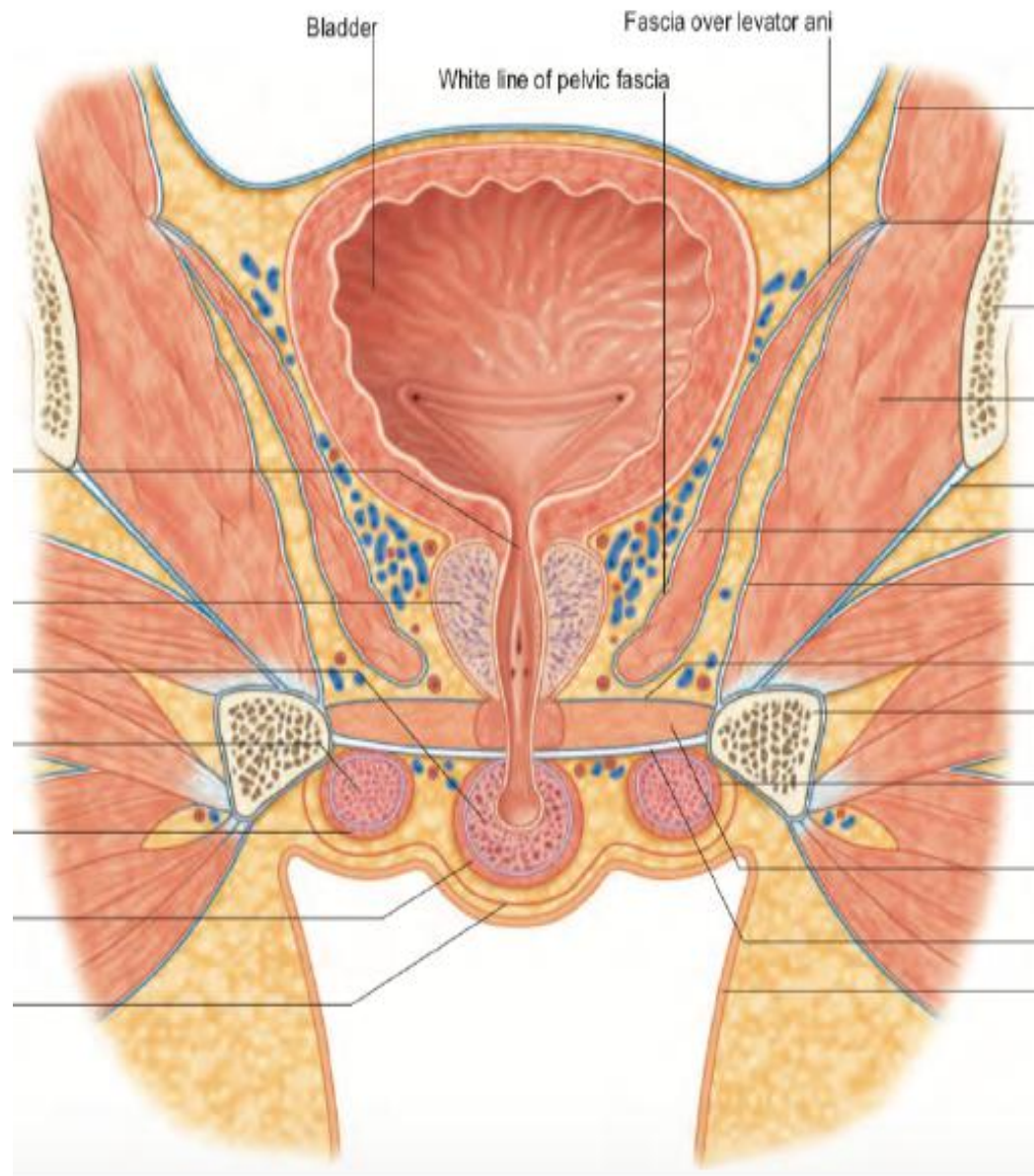


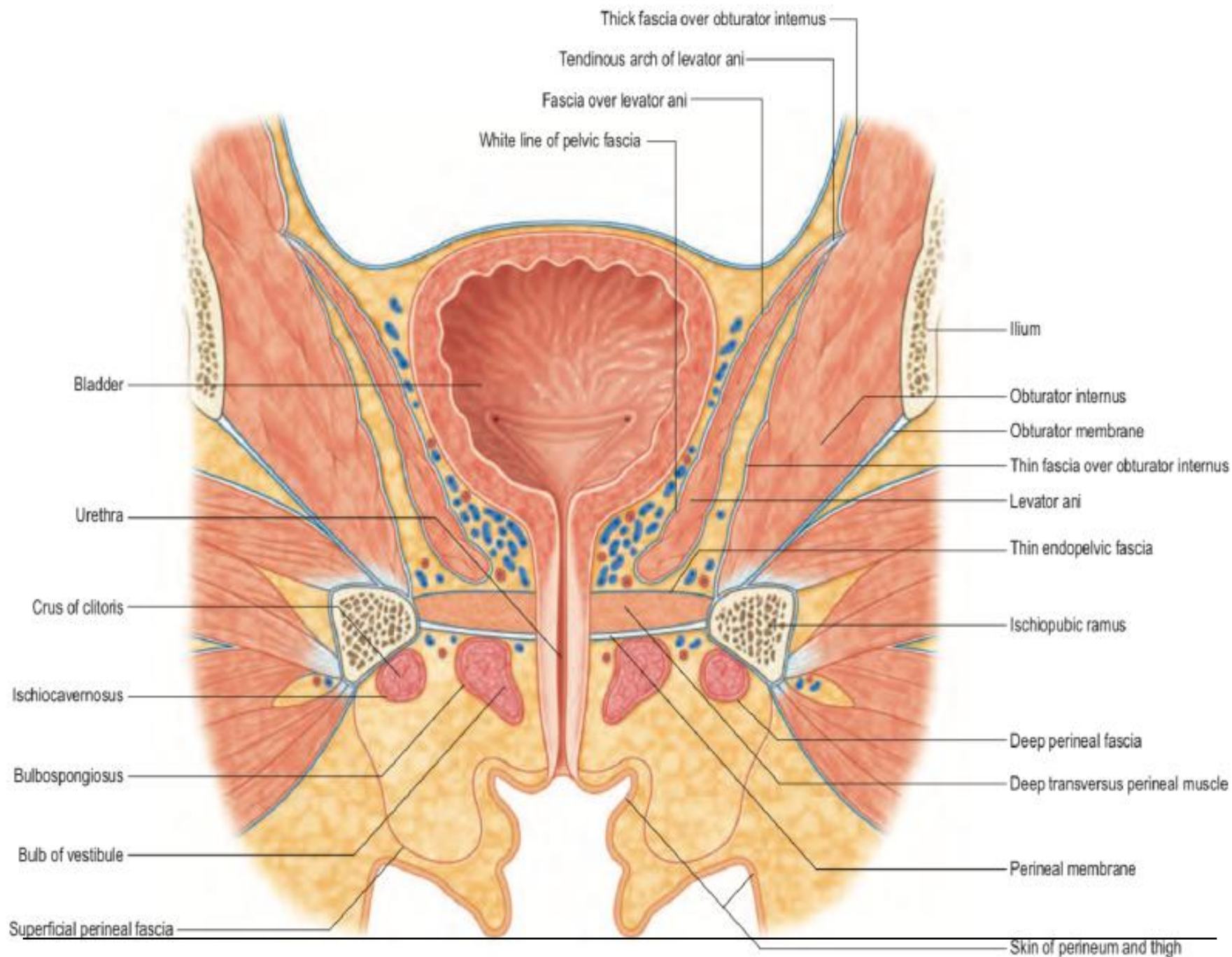




Dissection in the urogenital triangle region reveals following layers from superficial to deep:

1. Skin
2. Fatty layer of superficial fascia
3. Membranous layer of superficial fascia (Colles fascia)
4. Contents of superficial perineal space
5. Perineal membrane (inf. Layer of urogenital diaphragm)
6. Contents of deep perineal space
7. Endopelvic fascia (Superior fascia of urogenital diaphragm)



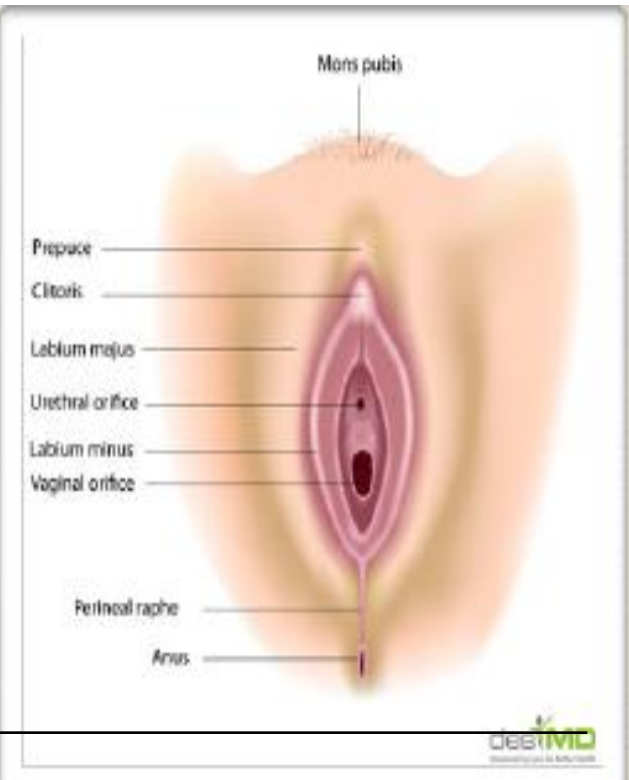
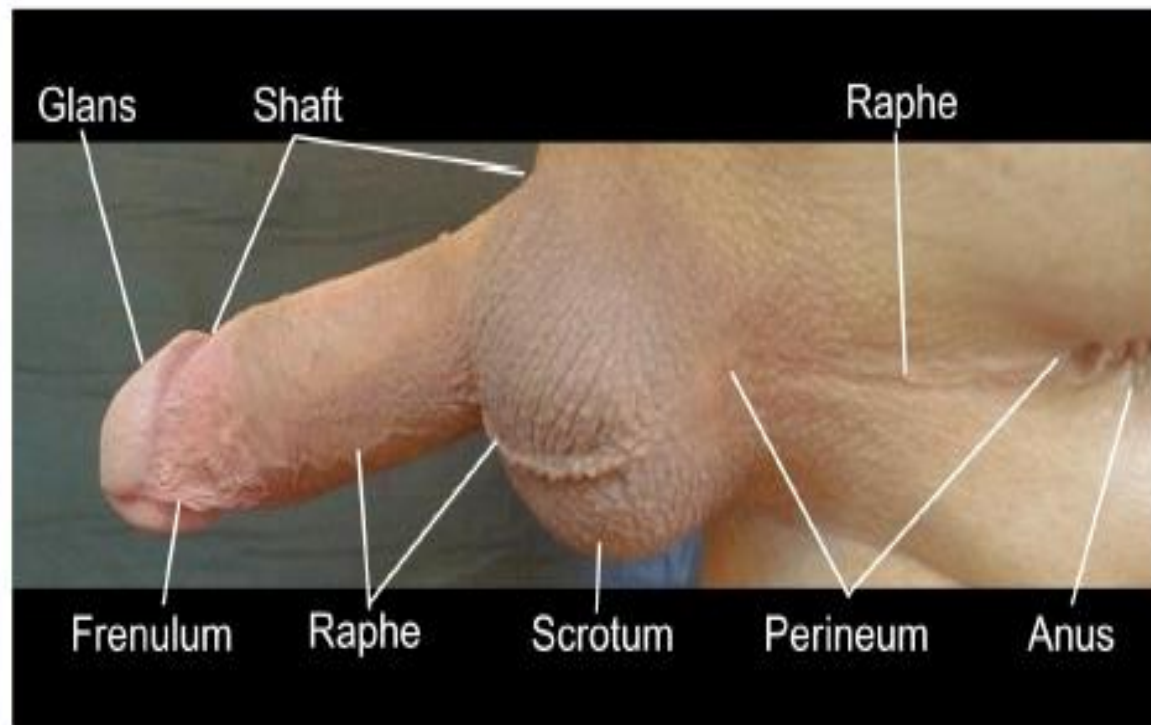


Skin:

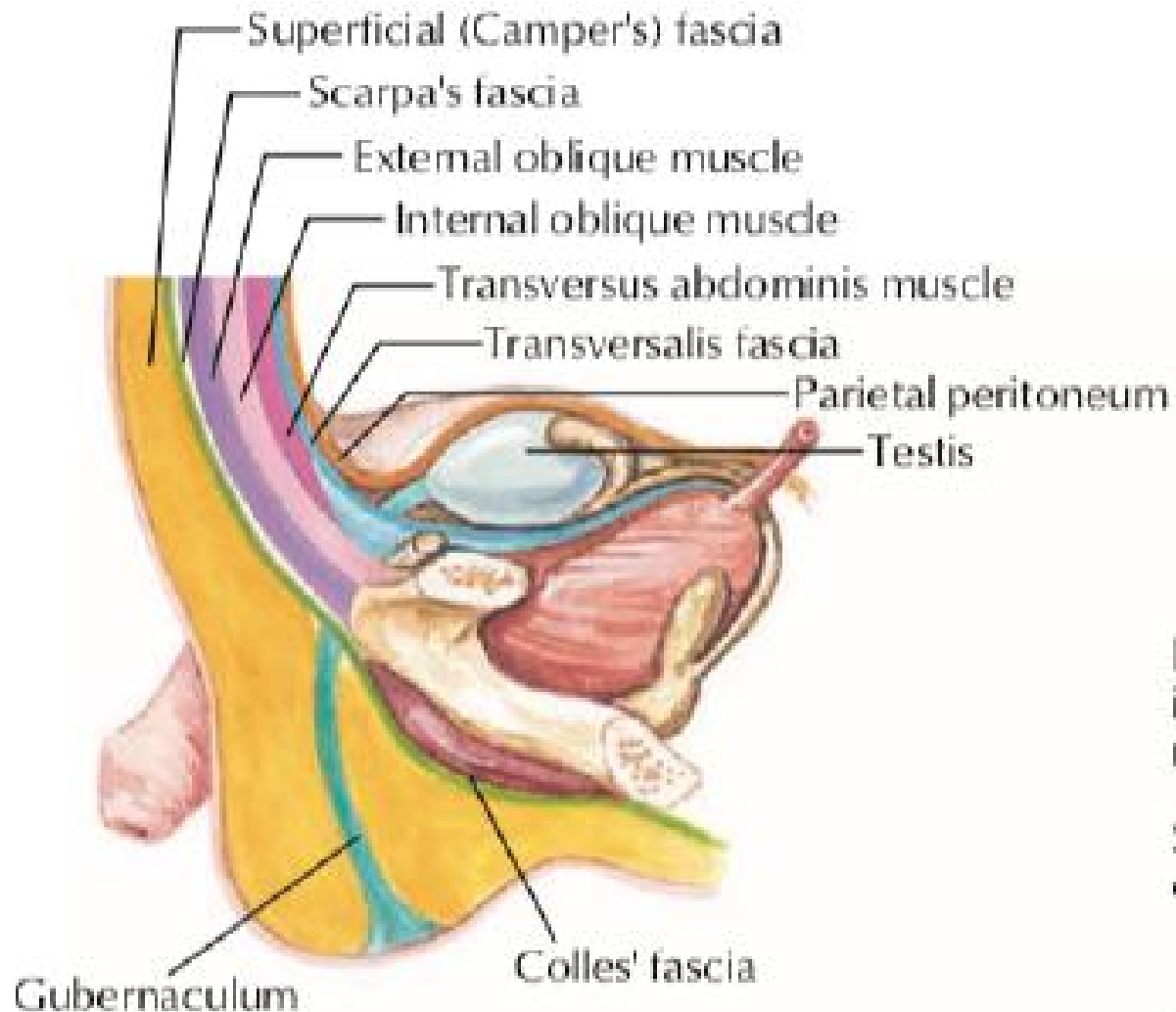
In male: midline raphe continuous with raphe of scrotum.

In female: perineal raphe leading to midline cleft called vestibule b/w labia minora.

Raphe indicates development from fusion of two symmetrical halves.



