

PERINEUM PART II

In this lecture, we will discuss the (1) pudendal canal (2) pudendal nerve (3) pudendal artery (4) ischiorectal fossa. Also, we will go over the superficial and deep perineal pouches.

Again, focus on the diagrams and pictures drawn in this lecture

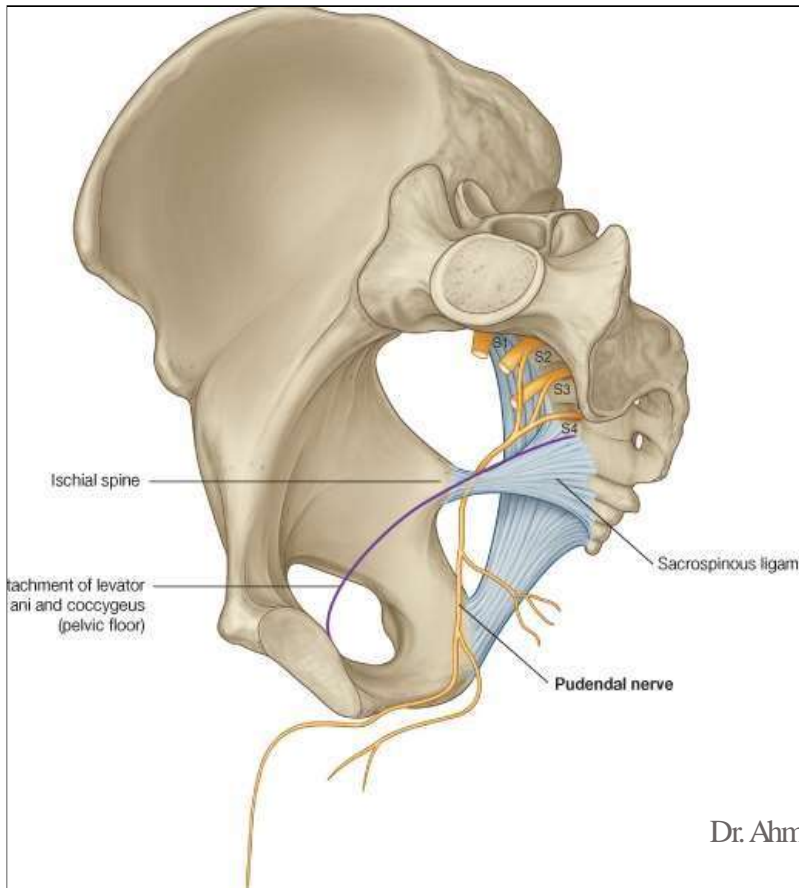
Edited by : Dana Hamo

Pudendal canal

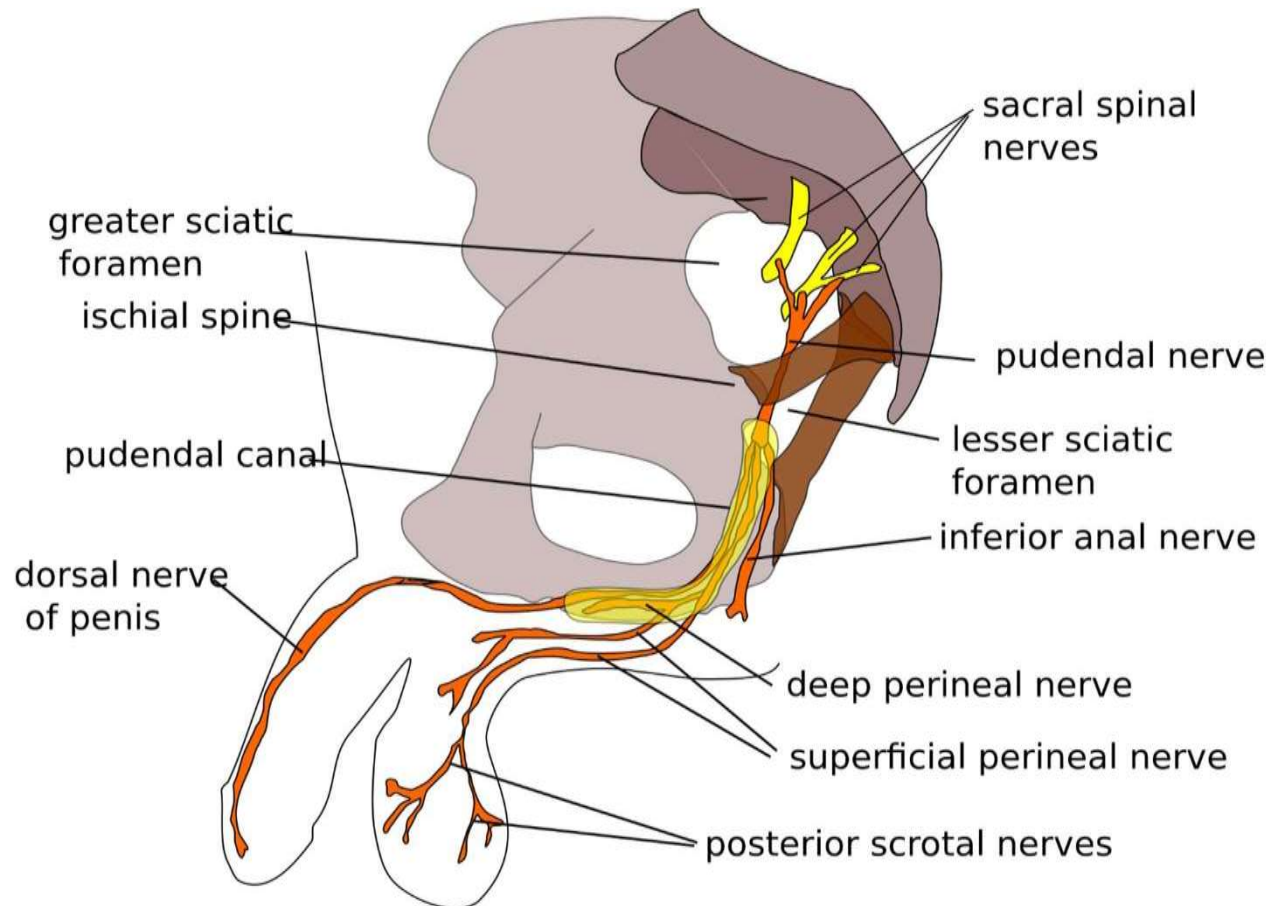
Location : Fascial canal (**space**) in lower part of the **lateral wall of ischiorectal fossa**

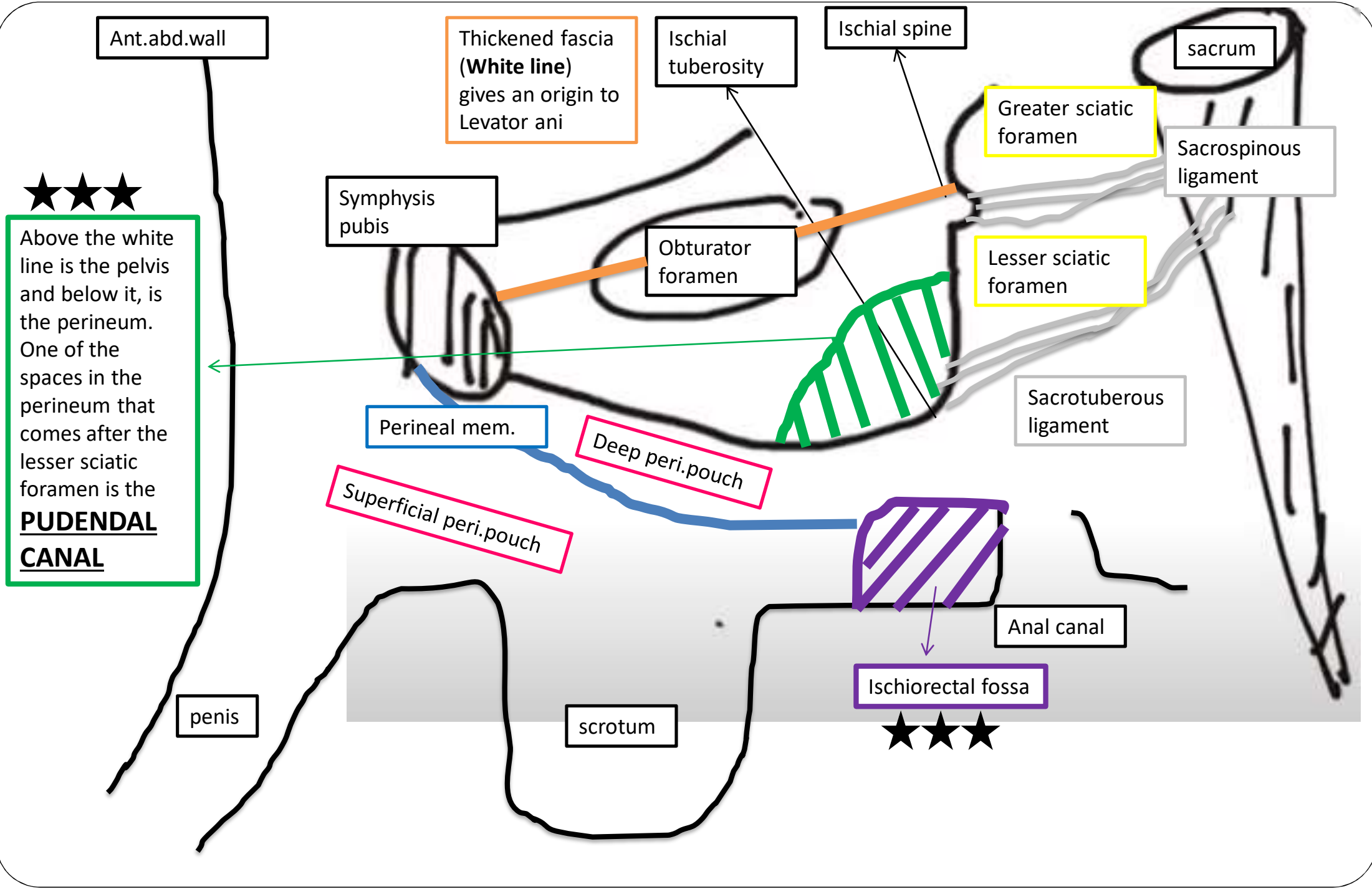
Extend: From the lesser sciatic foramen **to the posterior border of the perineal membrane.**

Contents: 1- pudendal nerve 2- Internal pudendal vessels



Dr. Ahmed S





Ant.abd.wall

Thickened fascia
(**White line**)
gives an origin to
Levator ani

Ischial
tuberosity

Ischial spine

sacrum

Greater sciatic
foramen

Sacrospinous
ligament

Symphysis
pubis

Obturator
foramen

Lesser sciatic
foramen

★★★
Above the white
line is the pelvis
and below it,
is the perineum.
One of the
spaces in the
perineum that
comes after the
lesser sciatic
foramen is the
**PUDENDAL
CANAL**

Sacrotuberous
ligament

Perineal mem.