Fatty layer of superficial fascia: continuous with the fatty layer of superficial fascia in lower abdomen - fascia of camper



Colles fascia:

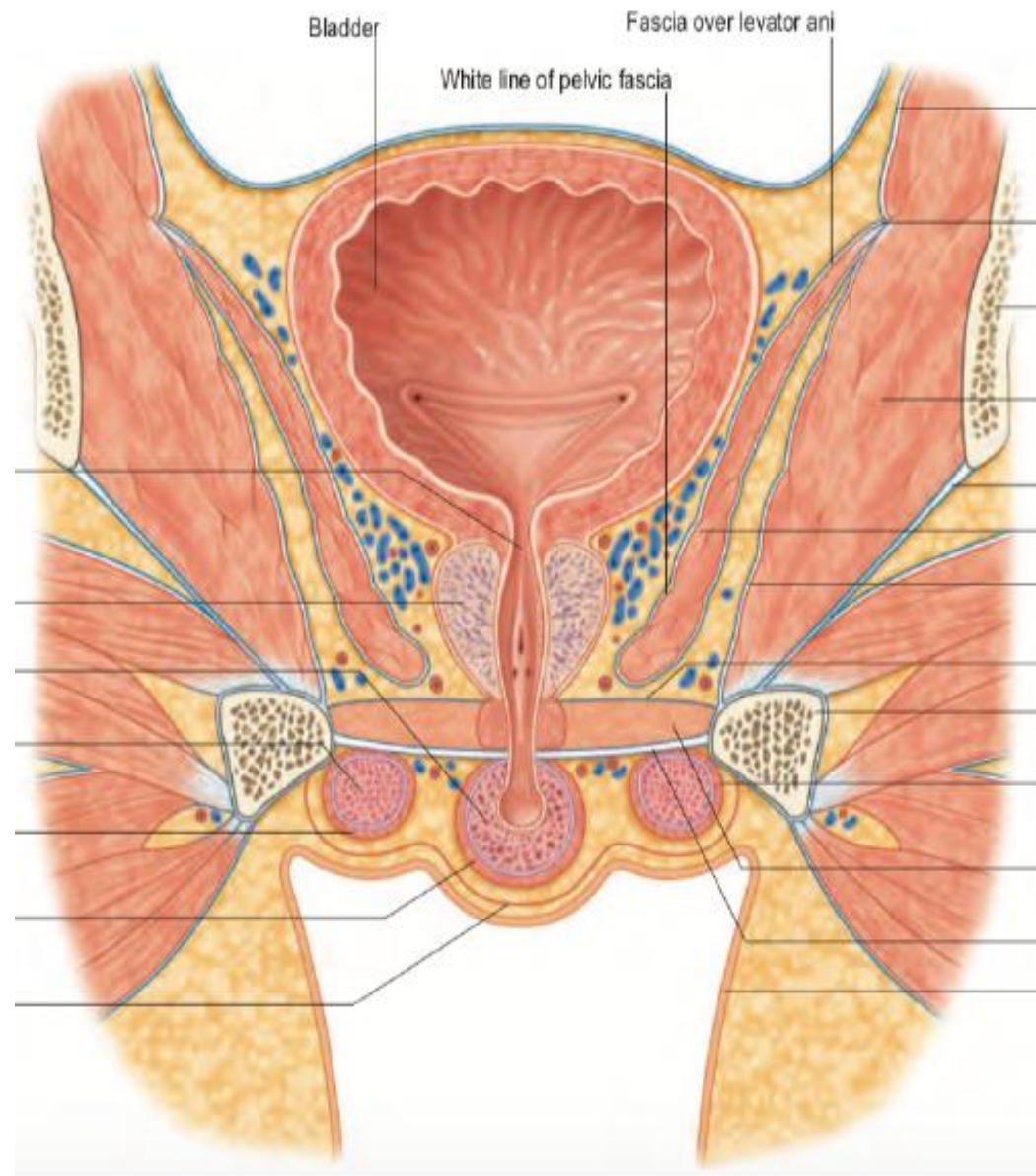
Membranous layer of superficial fascia.
Forms lower limit of superficial perineal pouch.

Attachments:

lateral: lower margin of ischiopubic rami

posterior: attached to posterior margin of perineal membrane

Anterior: continuous with dartos muscle of scrotum, superficial fascia of penis and Scarpa's fascia of lower abdomen.



Superficial perineal space/pouch:

Interfascial space below perineal membrane

Boundaries

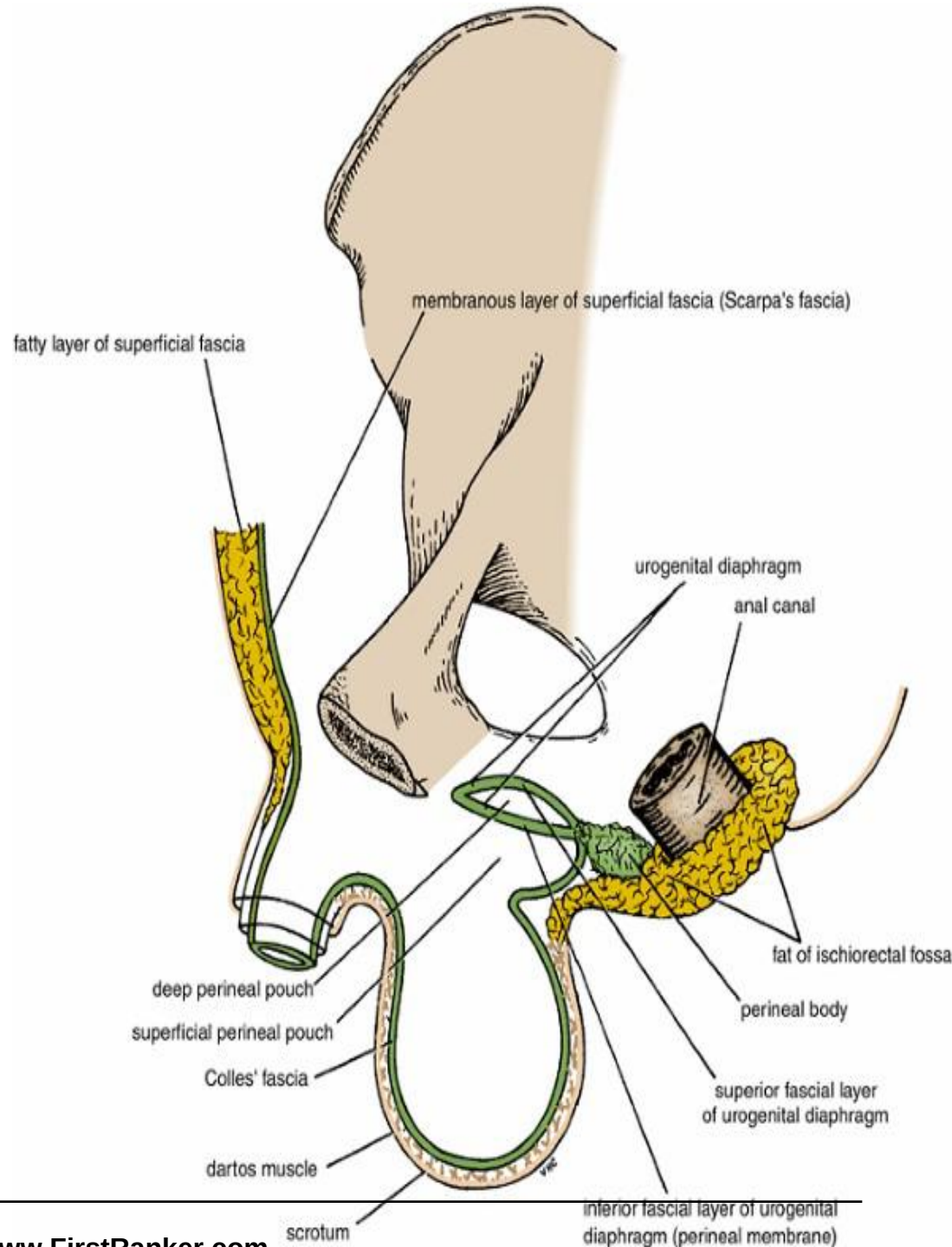
superior: perineal membrane

inferior: Colles fascia

lateral: ischiopubic ramus

posterior: closed by fusion of perineal membrane and Colles fascia

anterior: open with deep to Dartos muscle and superficial fascia of penis and ant. abdominal wall
between fascia Scarpa and External oblique



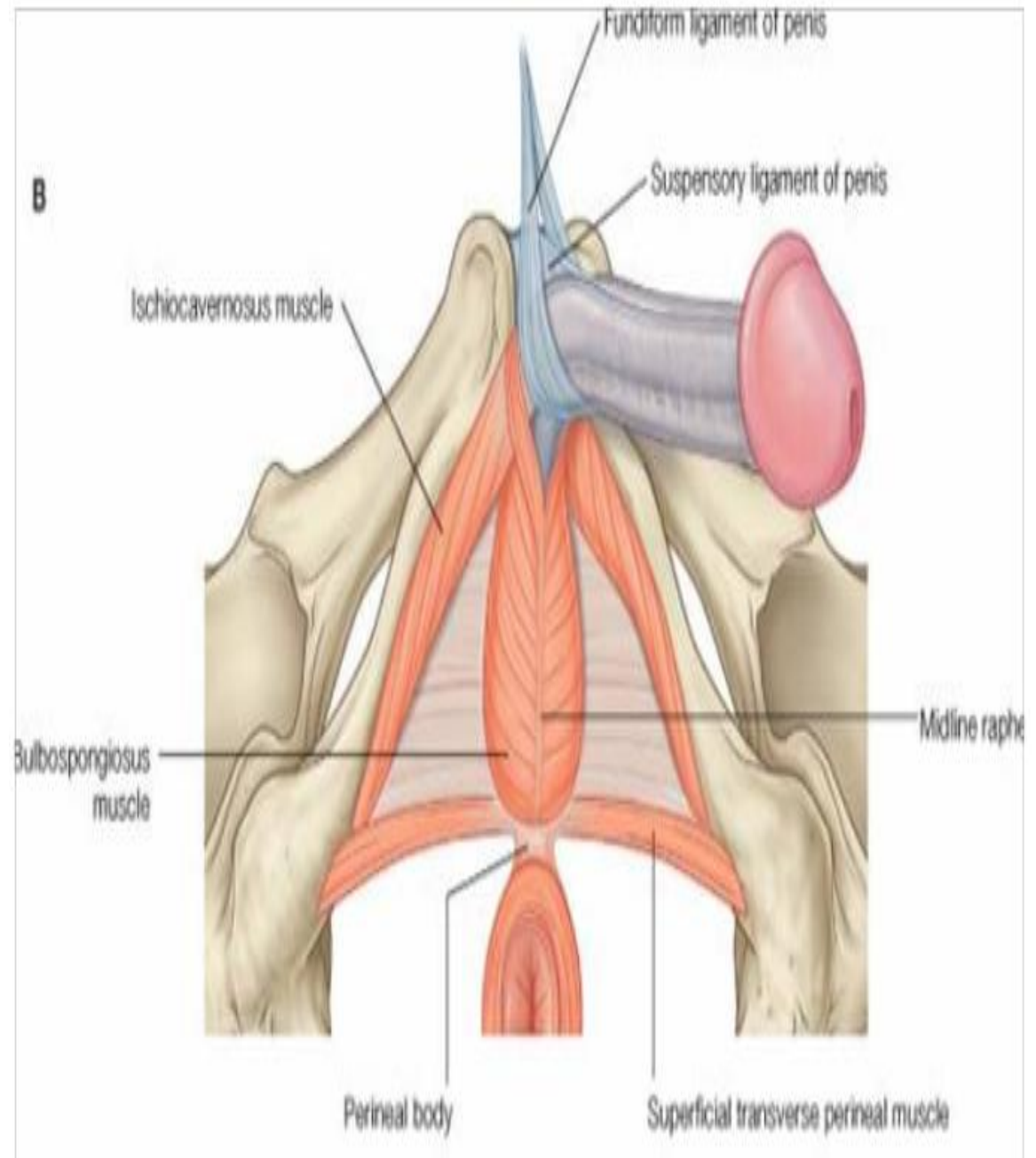
Contents:

A. Muscles:

Ischiocavernosus: cover crus penis or crus clitoridis.

Transversus perinei superficialis.

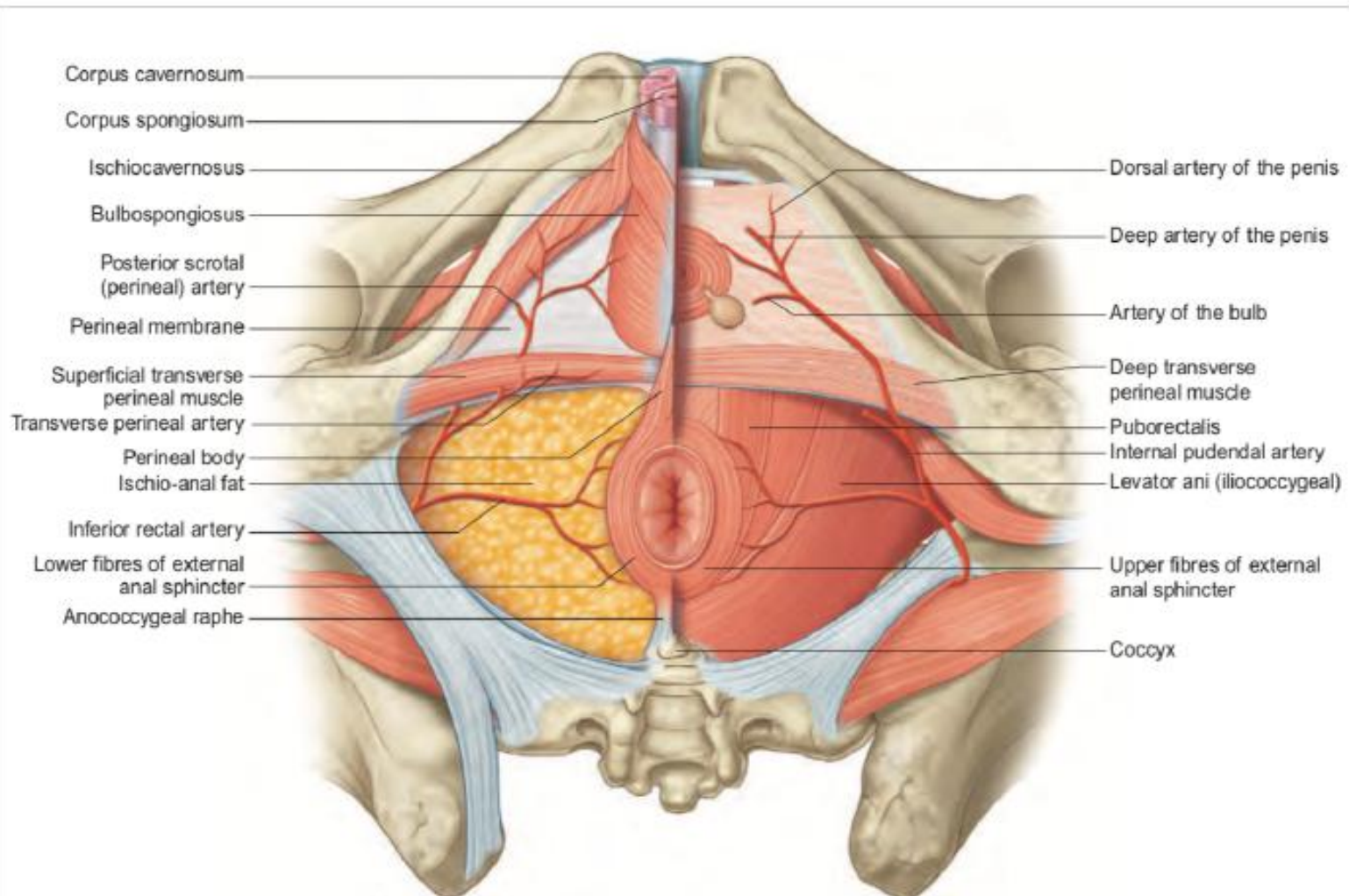
Bulbospongiosus: cover bulb of penis or bulb of vestibule.