Deep peri.pouch

Superficial peri.pouch

Anal canal

penis

scrotum

Ischioanal fossa

★★★

Pudenda Nerve :

It is the *somatic* nerve of the *perineum* and external genitalia.

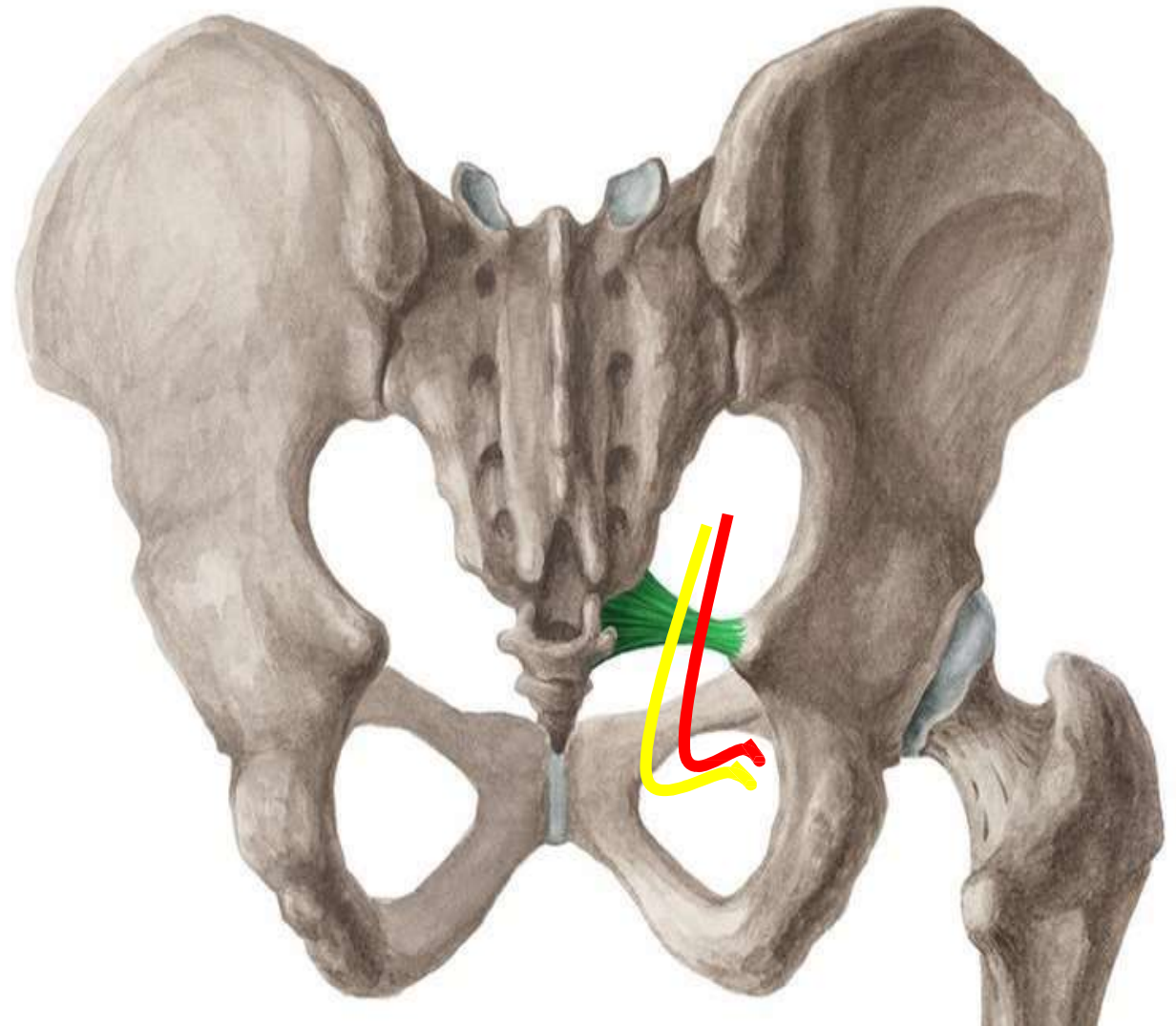
It arises from the sacral plexus; S2,3,4

Refer to slide 7
for more
clarification

Course and Relations :

- The nerve leaves the pelvis through the greater sciatic foramen *below* the piriformis to enter the gluteal region.
- In the **gluteal region**, the nerve crosses the **sacrospinous ligament** **medial** to the internal pudendal vessels which cross the ischial spine.
- The nerve and the vessels pass through the **lesser sciatic** foramen to enter the **pudendal canal** in side wall of ischiorectal fossa.
- In the posterior part of pudendal canal, the nerve gives inferior rectal N. and then divides into 2 terminal branches which are the perineal N. and dorsal nerve of penis (or clitoris).

Pudendal nerve (Yellow) crosses the **sacrospinous ligament *medial*** to the internal pudendal Artery (RED)



Branches and Distribution :

Refer to slide 7
for more
clarification

1 Inferior rectal N. (mixed)

- **Motor** to external canal sphincter
- **Sensory** to anal canal *below* pectinate line, skin around the *anus* .

2 Perineal nerve (mixed) : it gives :

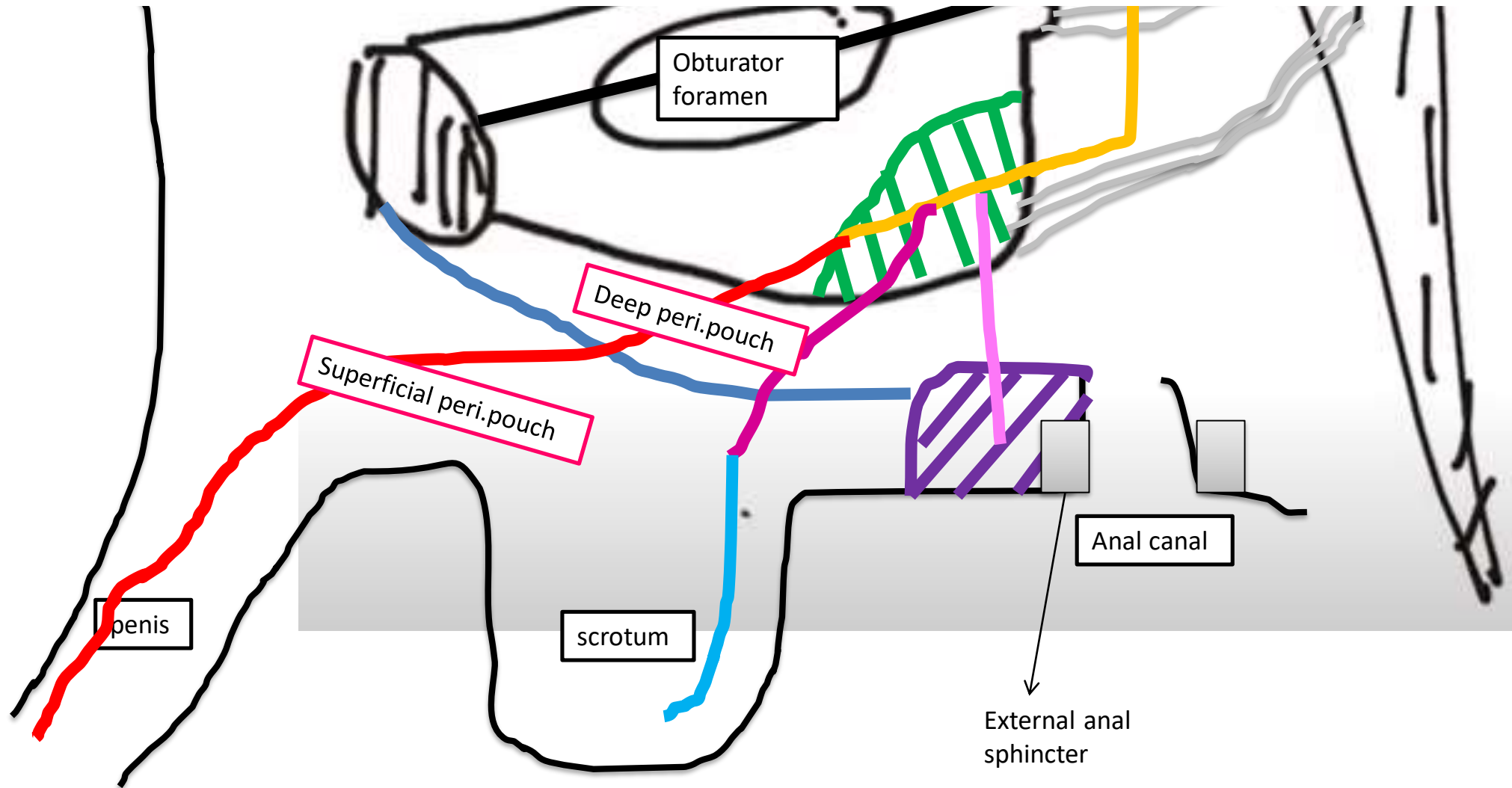
- **Motor** : to all muscles in the superficial and deep perineal pouches.
- **Sensory** : It gives 2 scrotal (labial) nerves, they pierce perineal membrane to supply posterior 2/3 of scrotum (or labium majora).

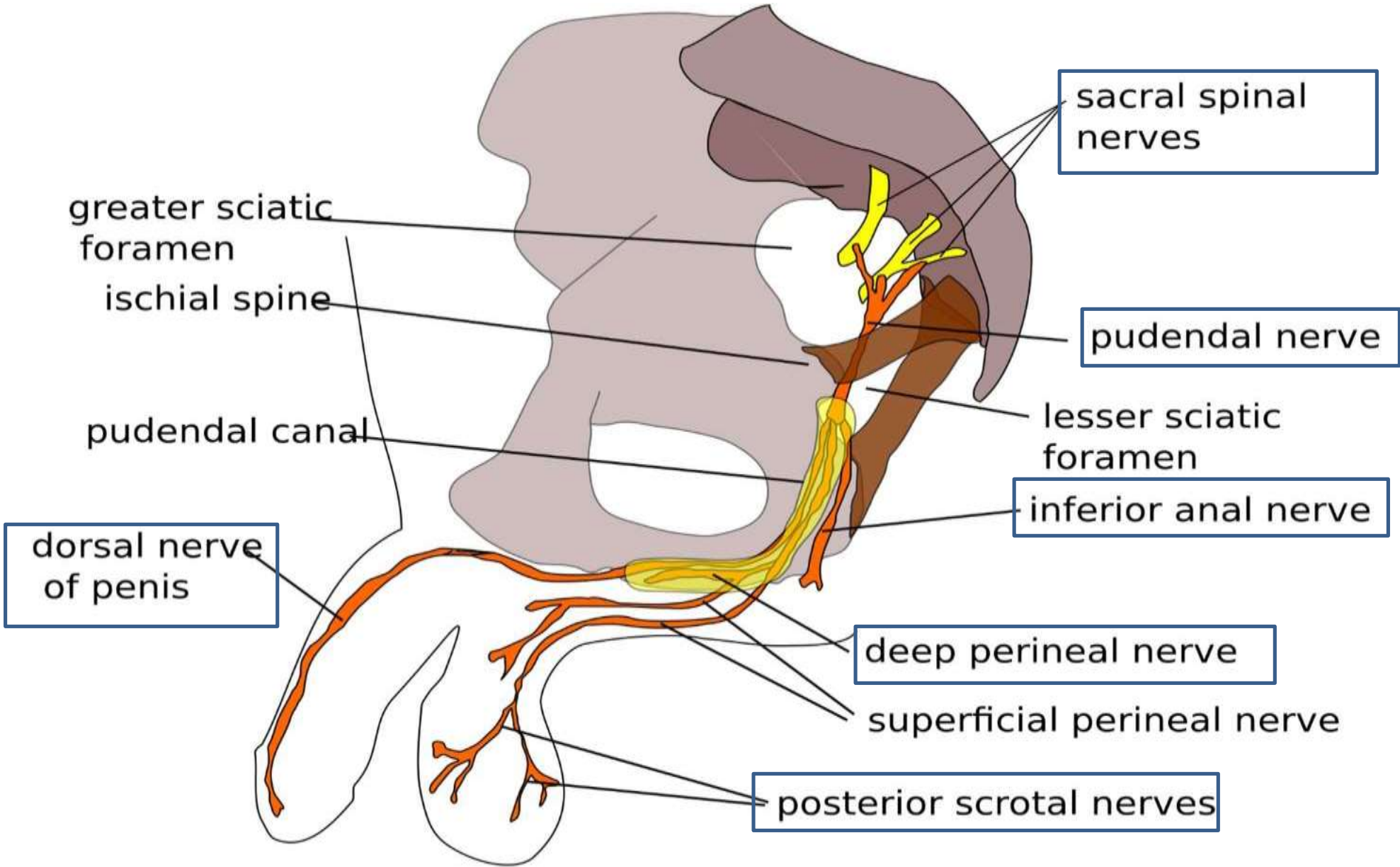
3- Dorsal nerve of penis or clitoris (sensory) :

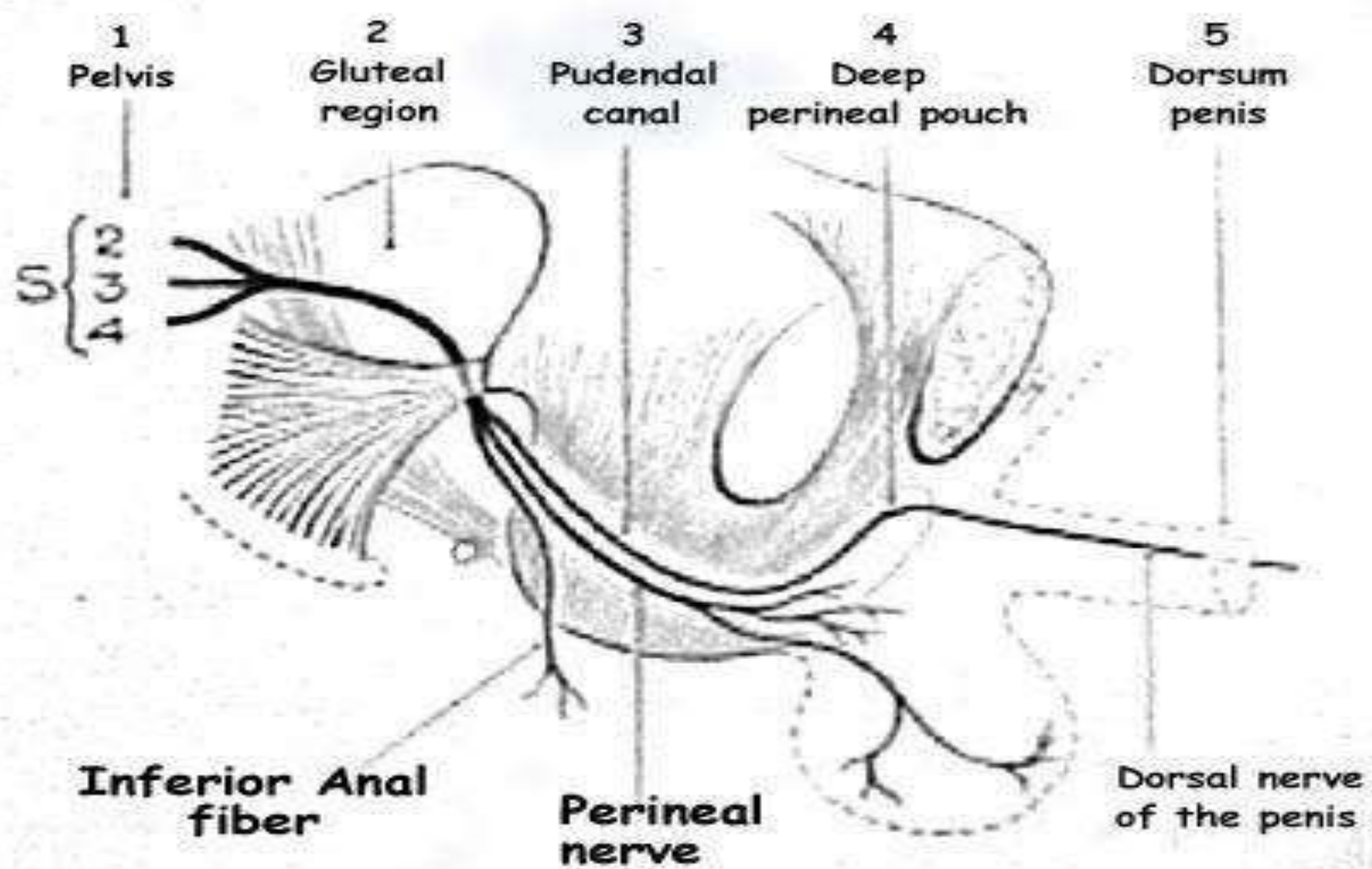
- It enters the deep perineal pouch, then pierces the perineal membrane to enter the superficial perineal pouch.
- Then it runs on dorsum of penis, supplying its skin and glans.



Sacral plexus (S2,3,4) → greater sciatic foramen → lesser sciatic foramen → pudendal canal → (1) **inferior rectal/anal nerve** which goes to the ischiorectal fossa (**SENSORY** for lower edge of the anal canal along with the surrounding skin and **MOTOR** for external anal sphincter) and (2) **perineal nerve** which gives off two branches : **MOTOR** for all the muscles in the perineum and **SENSORY** for scrotum/labial (**scrotal/labial n.**) (3) finally it gives off a nerve called the **dorsal nerve of the penis.**







Internal Pudendal Artery:

Refer to slide
13 for more
clarification

It is the artery of perineum and external genital organs.

It is one of the two terminal branches of anterior division of internal iliac artery.

Course and Relations :

- **In the pelvis** : it descends in front of sacral plexus and piriformis and leaves the pelvis (with pudendal N.) below the piriformis to enter the gluteal region.
- In **gluteal region**: The artery crosses the tip of the ischial spine and passes through the lesser sciatic foramen to enter the **pudendal canal** in side wall of ischiorectal fossa.
- **In the pudendal canal and perineum** :

At the end of the pudendal canal, it enters the **deep perineal pouch** then pierces the perineal membrane to enter the **superficial perineal pouch** to run close to the side of pubic arch

It ends by dividing into dorsal and deep arteries of the penis

Branches and Distribution :

two in the pudendal canal, **two** in the deep perineal pouch and **two** terminal in the superficial perineal pouch.

A. In the pudendal canal :

1-Inferior rectal A. : It supplies anal canal *below* the pectinate line.

2-Perineal A. : it gives

- Two scrotal (or labial) arteries to scrotum (or labia majora)
- Transverse perineal A. which anastomoses with its corresponding one .

Refer to slide
13 for more
clarification

B- In the deep perineal pouch :

3Artery of bulb : supplies bulbourethral glands and pierces perineal membrane to supply bulb of root of penis (or bulb of vestibule).