B. Blood vessels

Posterior scrotal/labial arteries - branch of perineal or internal pudendal artery

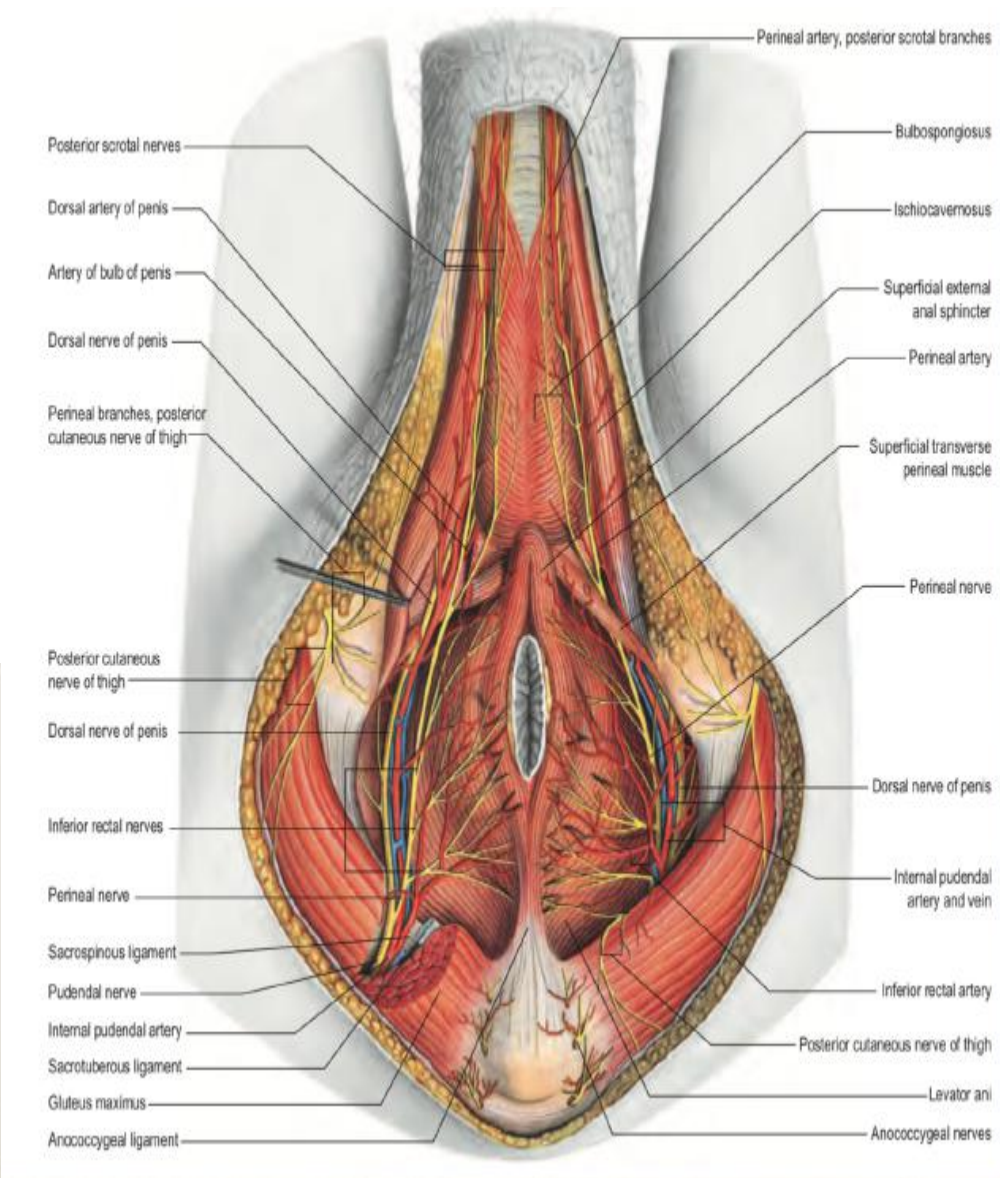
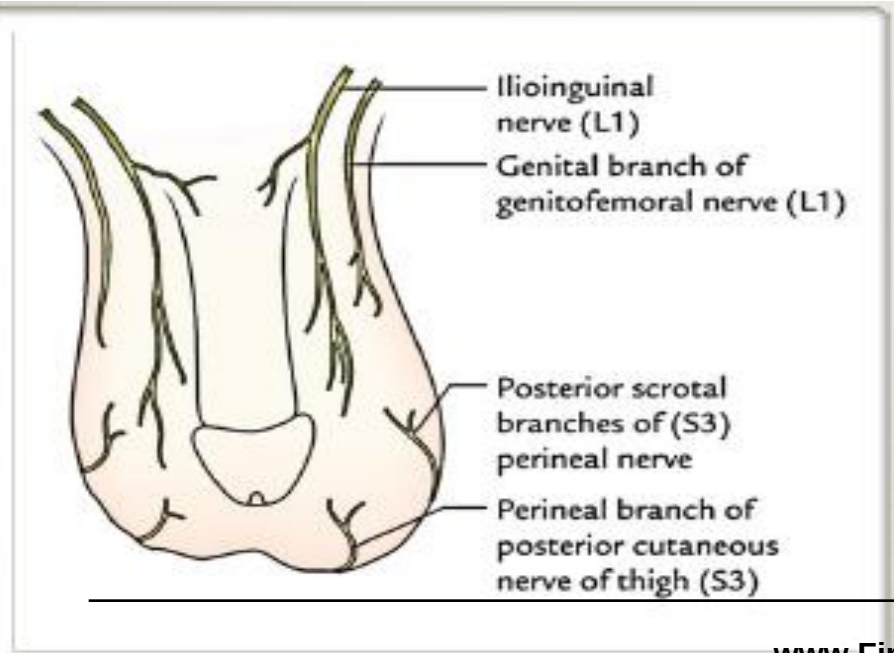
Transverse perineal artery- branch of perineal artery.



C. Nerves

Posterior scrotal/ labial nerves: branches of superficial perineal nerve.

Perineal branch of posterior femoral cutaneous nerve.

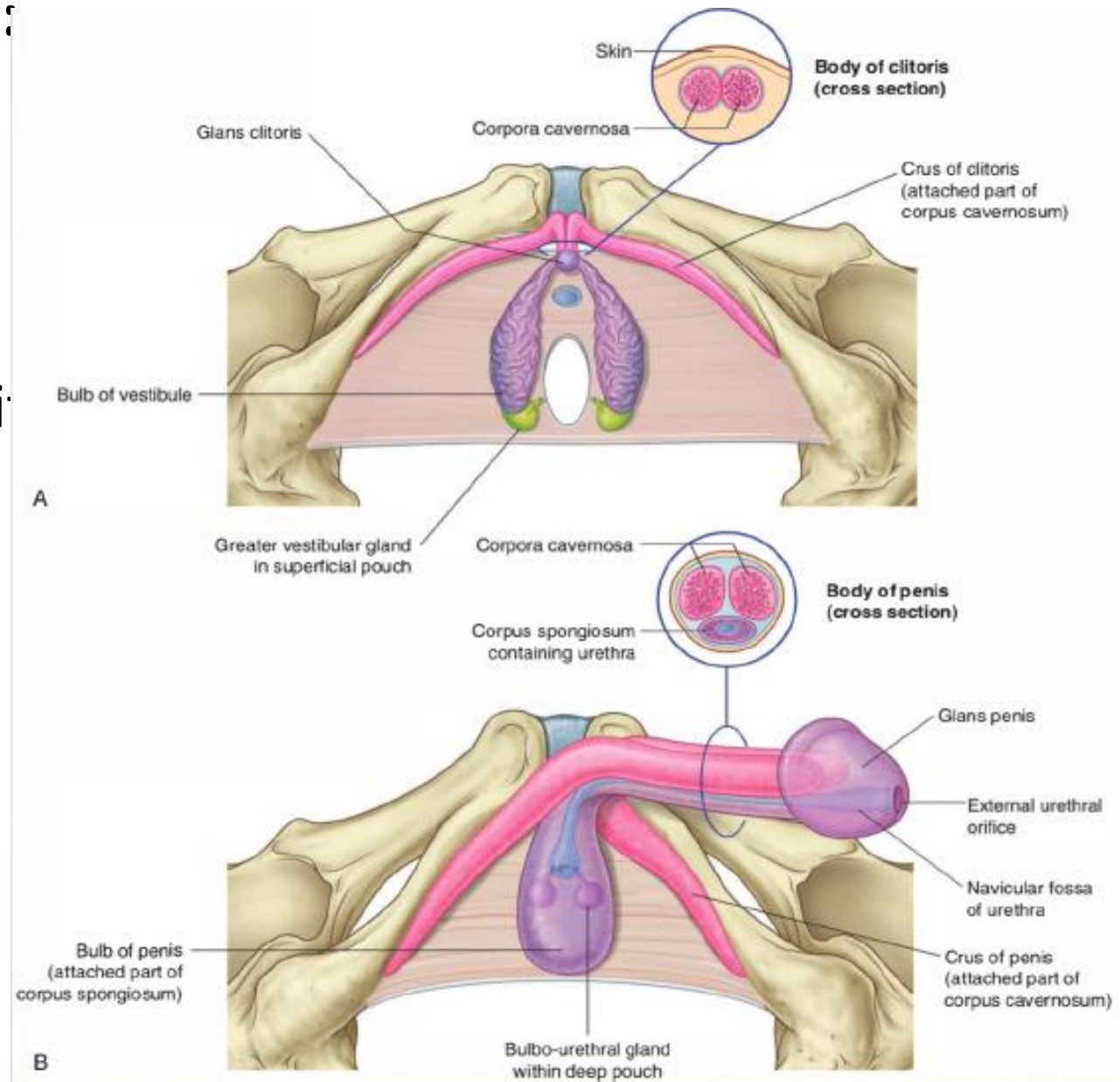


D. Other structures:

Crus penis/ crus clitoridis.

Bulb of penis with urethra traversing it

Bulb of vestibule with greater vestibular gland.

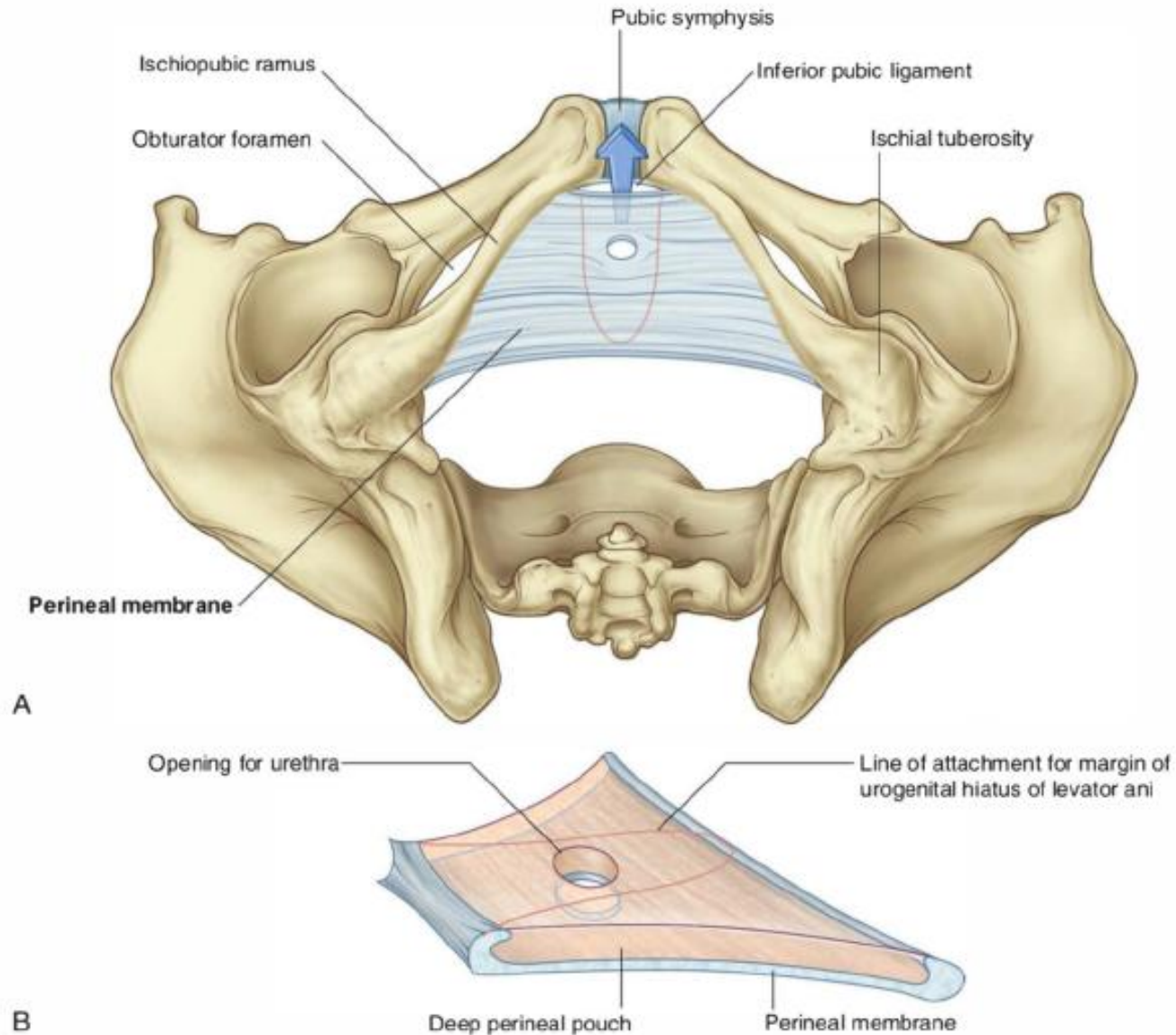


Perineal membrane

Inferior fascia of urogenital diaphragm.

Triangular; apex directed in the front.