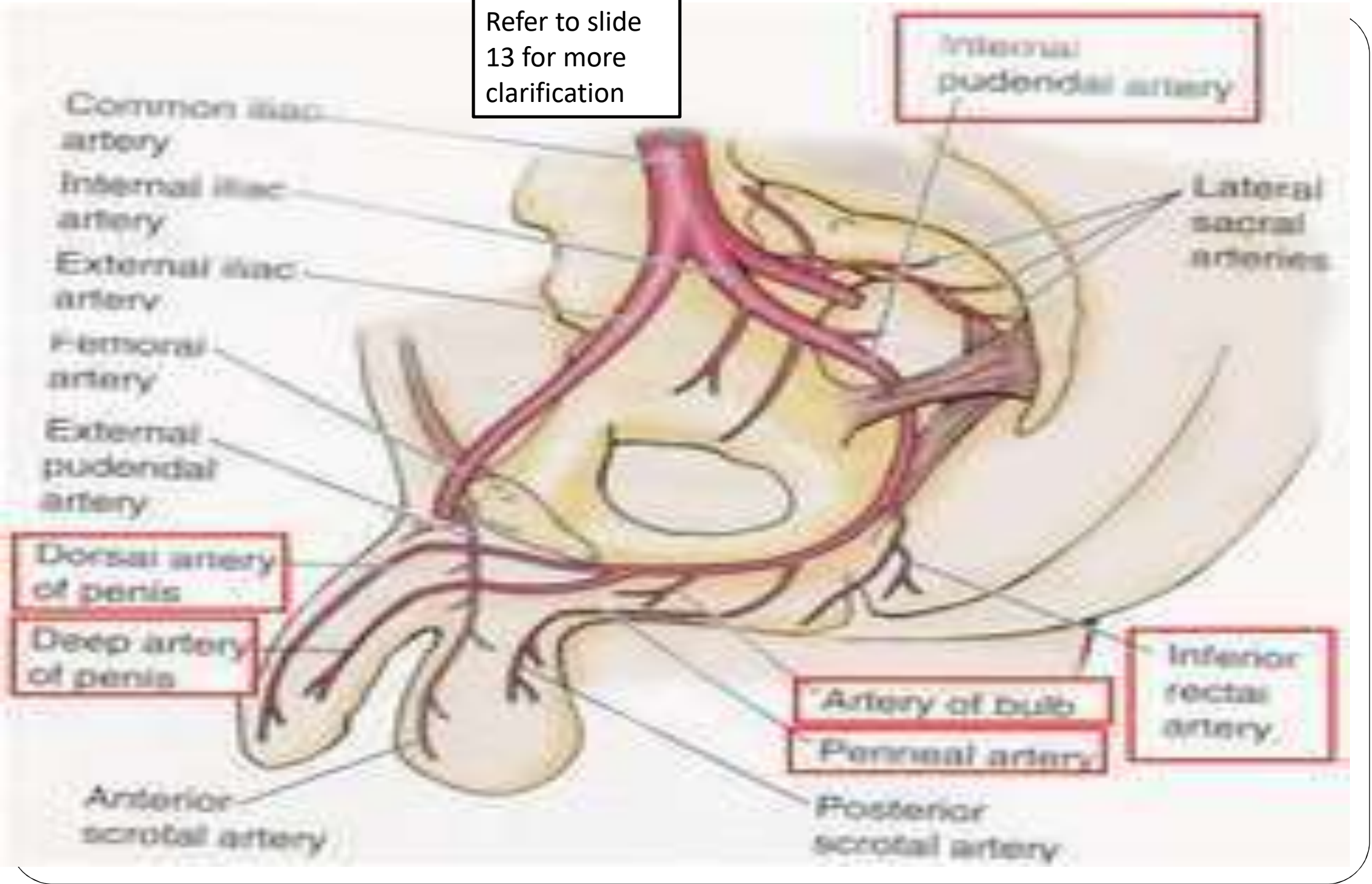
4Urethral A. : pierces perineal membrane to enter superficial perineal pouch to supply corpus spongiosum and urethra.

C-Superficial perineal pouch :

5Dorsal A. of penis : runs on dorsum of penis, supplying its skin, fascia and glans of penis.

6 Deep A. of penis : runs in corpus cavernosum, supplying its cavernous tissue.

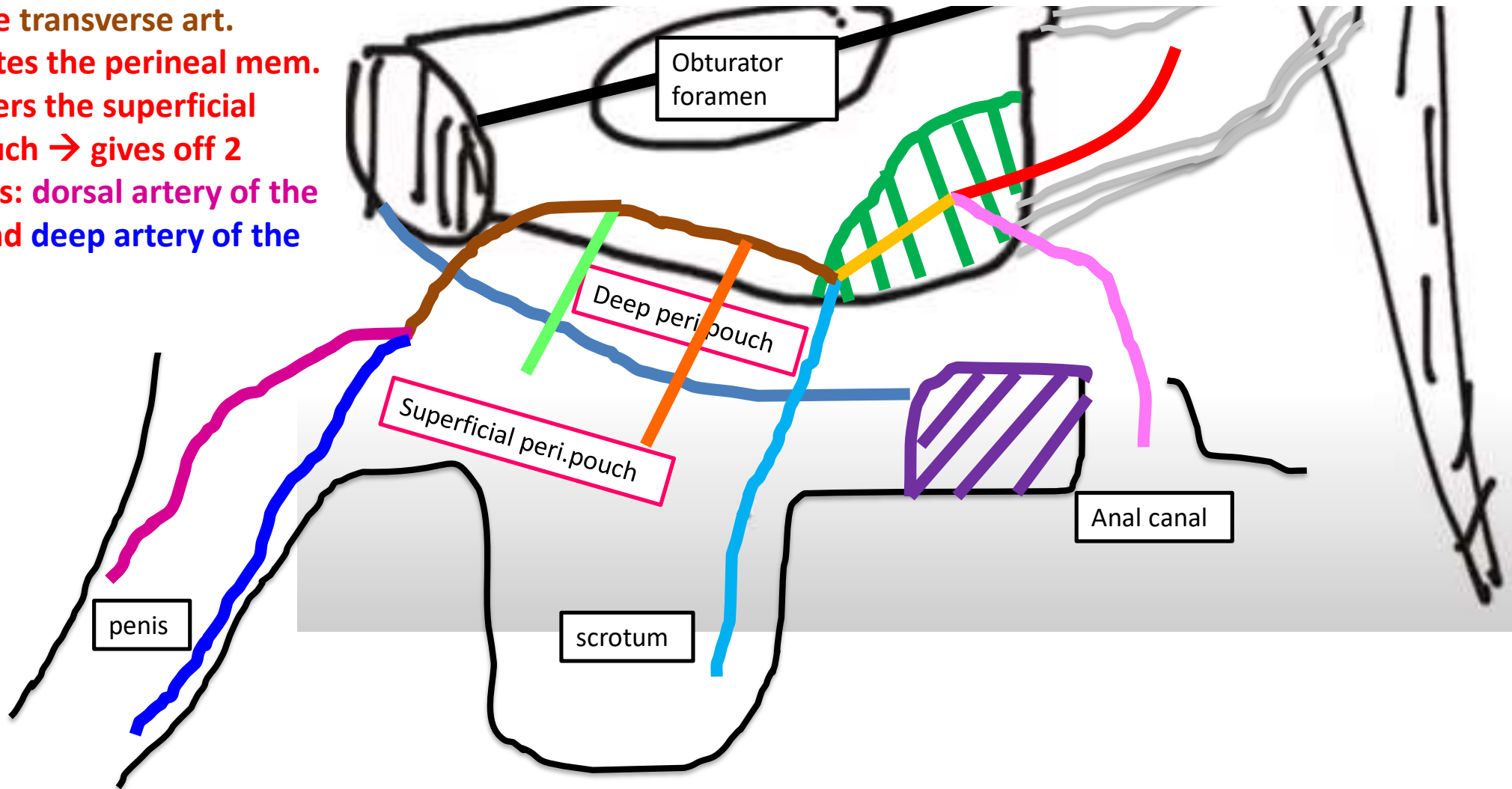
Refer to slide 13 for more clarification





Common iliac artery → internal iliac artery → **internal pudendal artery (enters pudendal canal through the lesser sciatic foramen) and gives off 2 branches: inferior rectus artery (to the rectum) and perineal artery.**
→ the **perineal artery gives off 2 branches: scrotal/labial artery and transverse artery . The transverse artery gives off 2 branches that go into the deep.peri.pouch and penetrate the perineal mem.: urethral artery and artery of the bulb.**

Then the transverse art. Penetrates the perineal mem. and enters the superficial peri.pouch → gives off 2 branches: dorsal artery of the penis and deep artery of the penis.



Internal pudendal artery

Internal pudendal nerve

Inferior rectal

Inferior rectal N

Perineal A

Perineal N

Two scrotal (or labial)

Two scrotal (or labial)

Transverse perineal A

Artery of the bulb

Urethral artery

Dorsal artery of the penis

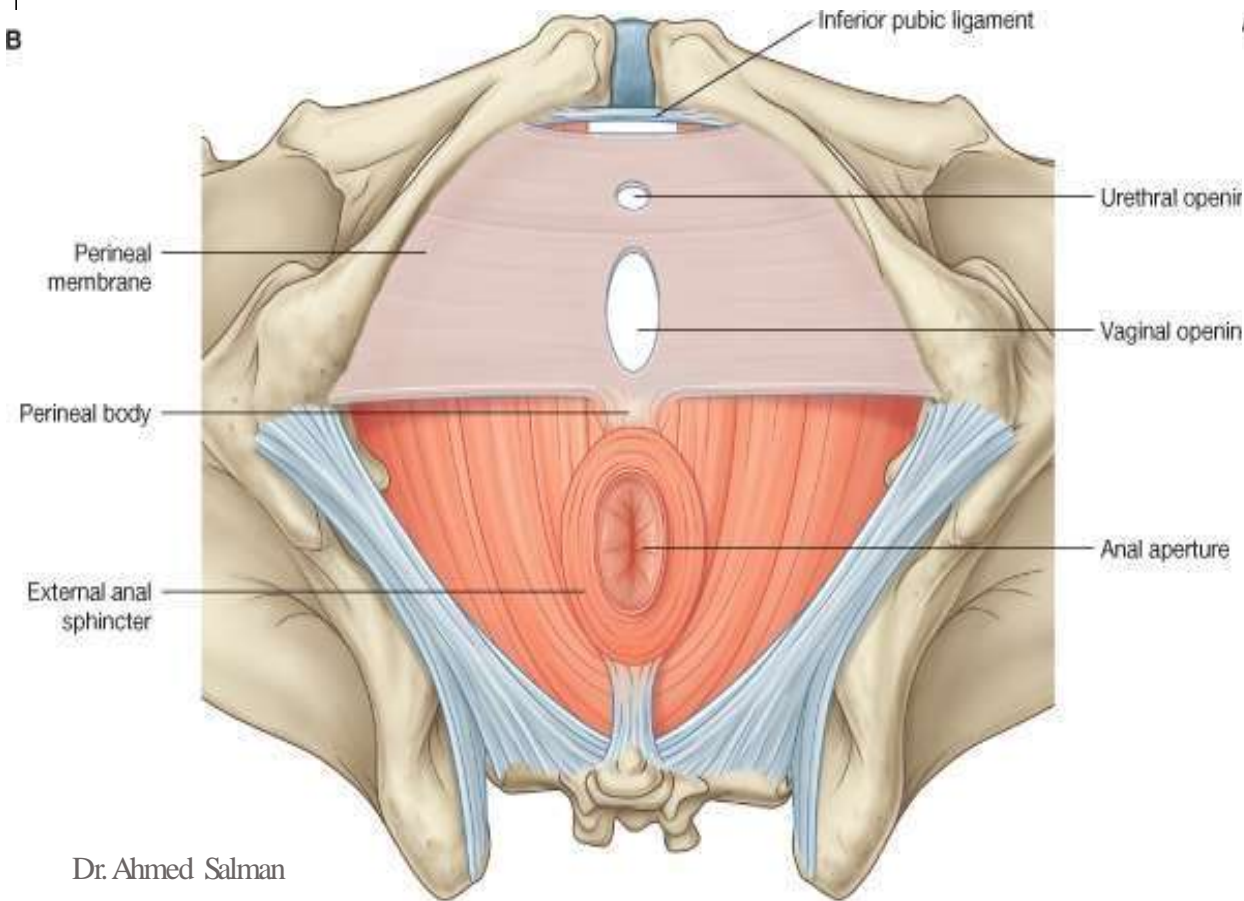
Deep artery of the penis

Dorsal nerve of penis or clitoris

Notice the
difference

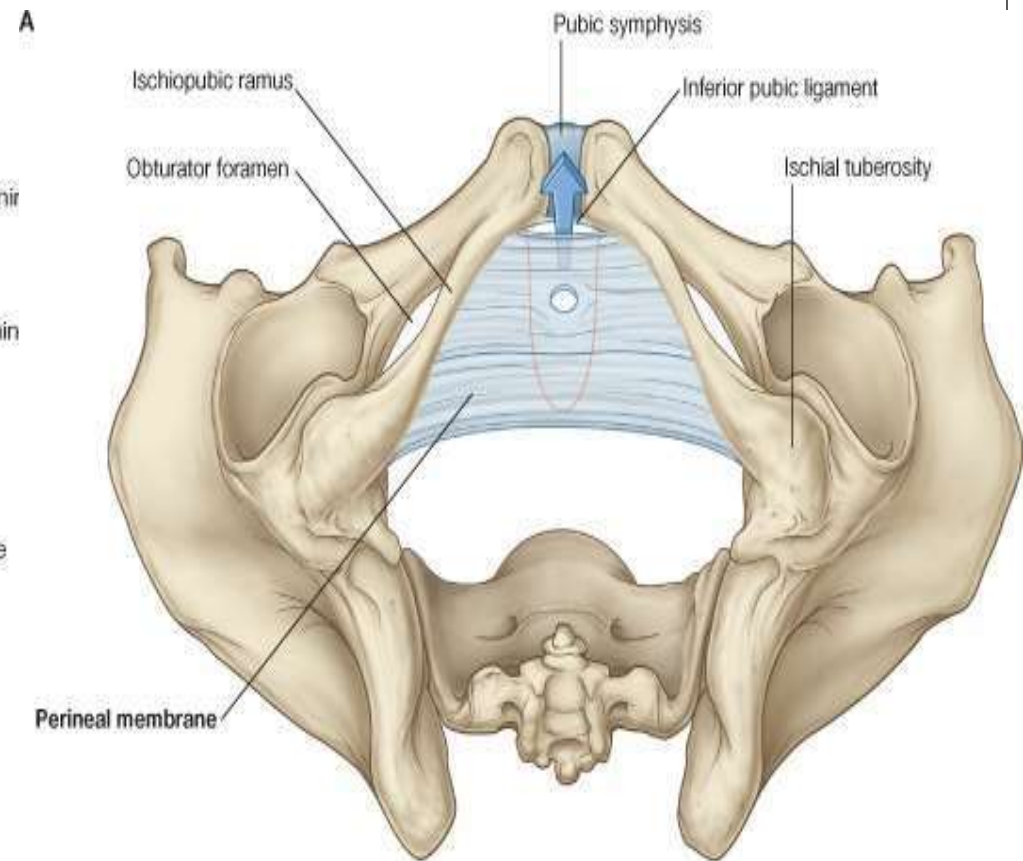
Now that we have discussed the internal pudendal nerves and arteries, we can go back again to the deep and superficial perineal pouches to discuss their contents.

Perineal pouches



Dr. Ahmed Salman

© Elsevier. Drake et al: Gray's Anatomy for Students - www.studentconsult.com



© Elsevier. Drake et al: Gray's Anatomy for Students - www.studentconsult.com

Deep Perineal pouch :

Already discussed in
lecture 10

Boundaries :

Floor : Perineal membrane (inferior fascia of urogenital diaphragm)

Roof: Inferior fascia of pelvic diaphragm (levator ani)

On either side : Obturator fascia.

Posteriorly : The pouch is closed by union of roof and floor.

Anteriorly : The pouch is closed by union of roof and floor below symphysis pubis to form the transverse perineal ligament.

The transverse perineal ligament

Is separated from the symphysis pubis by an oval opening. Through this opening

In male the deep dorsal vein of penis enters the pelvis to join the prostatic venous plexus.

In female, the deep dorsal vein of clitoris joins the vesical venous plexus

Borders of Deep perineal

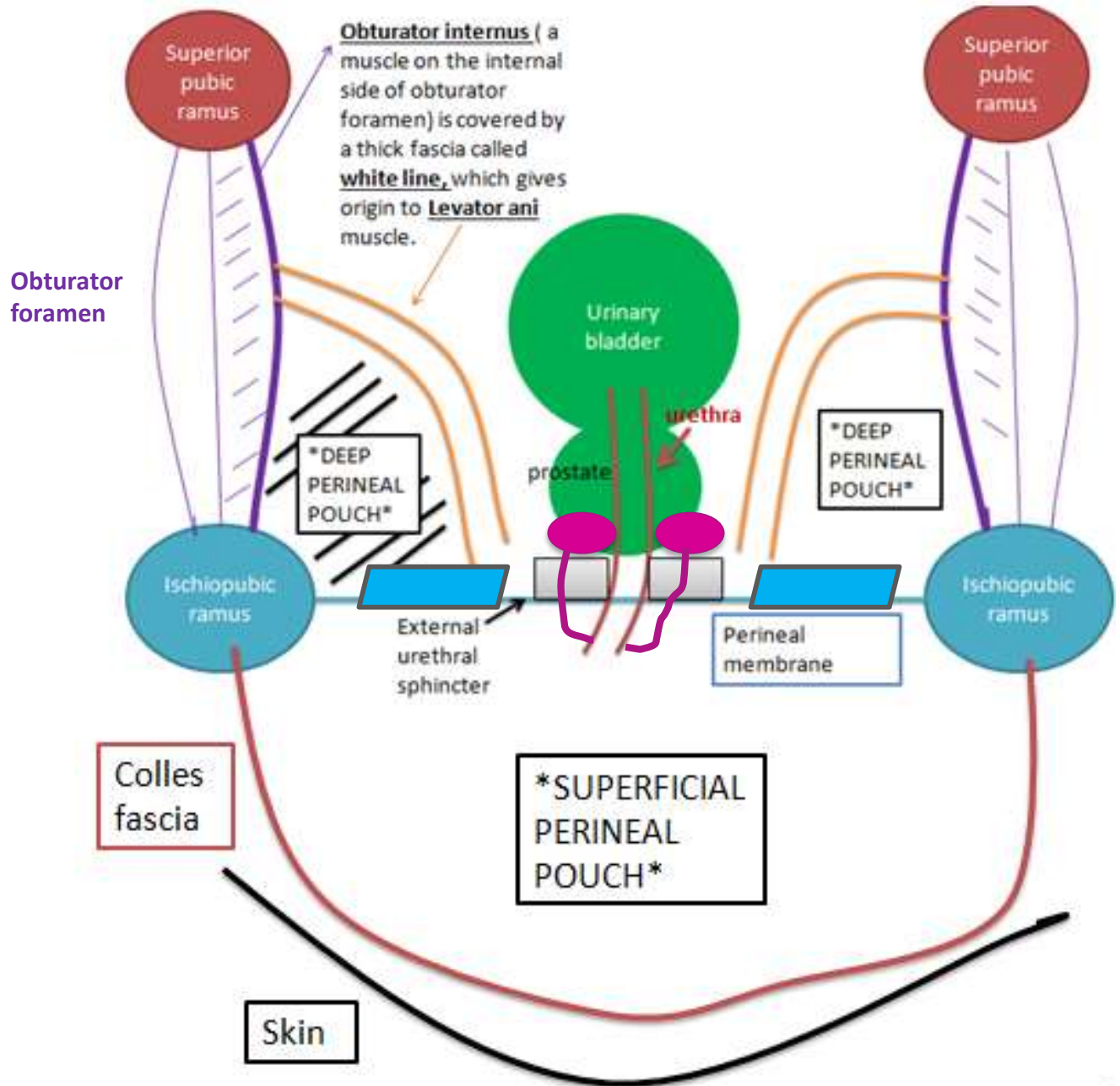
pouch :

- Floor = perineal membrane
- Roof = levator ani muscle or “fascia covering inferior surface of the pelvic diaphragm”
- Lateral = obturator fascia
- Anterior and Posterior = CLOSED
- it is a CLOSED SPACE.