Stretched between pubic arch

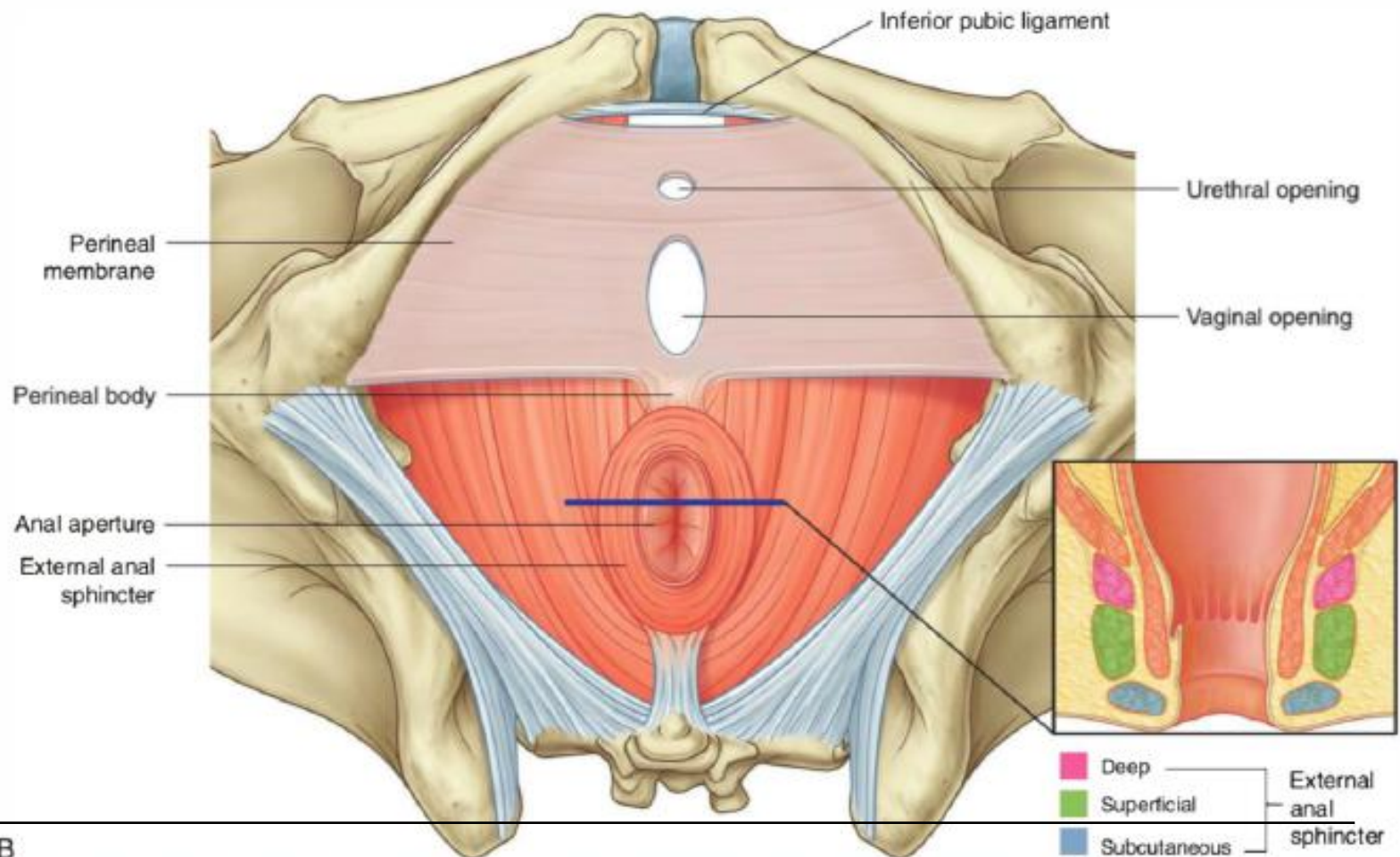


Attachments

lateral: inner surface of ischiopubic ramus

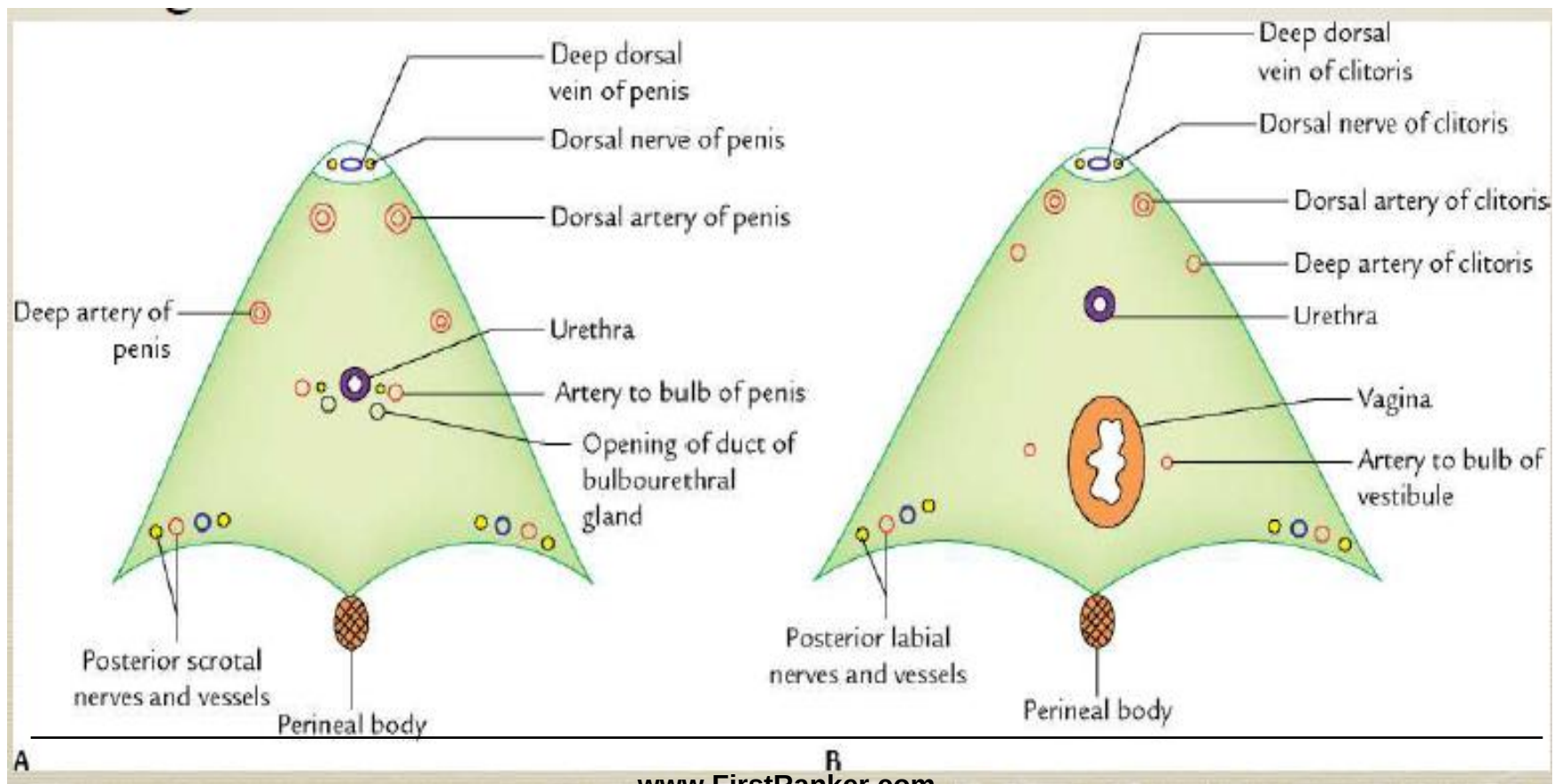
anterior: thickened to form **transverse perineal ligament**.

posterior: perineal body in midline but laterally has free margin.



Structures piercing the perineal membrane

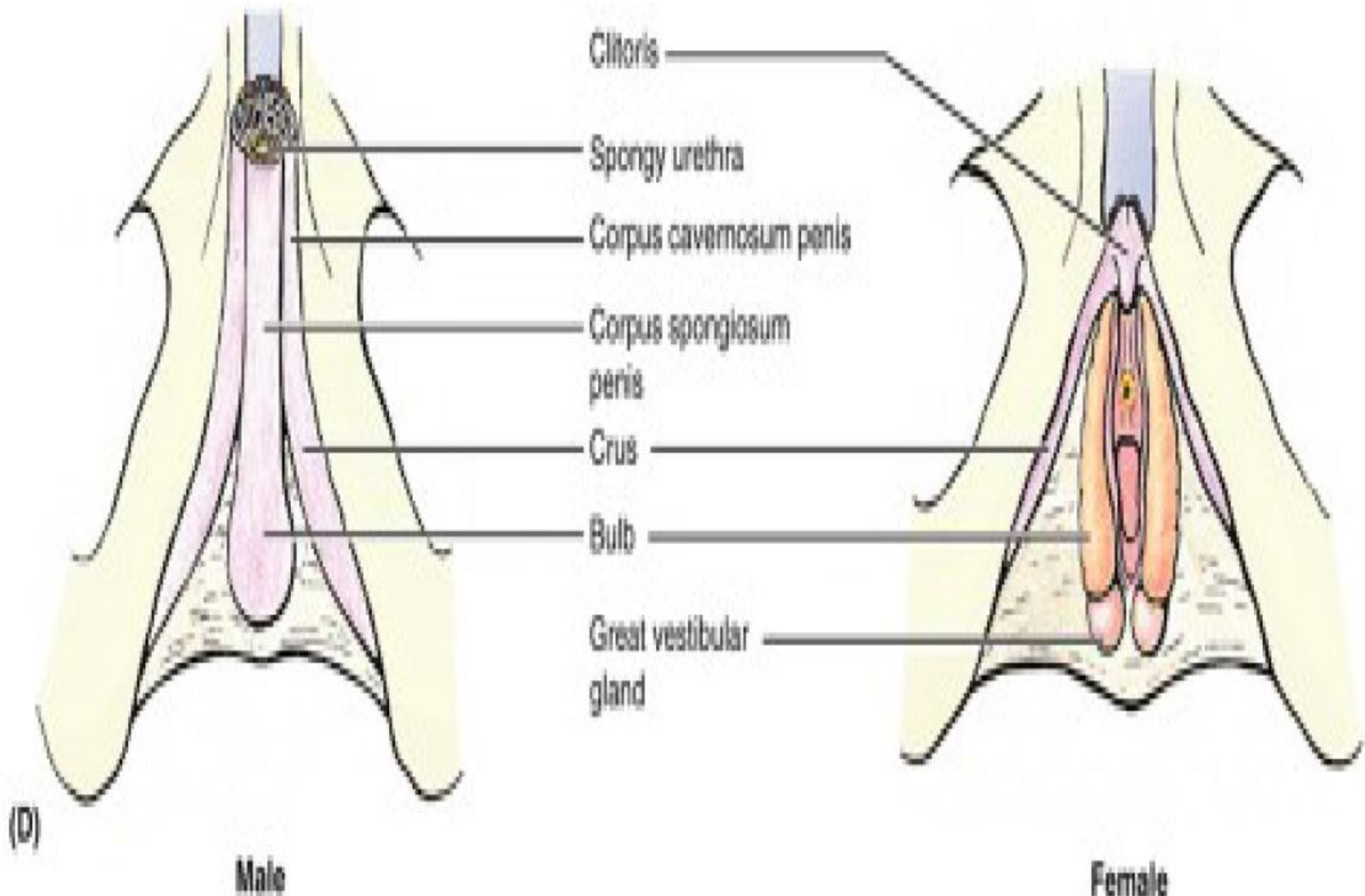
1. Posterior scrotal/labial nerves and vessels
2. Deep artery of penis /clitoris
3. Dorsal artery of penis or clitoris
4. Urethra
5. In male: duct of bulbo-urethral glands and artery to the bulb of penis
6. In female: vagina



SUMMARY

- **The superficial perineal pouch (compartment) is a potential space between:**
 - The membranous layer of subcutaneous tissue (Colle's fascia).
 - The perineal membrane (superiorly).
 - The ischiopubic rami (laterally).
 - **Closed posteriorly and continuous anteriorly** with the space between the membranous layer of superficial fascia and external oblique
-

Contents of superficial perineal pouch



	Males	Females
Superficial perineal pouch contents	Root (bulb and crura of the penis and associated muscles)	Root (crura) of the clitoris and the muscles associated with it (ischiocavernosus)
	Proximal part of the spongy urethra	Bulbs of the vestibule and the surrounding muscle (bulbospongiosus)
	Superficial transverse perineal muscles	Superficial transverse perineal muscles
	Branches of the internal pudendal vessels	Related vessels and nerves (branches of internal pudendal vessels, perineal nerves)
	Branches of the pudendal nerves (perineal nerves)	Greater vestibular glands

Vessels & nerves of the superficial perineal pouch

In male:

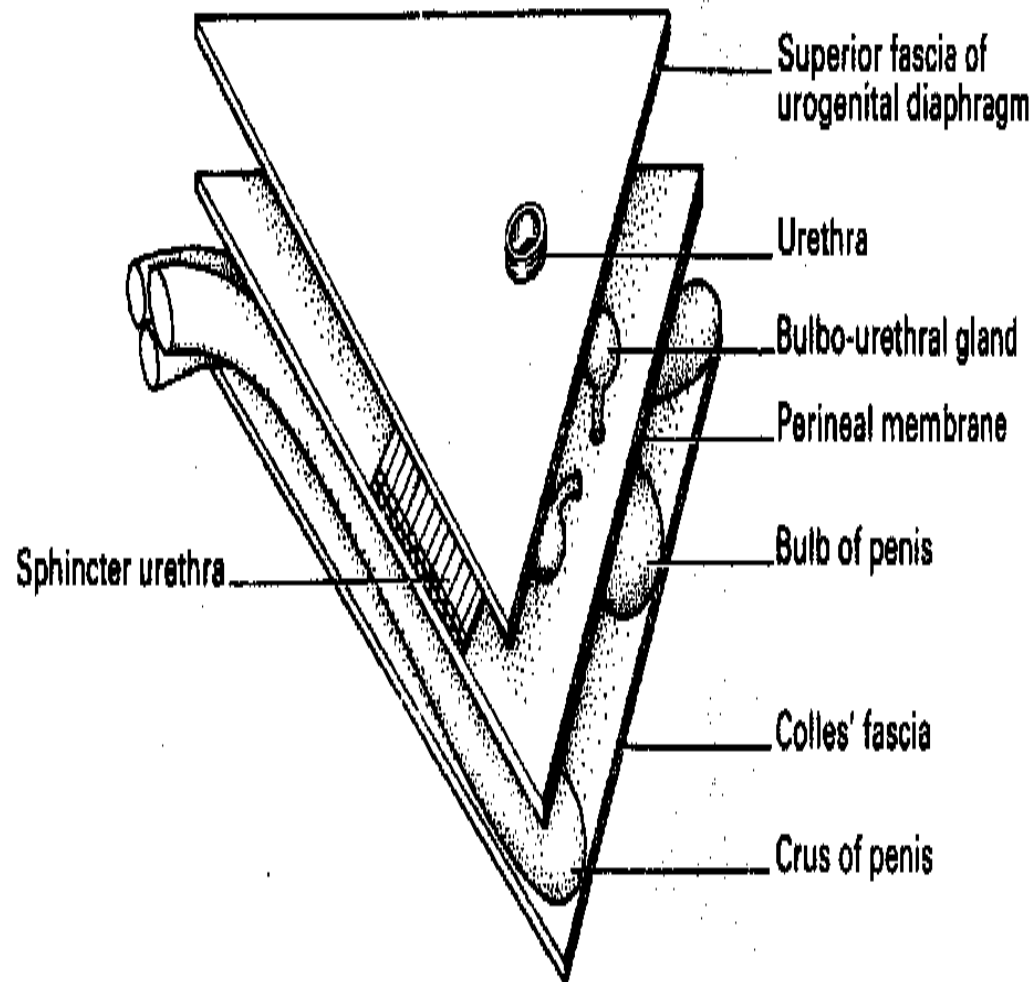
- **Vessels:** Dorsal and deep artery of **penis** (terminal branches of internal pudendal artery) + **scrotal** arteries.
- **Nerves:** dorsal nerve of **penis** & **scrotal** nerves.

In female

- **Vessels:** Dorsal and deep artery of **clitoris** (terminal branches of internal pudendal artery + **labial** arteries.
- **Nerves:** dorsal nerve of **clitoris** & **labial** nerves.

Urogenital Diaphragm or Triangular Ligament

- This consists of two muscles,
1. The sphincter urethrae in which lies the membranous part of the urethra (3/4 in. long), and
 2. The deep transverse perineus.
- These muscles are enveloped in two layers of fascia, the fasciae superior and inferior of the urogenital diaphragm (upper and lower layers of the triangular ligament), forming the deep perineal pouch.



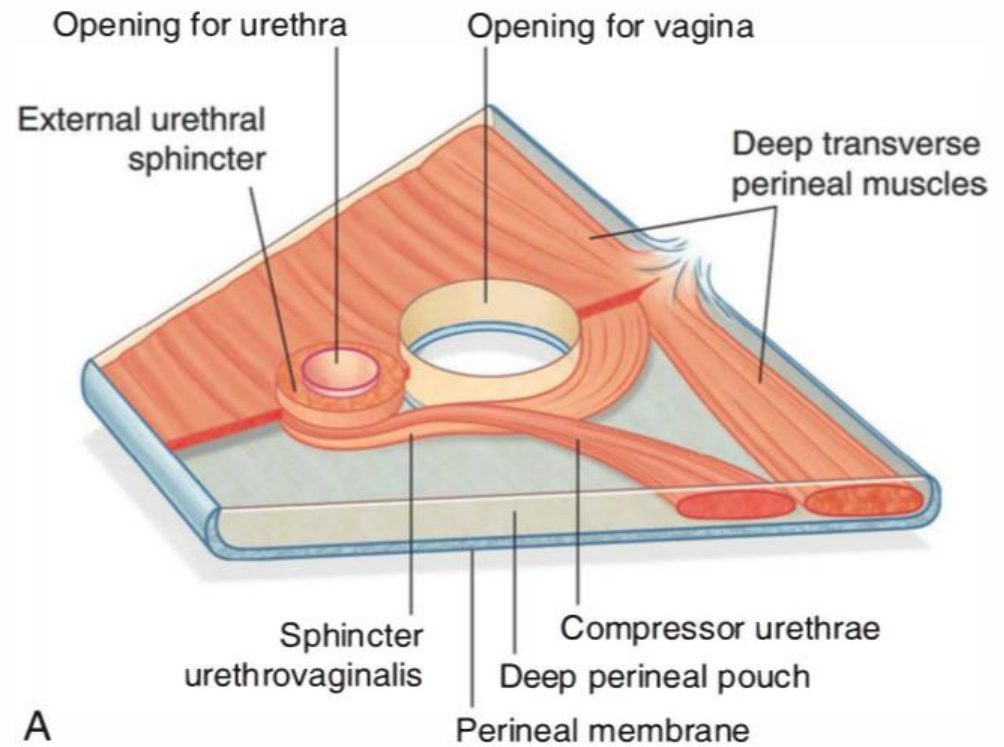
The three layers of the urogenital diaphragm, with the superficial and deep perineal pouches between them.