CONTENTS of Deep perineal

pouch :

- membranous urethra
- **Bulbourethral gland: pierces the perineal mem. To open into the spongy urethra**
- **Arteries:** perineal artery and artery to bulb of the penis and urethral artery
- **Nerves:** perineal n. and dorsal nerve of the penis
- **Muscle:** urogenital diaphragm= 2 **muscles** (external ureth.sph. And deep transversus)



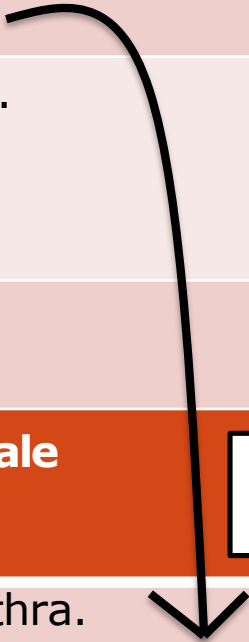
★ Contents of Deep Perineal pouch ★

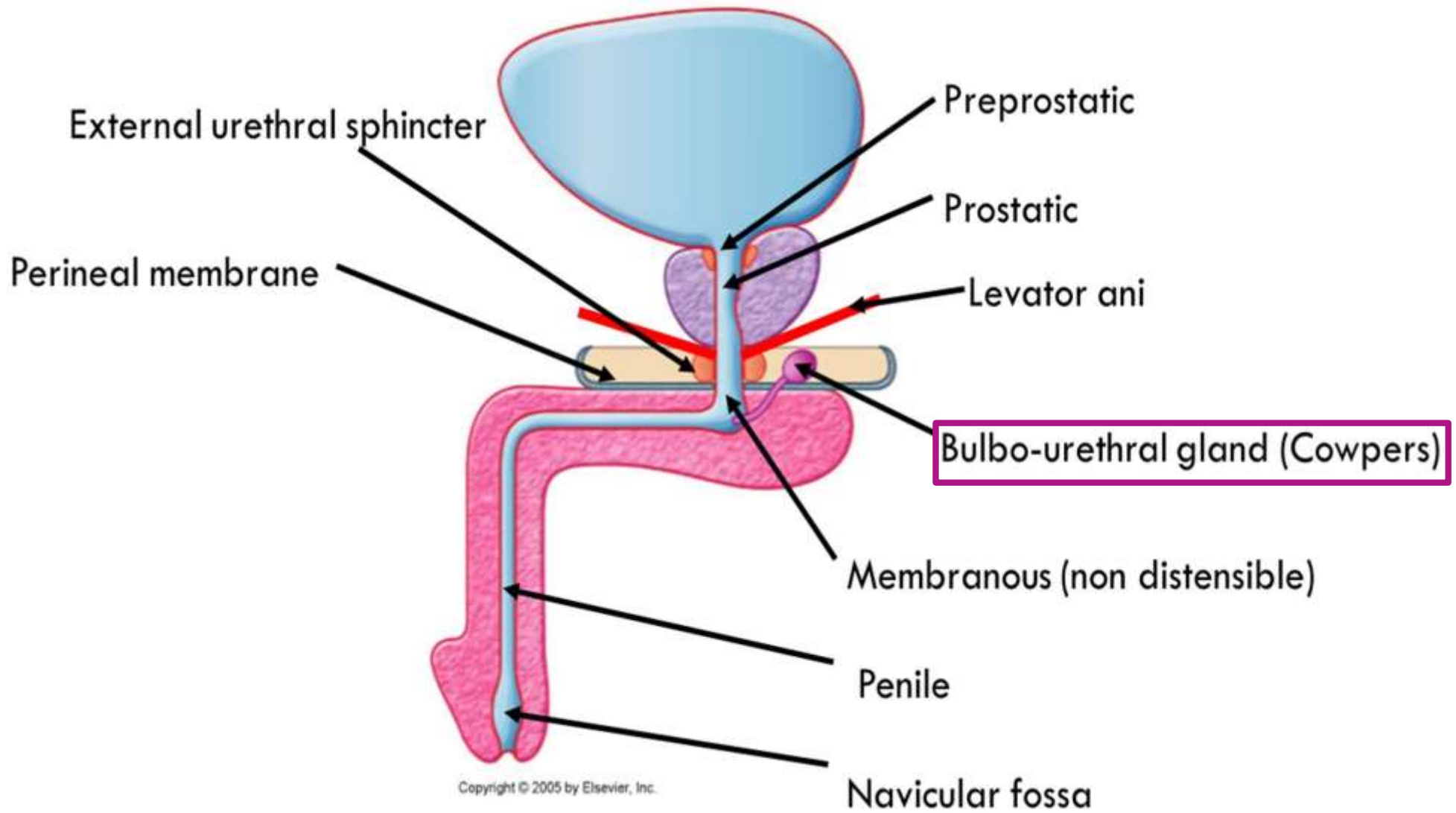
	Male	Female
Urogenital Structures	<ul style="list-style-type: none"> • Membranous urethra • Bulbourethral glands 	<ul style="list-style-type: none"> • Part of the urethra • Part of vagina (only in females)
Muscles	<ul style="list-style-type: none"> • Sphincter urethrae • Deep transverse perineal muscles <p>(These two muscles form the <i>urogenital diaphragm</i>)</p>	
Vessels	<ul style="list-style-type: none"> ▪ Internal pudendal A. ▪ Artery of bulb. ▪ Urethral A. (only in males) ▪ Perineal A. 	<ul style="list-style-type: none"> ▪ Internal pudendal A. ▪ Artery of bulb of vestibule. ▪ Perineal A.
Nerves	<ul style="list-style-type: none"> ▪ Dorsal N. of penis. ▪ Perineal N. 	<ul style="list-style-type: none"> ▪ Dorsal N. of clitoris. ▪ Perineal N.

N.B. : the greater vestibular glands of the female lie in the superficial perineal pouch, the bulbourethral glands of the male lie in the deep perineal pouch

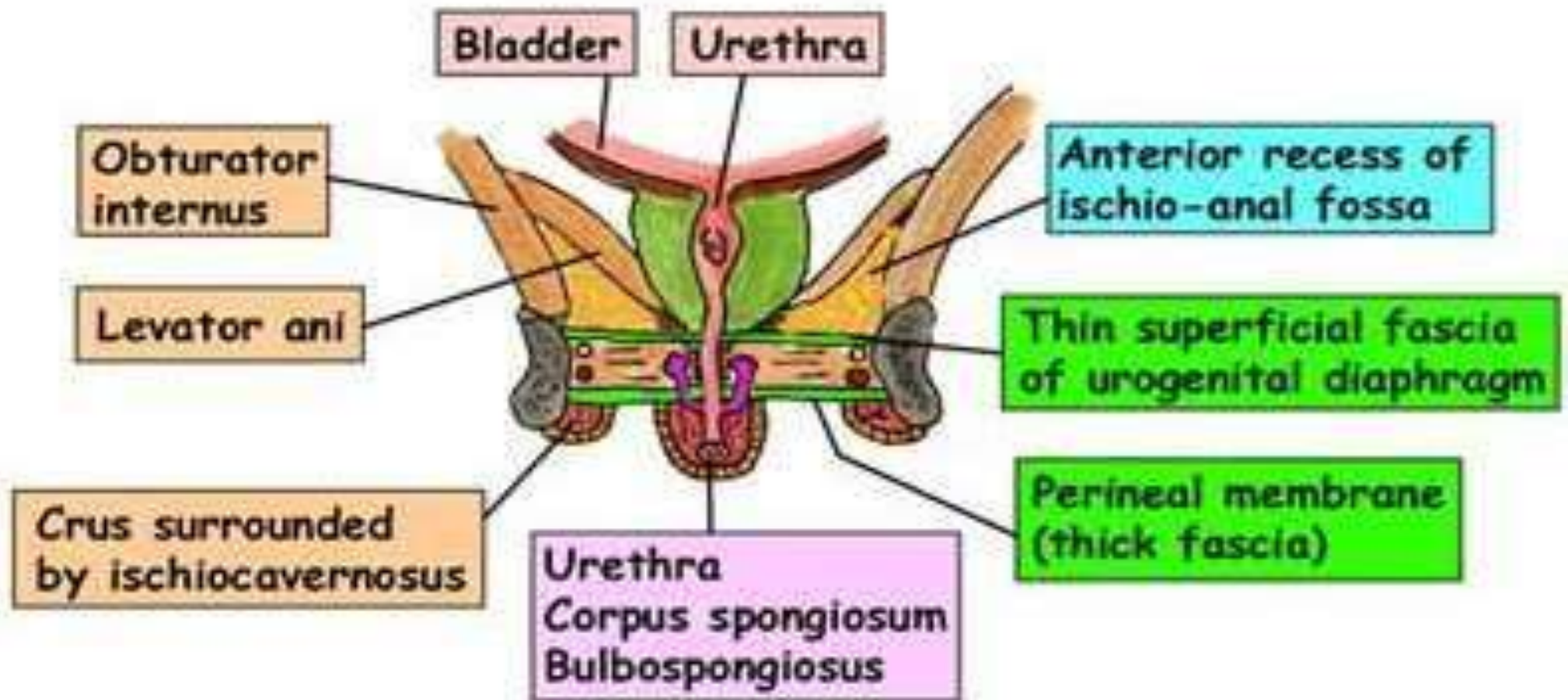
Contents of Deep Perineal pouch	Male	Female
Urogenital Structures	<ul style="list-style-type: none"> • Membranous urethra • <u>Bulbourethral glands</u> 	<ul style="list-style-type: none"> • Part of the urethra • Part of vagina
Vessels	<ul style="list-style-type: none"> ▪ Internal pudendal A. ▪ Artery of bulb. ▪ Urethral A. ▪ Perineal A. 	<ul style="list-style-type: none"> ▪ Internal pudendal A. ▪ Artery of bulb of vestibule. ▪ Perineal A.
Nerves	<ul style="list-style-type: none"> ▪ Dorsal N. of penis. ▪ Perineal N. 	<ul style="list-style-type: none"> ▪ Dorsal N. of clitoris. ▪ Perineal N.
Structures piercing perineal membrane	Male	Female
A-Genitourinary structures	<ul style="list-style-type: none"> • Urethra. • <u>Ducts of bulbo-urethral glands.</u> 	<ul style="list-style-type: none"> • Urethra. • Vagina
B- Vessels	<ul style="list-style-type: none"> ▪ Internal pudendal A. ▪ Artery of the bulb <ul style="list-style-type: none"> ▪ Perineal A. ▪ Urethral A. 	<ul style="list-style-type: none"> ▪ Internal pudendal A. ▪ Artery of the bulb of vestibule. <ul style="list-style-type: none"> ▪ Perineal A.
Nerves	<ul style="list-style-type: none"> ▪ Dorsal nerve of penis. ▪ Perineal N. 	<ul style="list-style-type: none"> ▪ Dorsal nerve of clitoris. ▪ Perineal N.

The only difference





Deep perineal pouch in male



Deep perineal pouch in female



Coronal section
through urogenital
diaphragm at level
of vagina

Superficial Perineal Pouch:

Already discussed in
lecture 10

Boundaries:

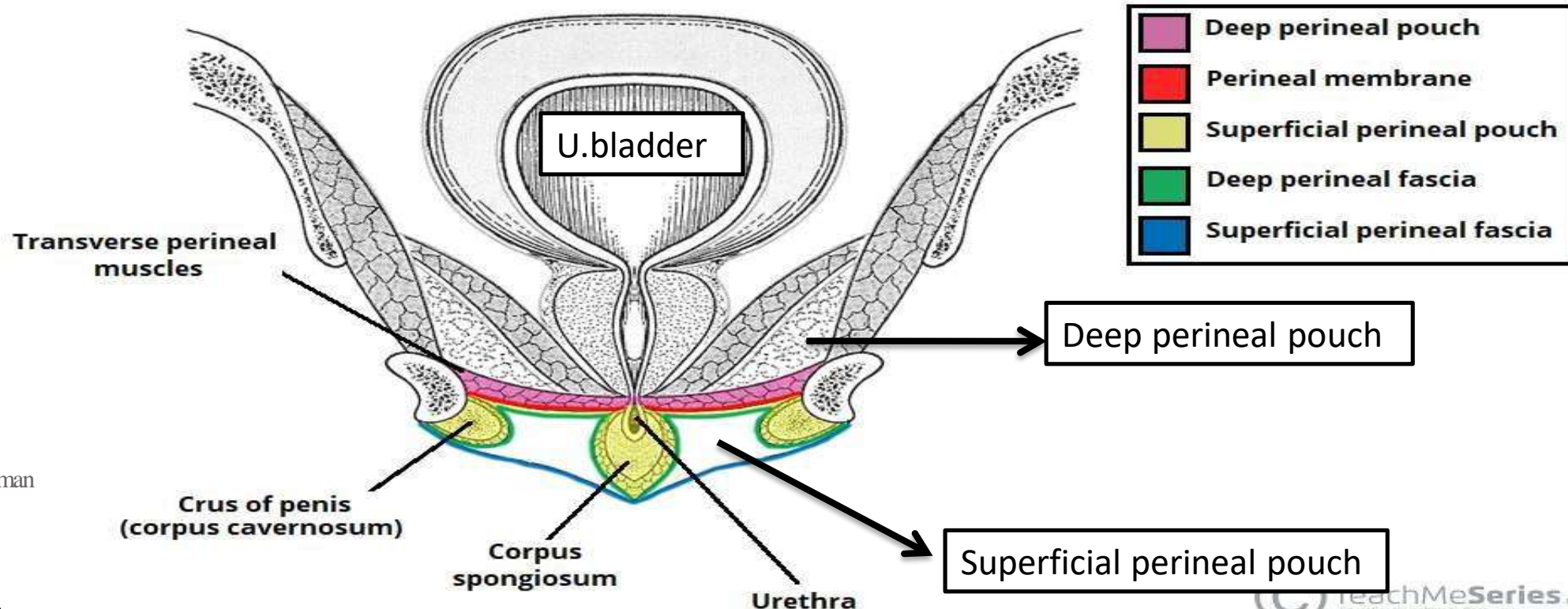
Floor : Membranous layer of the superficial fascia of the perineum (Colles fascia).

Roof : Perineal membrane.

On either side : both roof and floor are attached to the side of the pubic arch.

Posteriorly : The pouch is closed by union of the roof and floor.

Anteriorly : The pouch is opened and continuous with the interval between the membranous layer of anterior abdominal wall and the external oblique aponeurosis

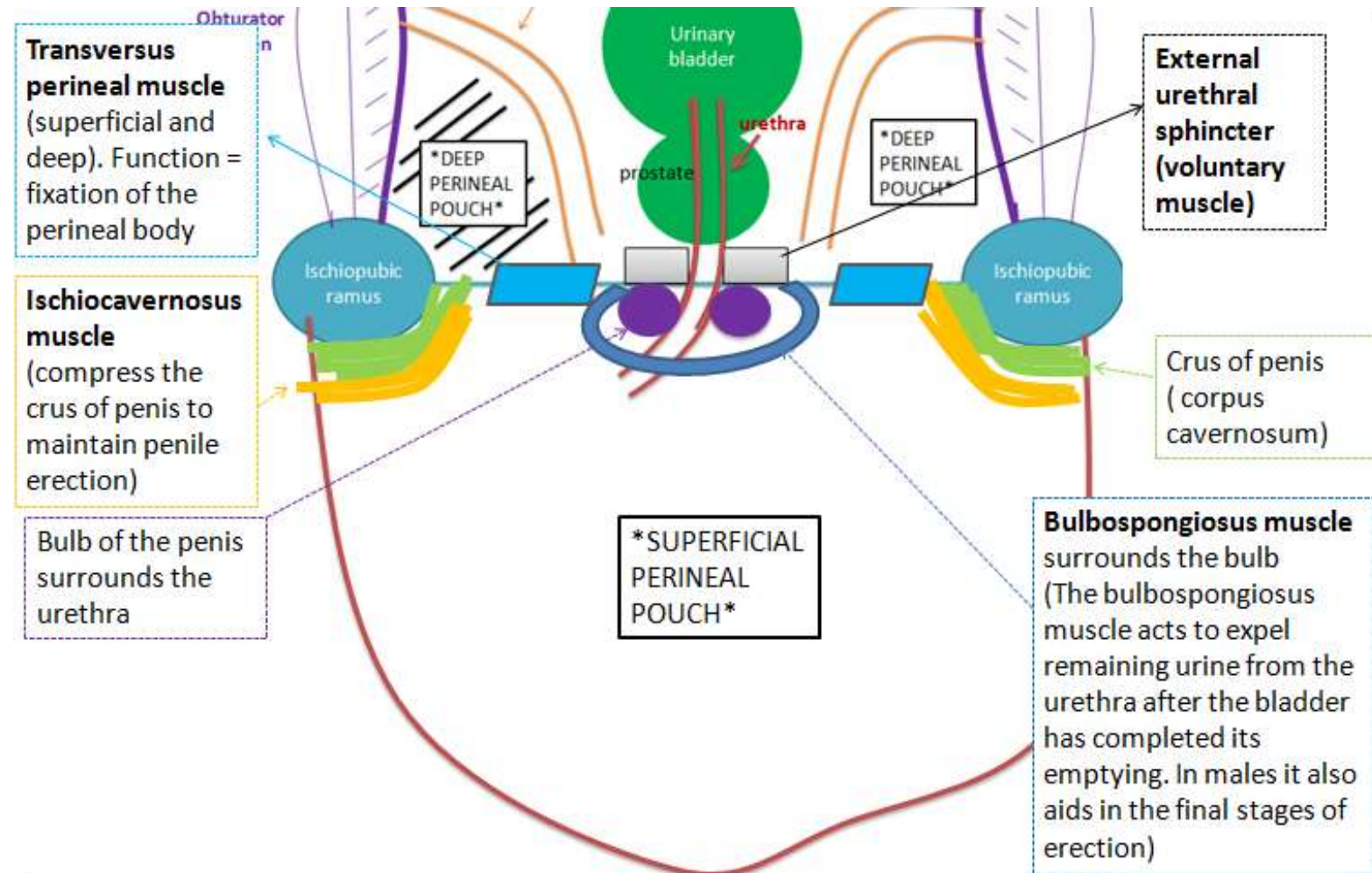


Borders of Superficial perineal pouch :

- Floor = Colles fascia
- Roof = perineal membrane
- The floor and the roof are connected at the ischiopubic ramus
- Posteriorly = CLOSED
- Anteriorly = OPEN = tiny opening to the anterior abdominal wall

CONTENTS of Superficial perineal pouch :

- Ischiocavernosus muscle
- Bulbospongiosus muscle
- Crus of penis
- Penile/spongy urethra
- Superficial transverse perineal muscle
- **Artery:** dorsal a. and deep a. of the penis + scrotal/labial a.
- **Nerve:** Dorsal n. + scrotal/labial n.