Deep perineal Space/pouch:

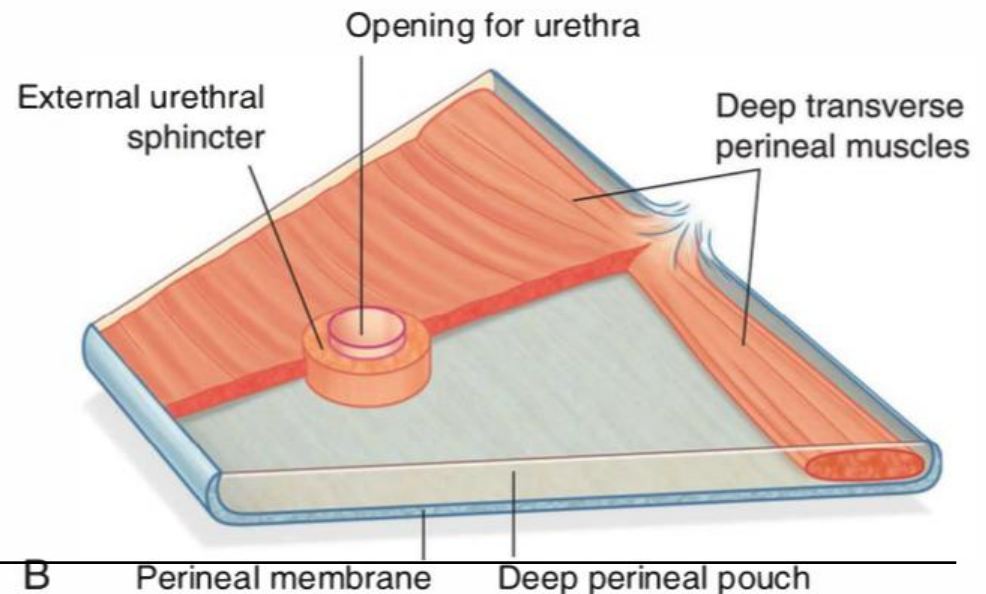
Closed interfascial space inside the urogenital diaphragm.

Boundaries

- **superior**: superior fascia of urogenital diaphragm
- **inferior**: perineal membrane (inferior fascia)
- **anterior**: transverse perineal ligament
- **posterior**: fused superior and inferior fascia of urogenital diaphragm
- **lateral**: inner surface of ischiopubic rami



A

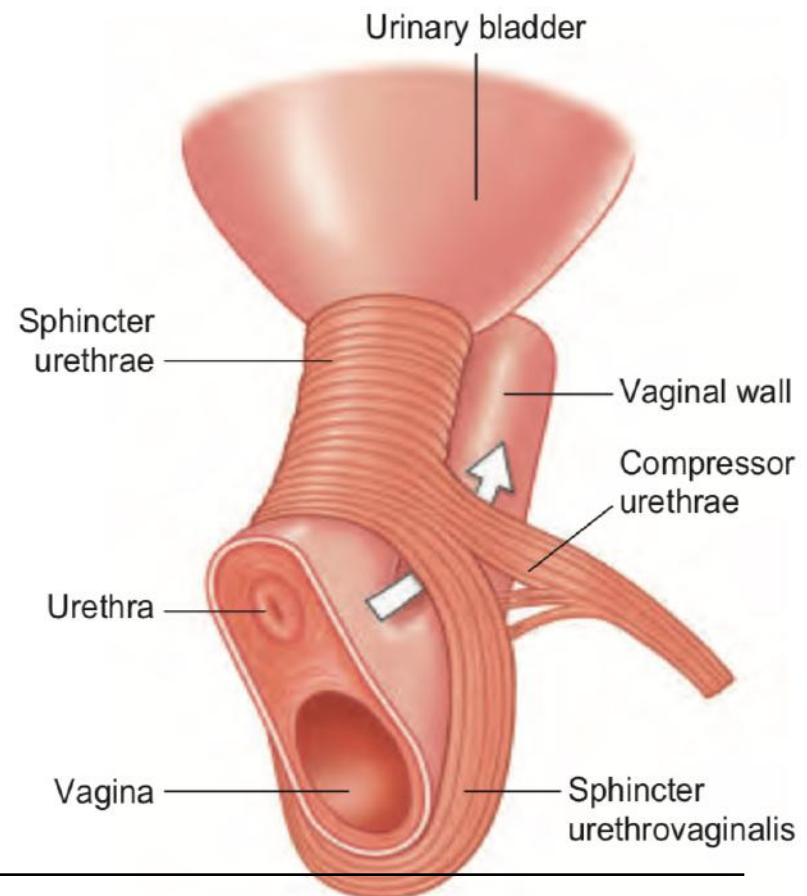
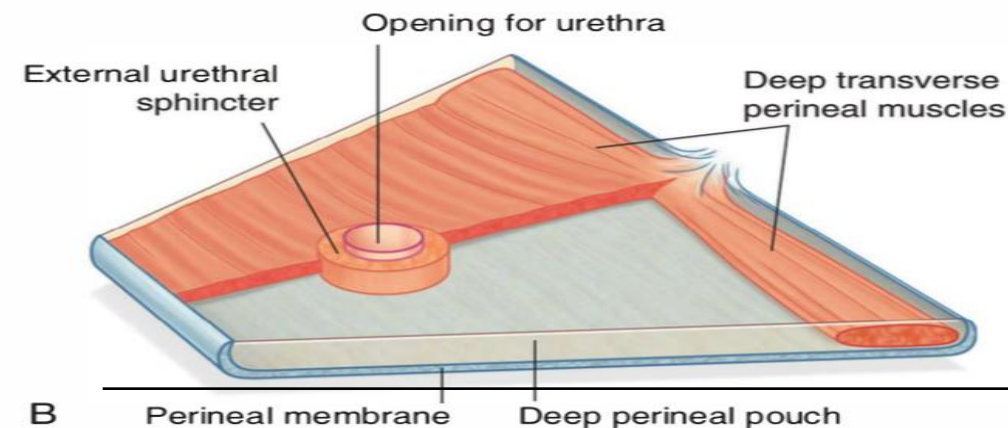
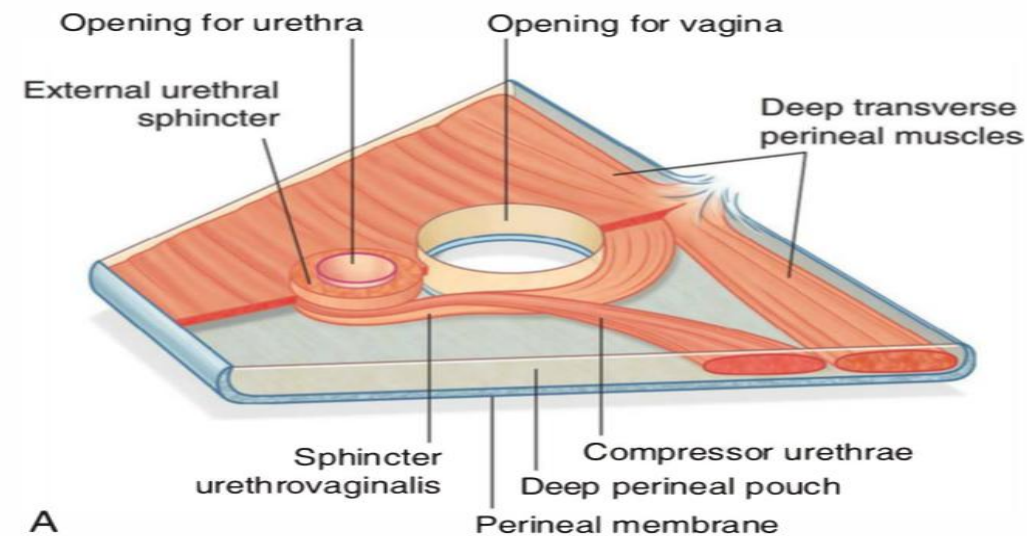


B

Contents:

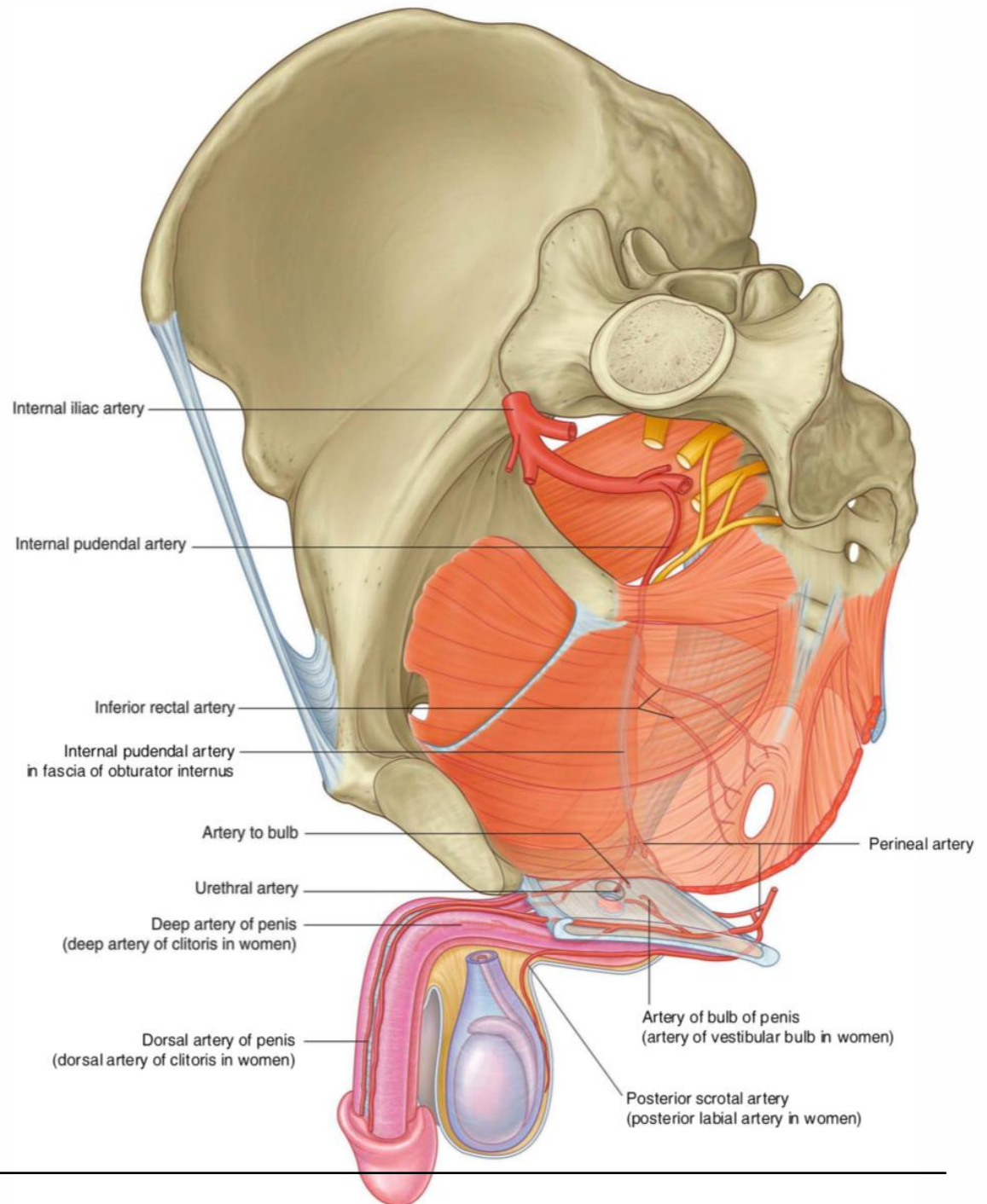
A. Muscles

- Sphincter urethrae: surround membranous urethra.
- Deep Transverse perinei.



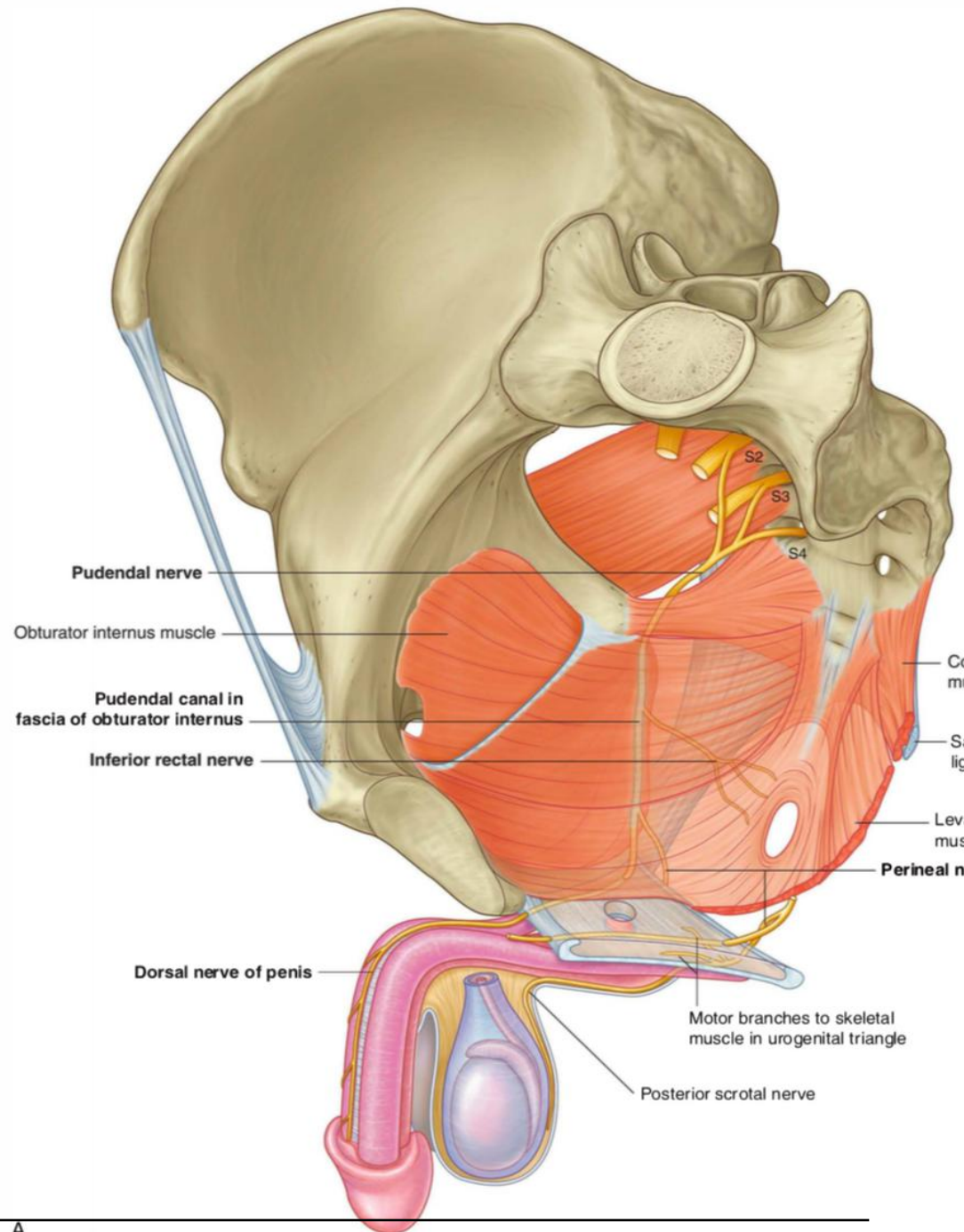
B. Blood vessels:

- Internal pudendal artery and its terminal branches
- Deep artery of penis/ clitoris
- Dorsal artery of penis/ clitoris
- Artery to the bulb of penis/ bulb of vestibule



C. Nerves

Dorsal nerve of penis/
clitoris

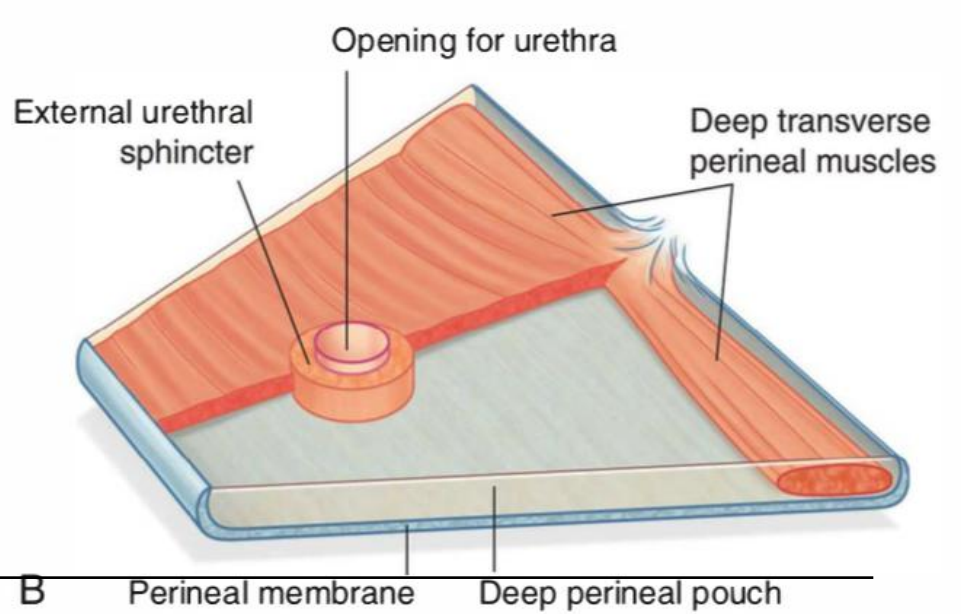
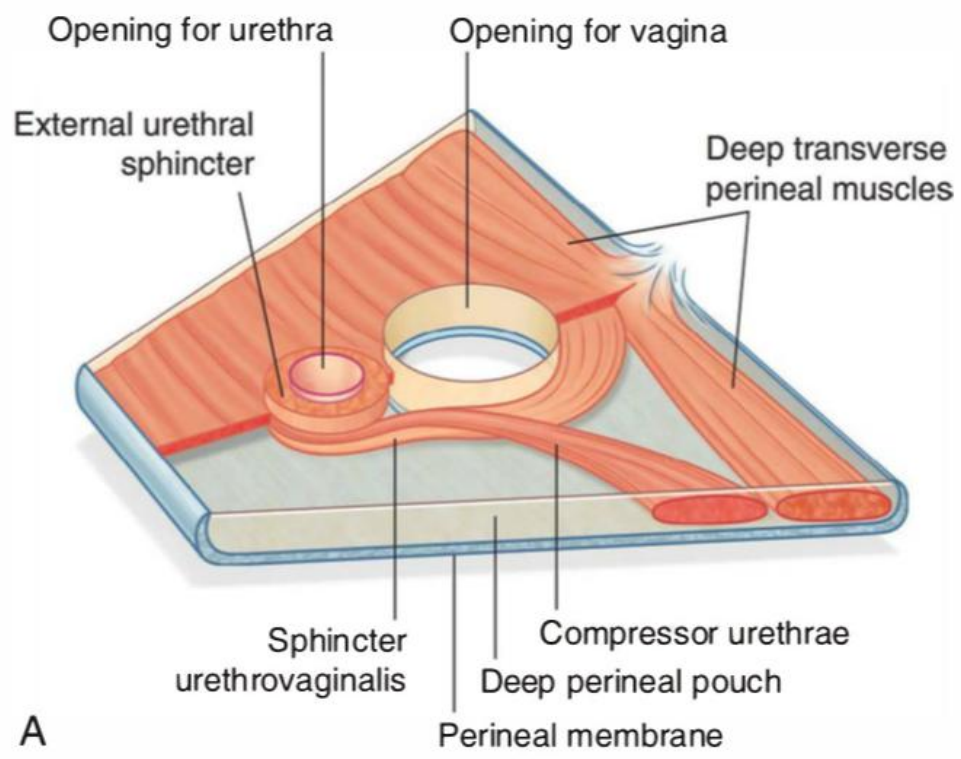


D. Other structures

Membranous urethra

Bulbo-urethral glands
in male

Vagina in female



CONTENTS OF DEEP PERINEAL POUCH

In Males

- Intermediate part of the urethra
- External urethral sphincter muscles
- Bulbourethral glands
- Deep transverse perineal muscles
- Related vessels and nerves

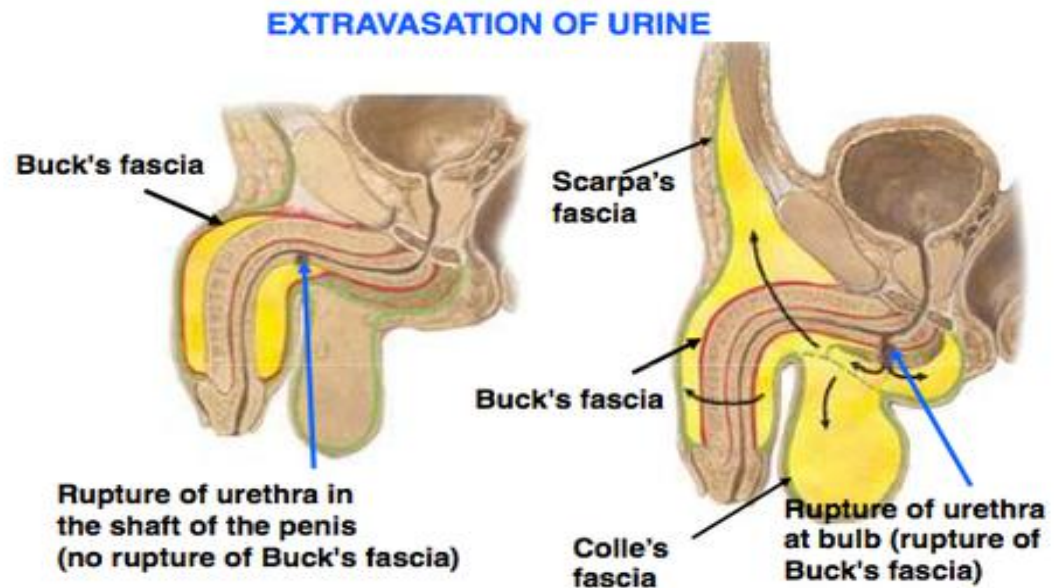
In Females

- Proximal part of the urethra
- External urethral sphincter muscles
- Deep transverse perineal muscles
- Related vessels and nerves

APPLIED ANATOMY

Urethral rupture: commonest site is rupture of proximal spongy urethra below perineal membrane.

Mode of injury : perineal structure crushed between inferior pubic ramus and any hard object like crossbar of bicycle



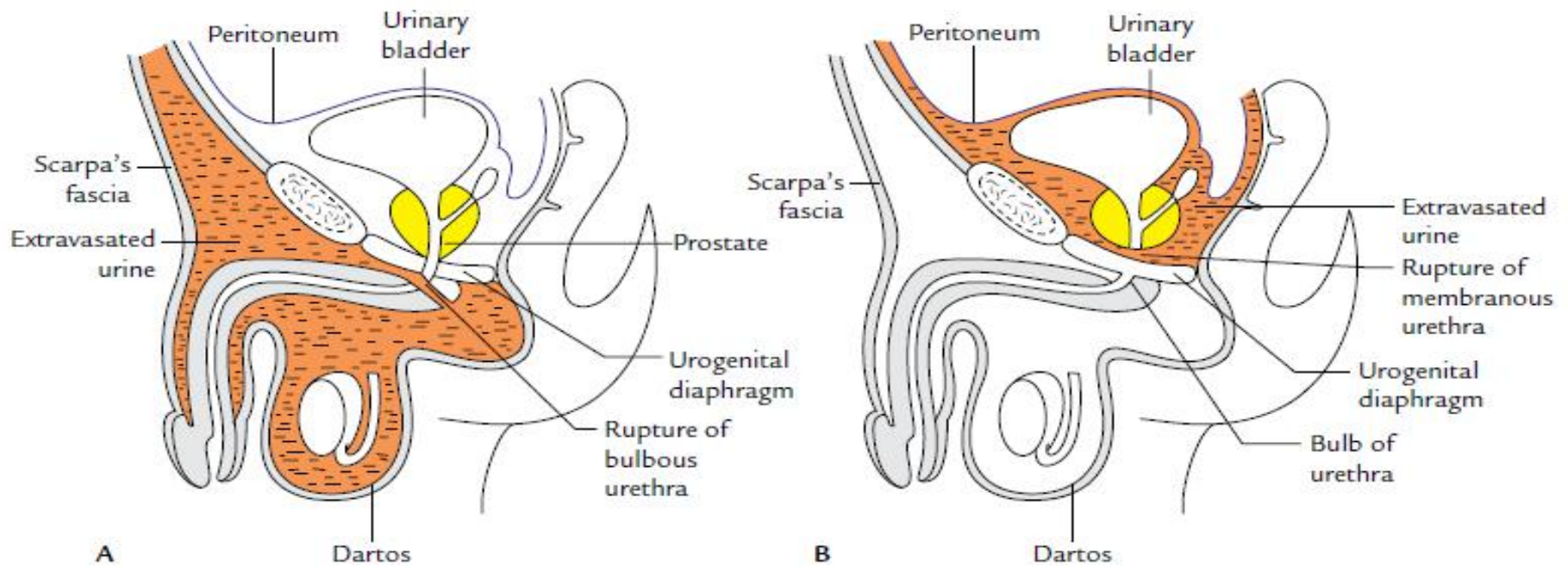


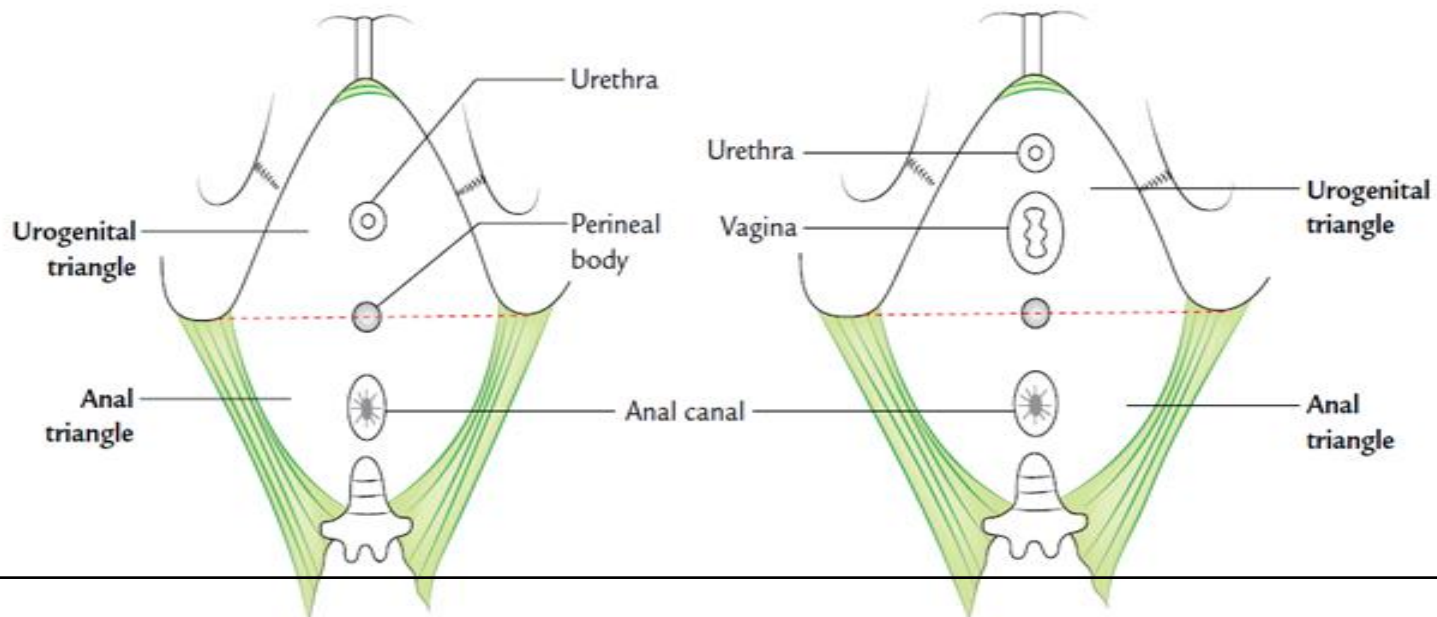
Fig. 16.14 Rupture of urethra: A, rupture of the bulbous urethra leading to superficial extravasation; B, rupture of the urethra above the urogenital diaphragm leading to deep extravasation. The orange coloured areas represent the extravasated of urine.

A. In superficial extravasation of urine, Urine escapes through the rupture into the superficial perineal pouch, descends into the scrotum, around penis and upto the anterior abdominal wall.

May even reach axilla but never enter thigh due to fusion of fascia scarpa and fascia lata just below inguinal ligament.

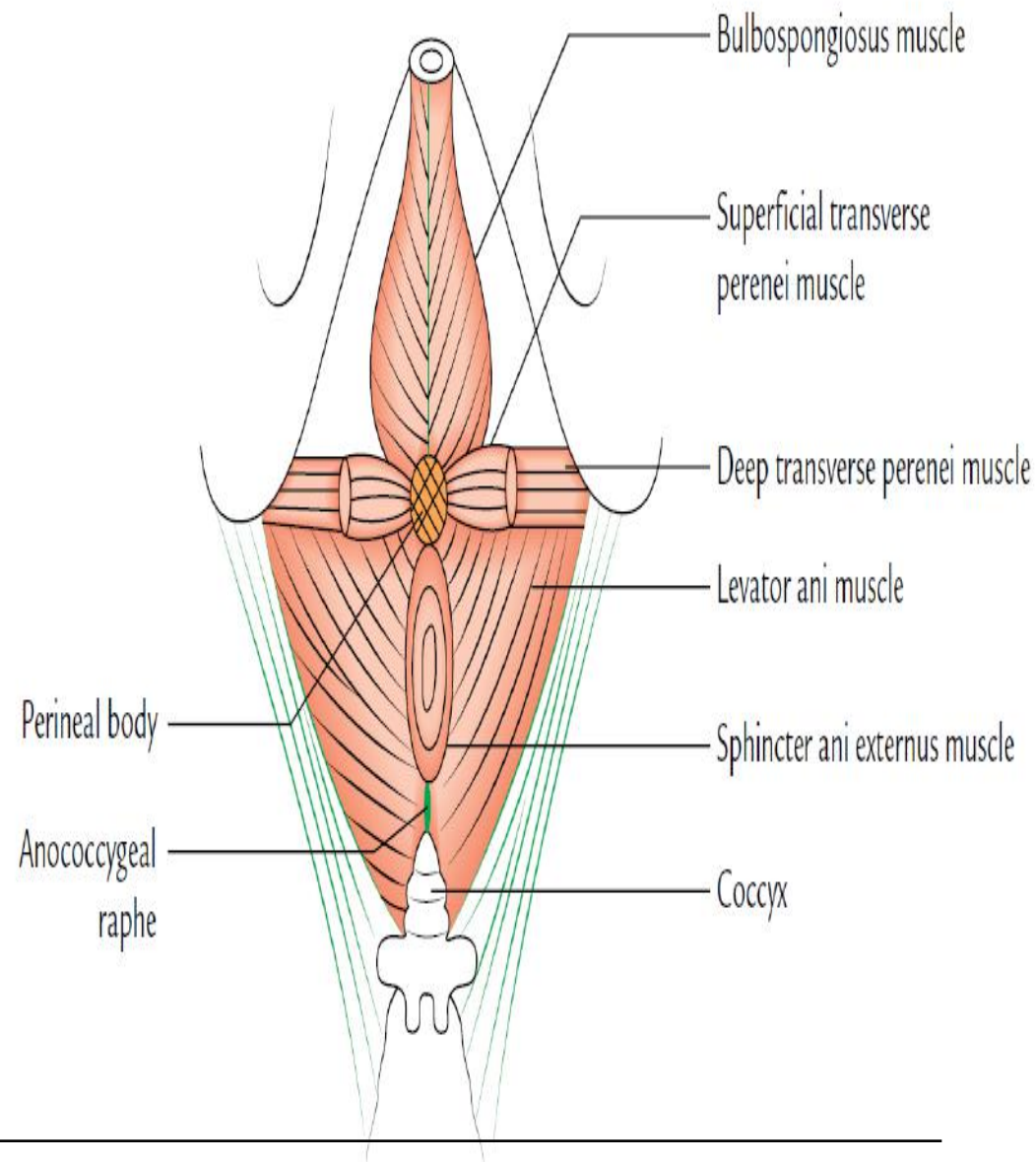
PERINEAL BODY

- The midpoint of the line joining the ischial tuberosities is the central point of the perineum.
- This is the location of the perineal body, which is an irregular mass, variable in size and consistency and containing collagenous and elastic fibers and both skeletal and smooth muscle.
- The perineal body lies deep to the skin, with relatively little overlying subcutaneous tissue, posterior to the vestibule or bulb of the penis and anterior to the anus and anal canal.



PERINEAL BODY

- The perineal body is the site of convergence and interlacing of fibers of several muscles, including the:
 - **Bulbospongiosus.**
 - **External anal sphincter.**
 - **Superficial and deep transverse perineal muscles.**
 - **Smooth and voluntary slips of muscle from the external anal sphincter, levator ani, and muscular coats of the rectum.**
- Anteriorly, the perineal body blends with the posterior border of the perineal membrane and superiorly with the rectovesical or rectovaginal septum



This anatomical diagram illustrates the male reproductive and digestive systems in the perineal region. The diagram shows the bladder, prostate, and ureters on the left, and the rectum and anal canal on the right. The urogenital diaphragm is shown as a horizontal line separating the two systems. The bulb of the penis is shown below the urogenital diaphragm, and the penile urethra is shown passing through it. The perineal body is shown as a small, oval-shaped structure between the bulb of the penis and the anal canal. The anal valves are shown as small, dark spots at the entrance of the anal canal. The anococcygeal body is shown as a small, green, oval-shaped structure between the anal canal and the coccyx. The puborectalis muscle is shown as a large, pink, oval-shaped structure surrounding the rectum. The external urethral orifice is shown as a small, circular opening at the end of the penile urethra. The prepuce is shown as a fold of skin covering the external urethral orifice. The fossa terminalis is shown as a small, circular depression between the prepuce and the external urethral orifice. The diagram is labeled with various anatomical structures, including the bladder, prostate, ureters, rectum, anal canal, anal valves, perineal body, bulb of penis, penile urethra, urogenital diaphragm, anococcygeal body, puborectalis, prepuce, fossa terminalis, and external urethral orifice.

bladder

prostate

puborectalis

anococcygeal body

anal canal

anal valves

perineal body

bulb of penis

urogenital diaphragm

penile urethra

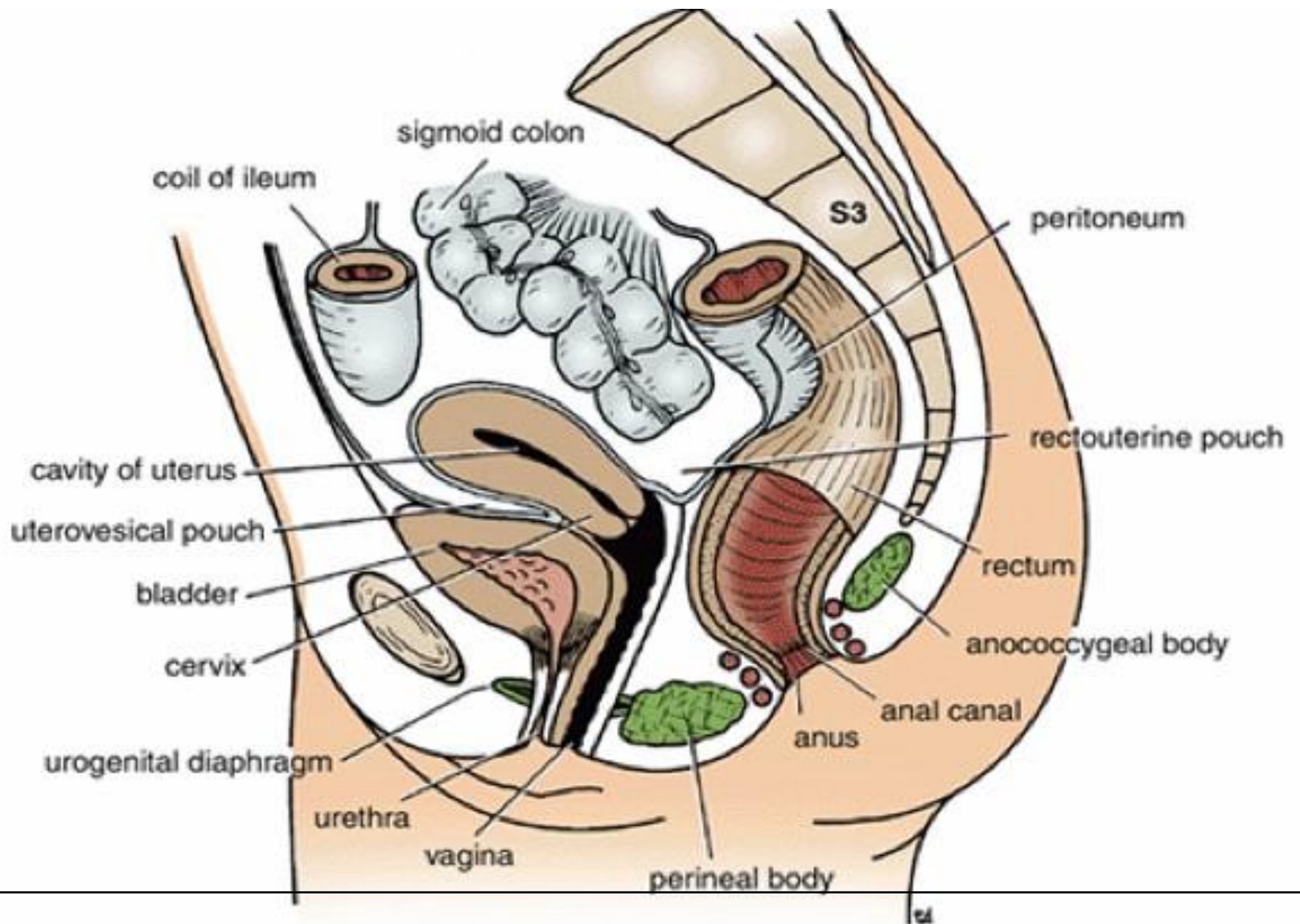
body of penis

prepuce

fossa terminalis

external urethral orifice

In Females



Disruption of the Perineal Body

- The perineal body is an especially important structure in women because it is the final support of the pelvic viscera, linking muscles that extend across the pelvic outlet, like crossing beams supporting the overlying pelvic diaphragm.
- Stretching or tearing the attachments of perineal muscles from the perineal body can occur during childbirth, removing support from the pelvic floor.
- As a result, prolapse of pelvic viscera, including prolapse of the bladder (through the urethra) and prolapse of the uterus and/or vagina (through the vaginal orifice) may occur.

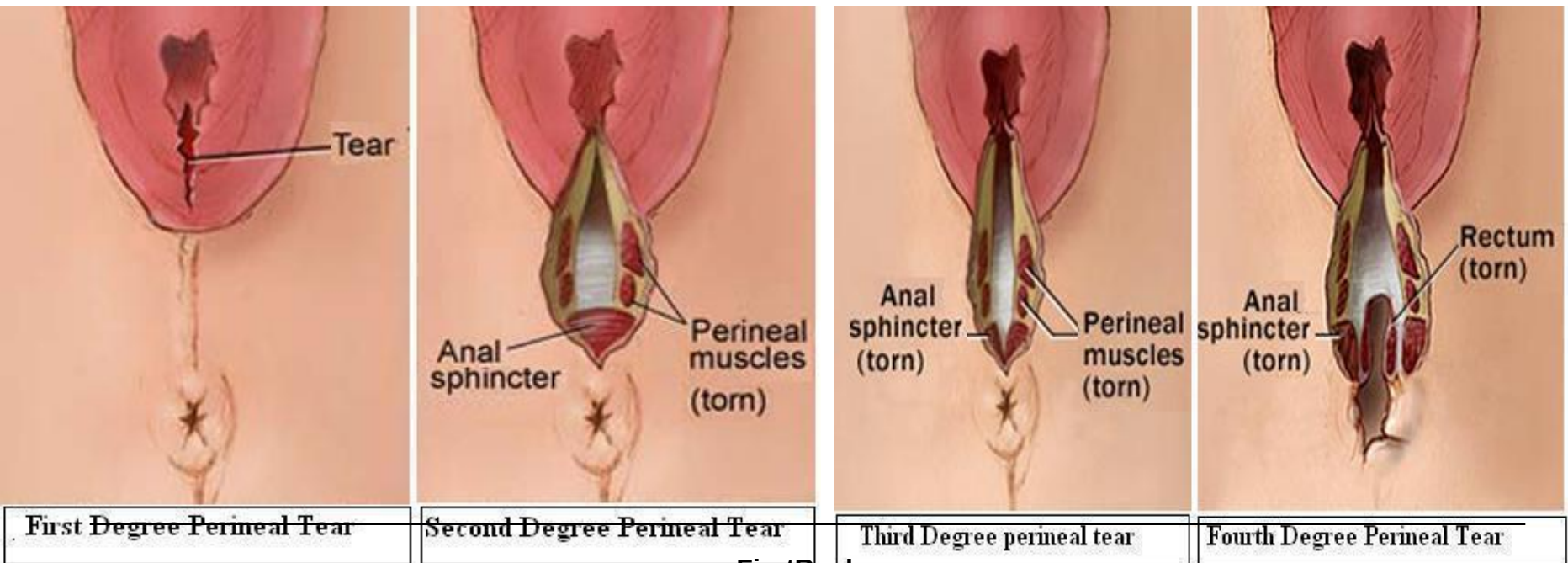
APPLIED ANATOMY

Perineal tear:

Commonly during parturition of nullipara wome

Perineal tear if not repaired cause prolapse

Prevented by using Episiotomy.



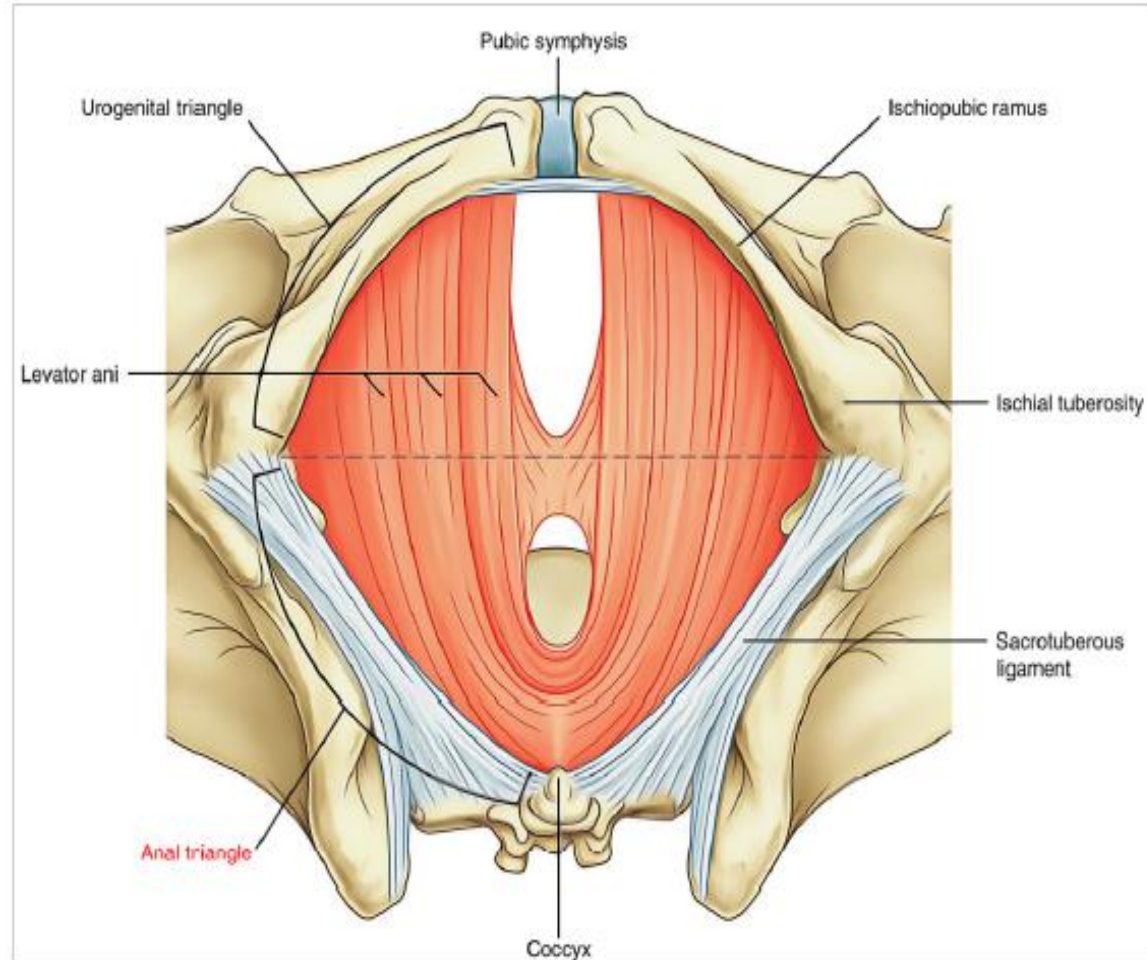
Anal triangle(Posterior Perineum)

Posterior part of
perineum

Boundaries:

Anteriorly: imaginary
line joining two ischial
Tuberosities.

POSTEROLATERALLY:
sacrotuberous
ligament



Ischioanal (ischiorectal) fossa:

A perineal space on both side of anal canal.

Wedge shaped with apex directed upwards.

Lateral wall vertical and medial wall sloping downward and medially.

Fat filled: allows expansion of rectum and anal canal during defecation.



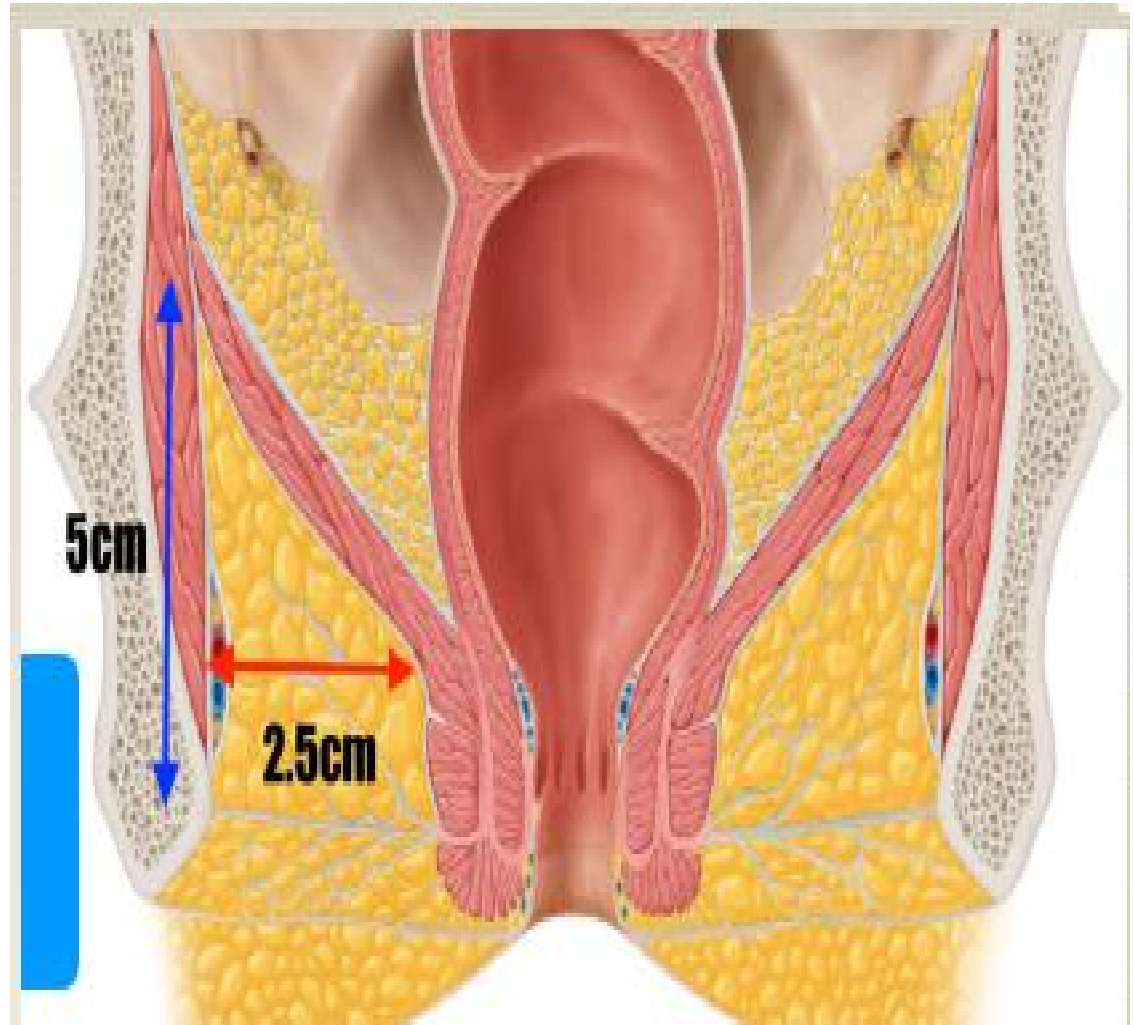
Ischioanal (ischiorectal) fossa:

Measurements:

Vertical- 5cm

Anteroposterior- 5cm

Transverse- 2.5cm



Ischioanal (ischiorectal) fossa:

Boundaries

Laterally : obturator internus and its fascia & ischial tuberosity

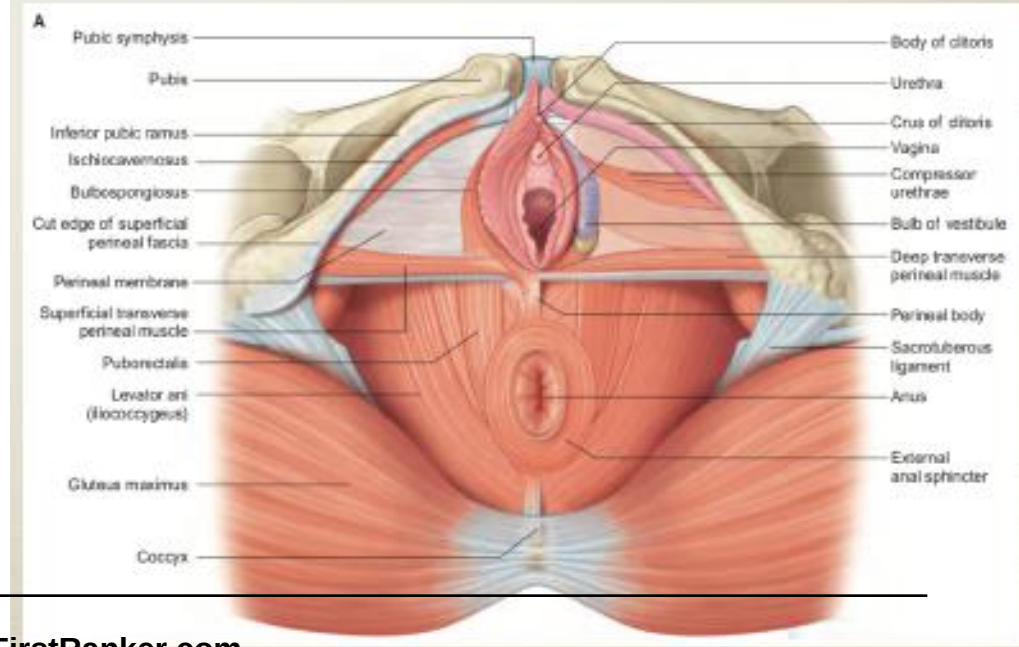
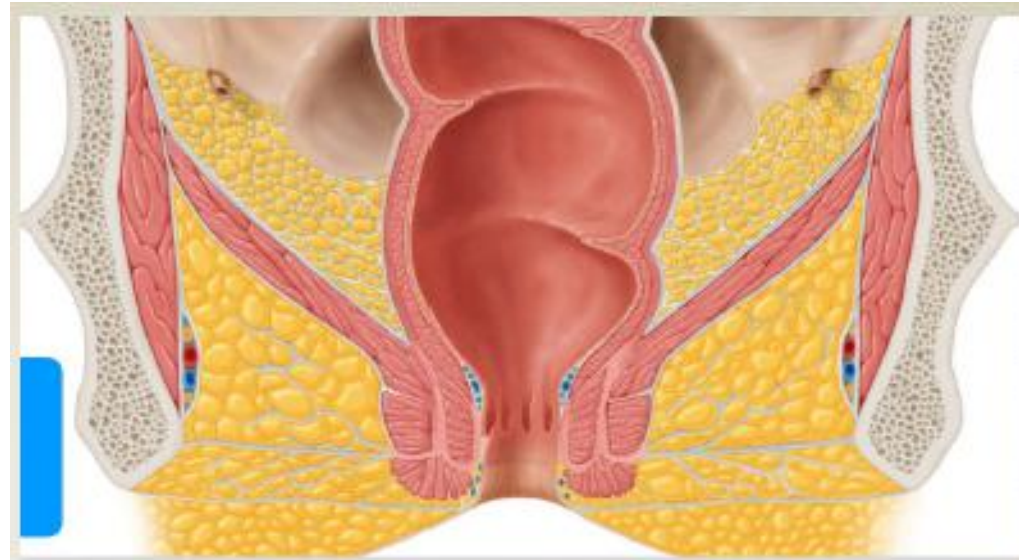
Medially: levator ani covered by anal fascia & external anal sphincter

Anteriorly: superficial and deep transverse perineal muscles.

Posteriorly: sacrotuberous ligament covered by Gluteus Maximus

Apex: fusion of obturator and anal fascia

Base: skin and superficial fascia



Ischioanal (ischiorectal) fossa:

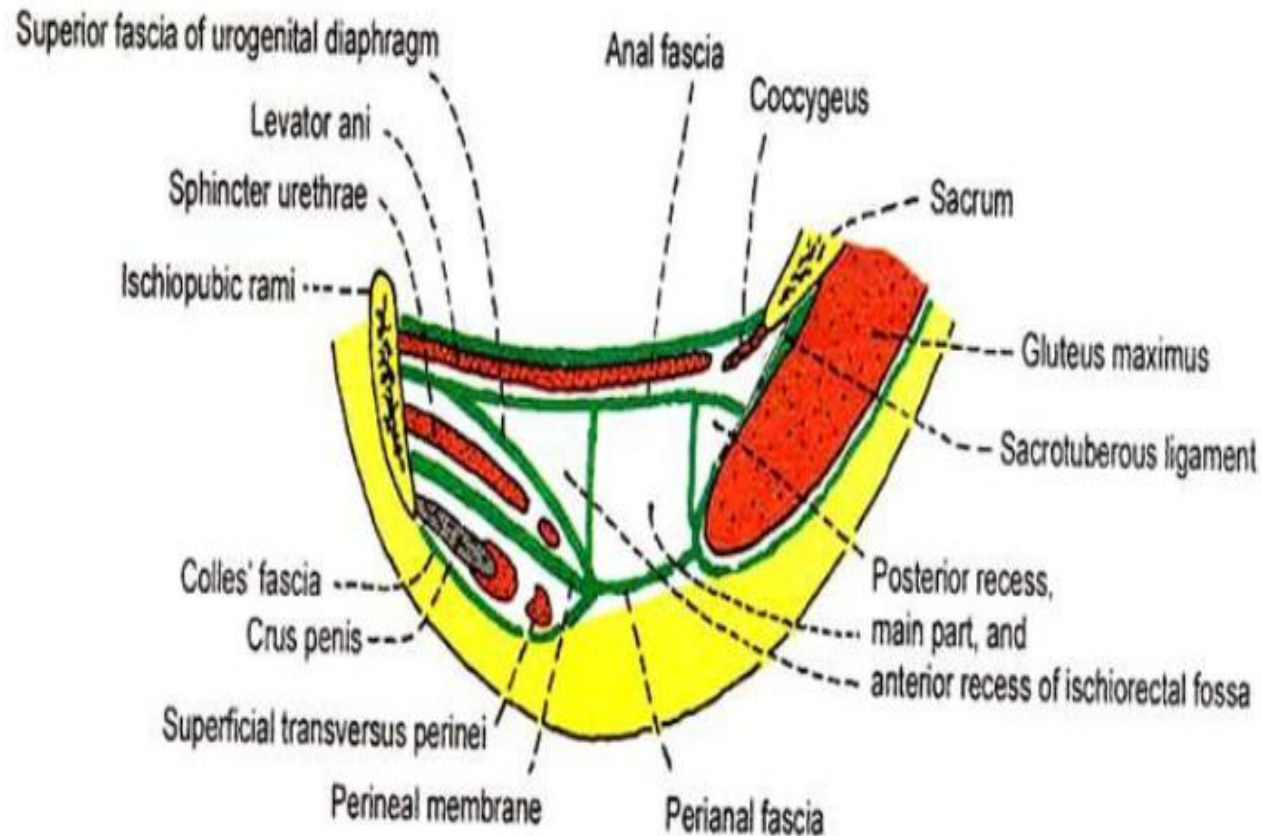
Recesses:

Anterior recess:

anterior extension above the urogenital diaphragm.

Posterior recess:

posterior extension between sacrotuberous and sacrospinous ligament



Parasagittal section through the ischioanal fossa, showing its recesses

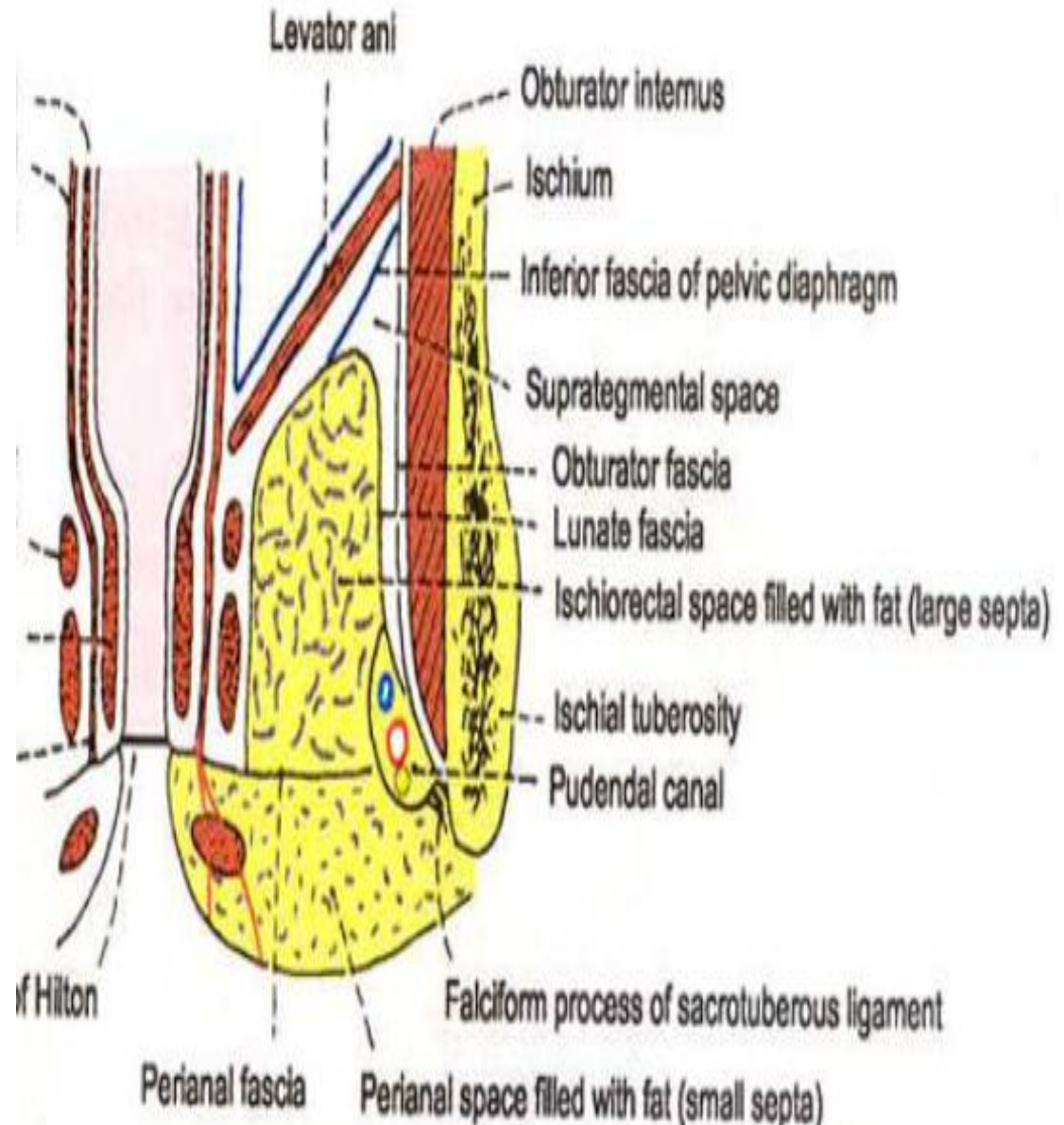
Ischioanal (ischiorectal) fossa:

Lunate fascia:

Arched fascia in ischiorectal fossa.

Starts from the periosteum of ischial tuberosity makes medial wall of pudendal canal, lines obturator fascia goes towards apex and lines anal fascia blends with it at the level of white line of Hilton.

Summit of this fascia called **tegmenum**.



Ischioanal (ischiorectal) fossa:

Pudendal or Alcock's canal:

Fascial tunnel in lateral wall of ischiorectal fossa 2.5cm above ischial tuberosity.

Formed either by splitting of obturator fascia or by separation between lunate and obturator fascia or by splitting of perianal fascia.

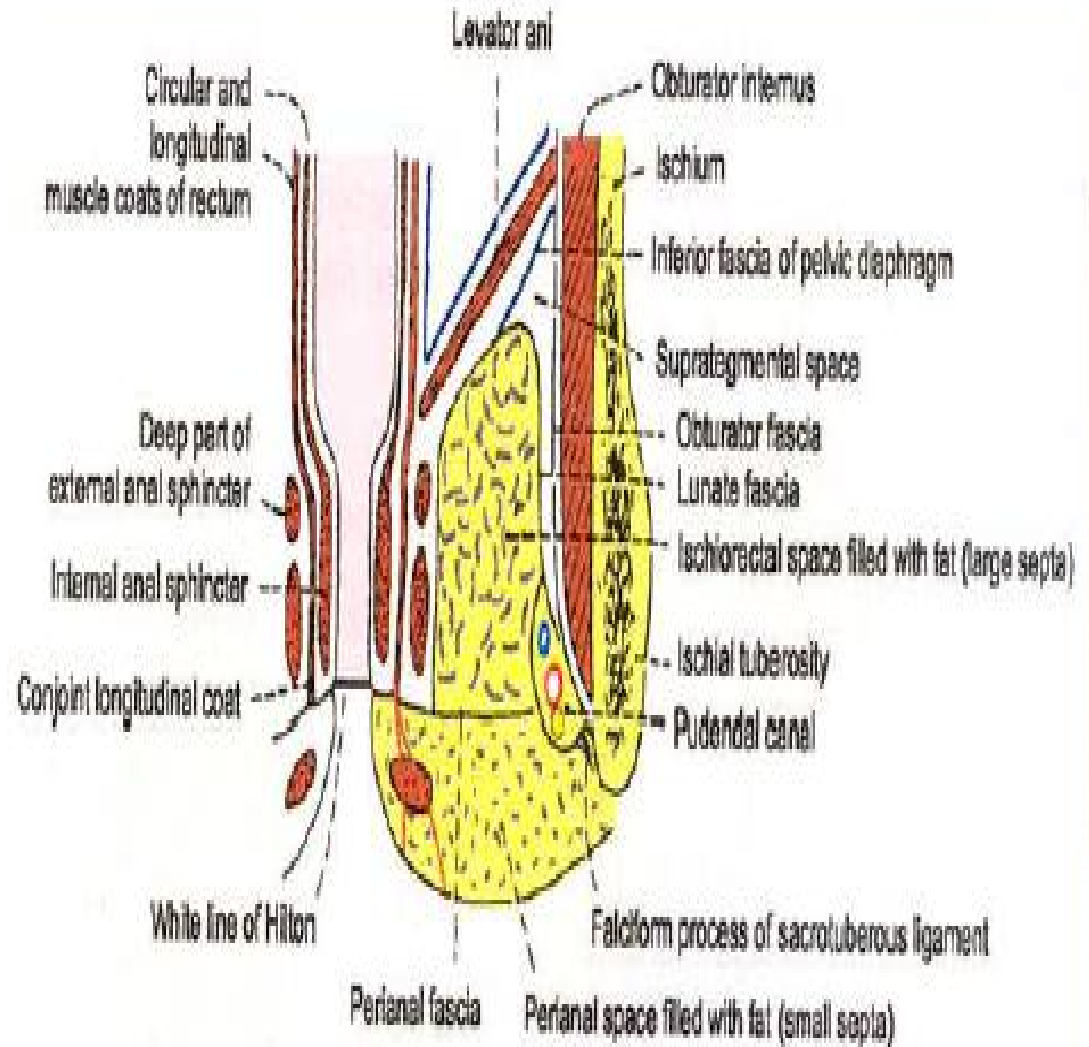


Fig. 28.7: Coronal section through the ischioanal fossa.