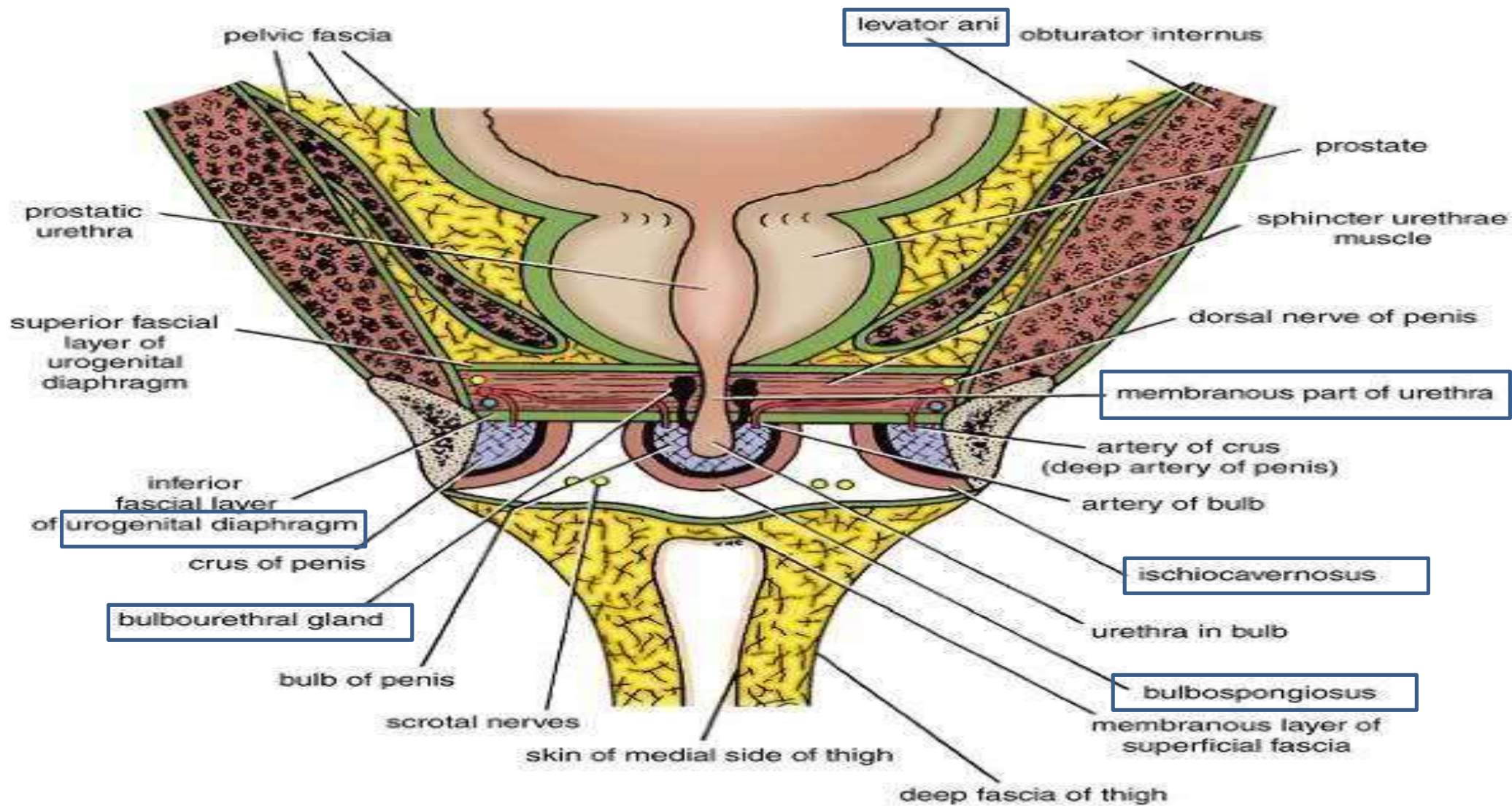




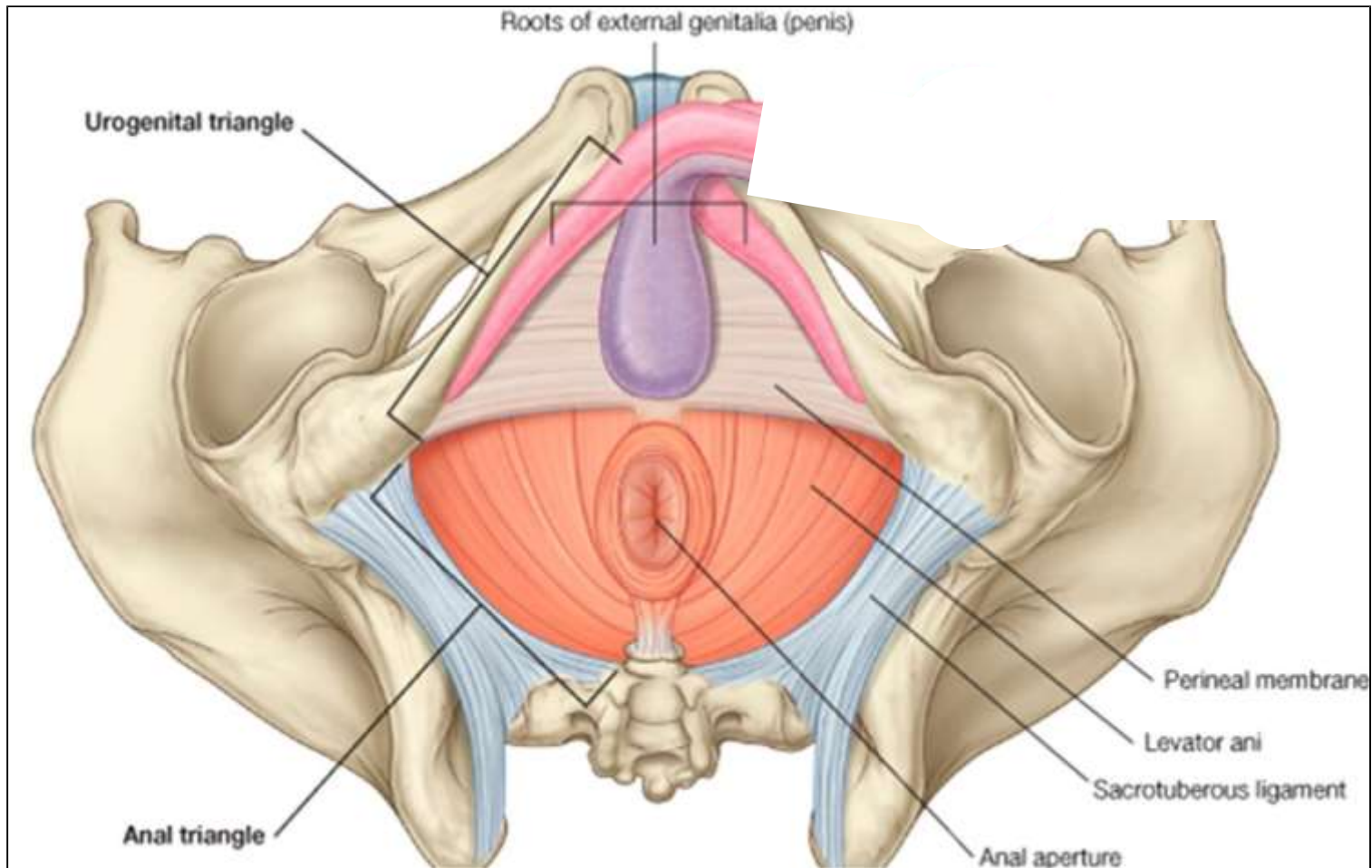
Contents of Superficial Perineal Pouch



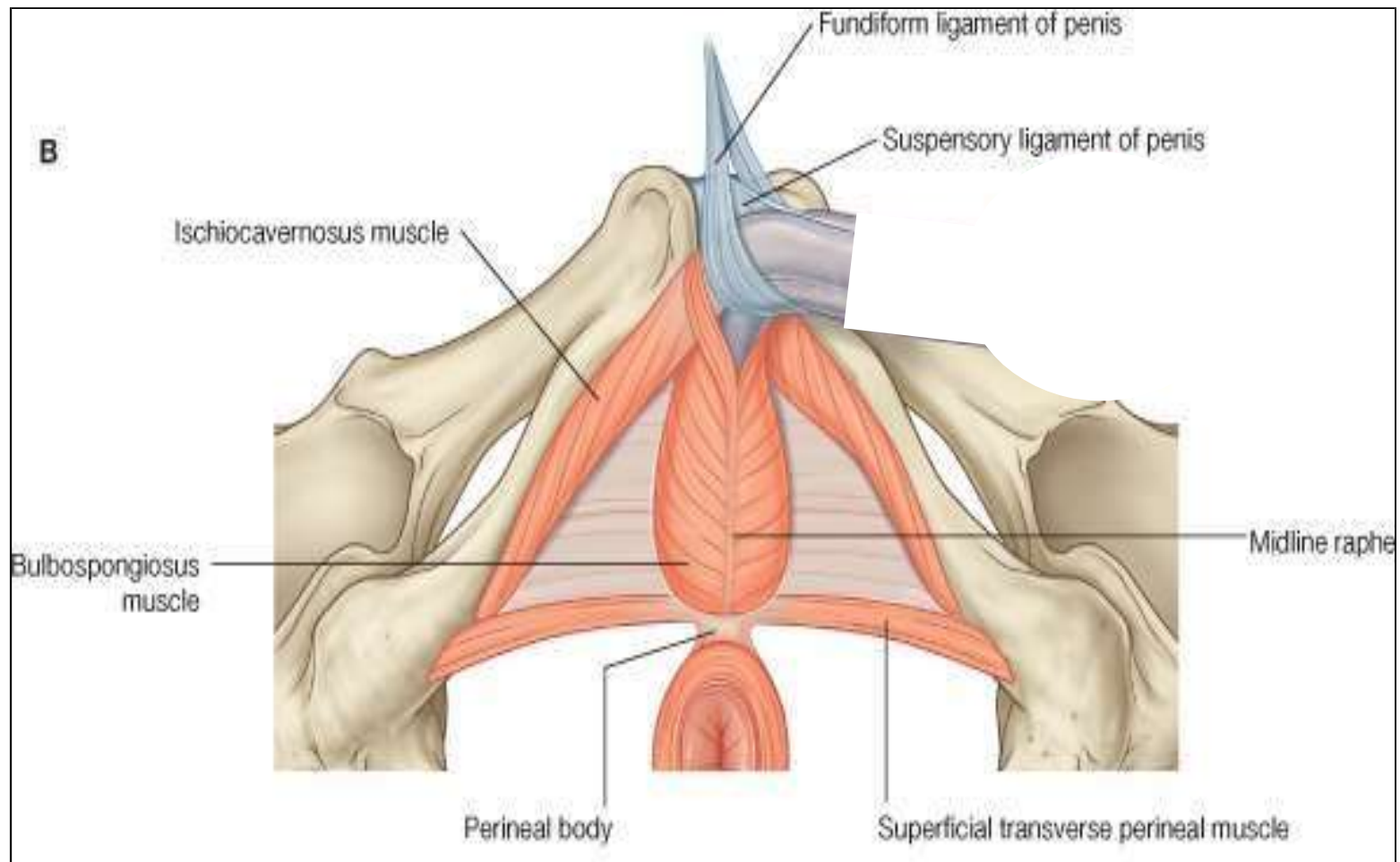
	Male	Female
Urogenital Structures	<ul style="list-style-type: none">• Root of penis (2 crura + Bulb)• Penile urethra in corpus spongiosum (bulb of penis)	<ul style="list-style-type: none">• Root of clitoris (2 crura)• Two bulbs of vestibule (<u>instead of bulb of penis</u>)• Greater vestibular glands (only in females).
Muscles (same in both)	<ul style="list-style-type: none">• Two ischiocavernosus muscles cover the 2 crura• Bulbospongiosus muscle covers bulb of penis.• Two superficial transverse perineal muscles.	<ul style="list-style-type: none">• Two ischiocavernosus• Bulbospongiosus muscle• Two superficial transverse perineal muscles.
Vessels (same in both; scrotal/penis in males while labial/clitoris in females)	<ul style="list-style-type: none">• Internal pudendal A.• Dorsal A. of penis.• Deep A. of penis.• Two scrotal arteries	<ul style="list-style-type: none">• Internal pudendal A.• Dorsal A. of clitoris.• Deep A. of clitoris.• Two labial arteries.
Nerves (same in both)	<ul style="list-style-type: none">• Dorsal N. of penis.• Two scrotal nerves	<ul style="list-style-type: none">• Dorsal N. of clitoris.• Two labial nerves



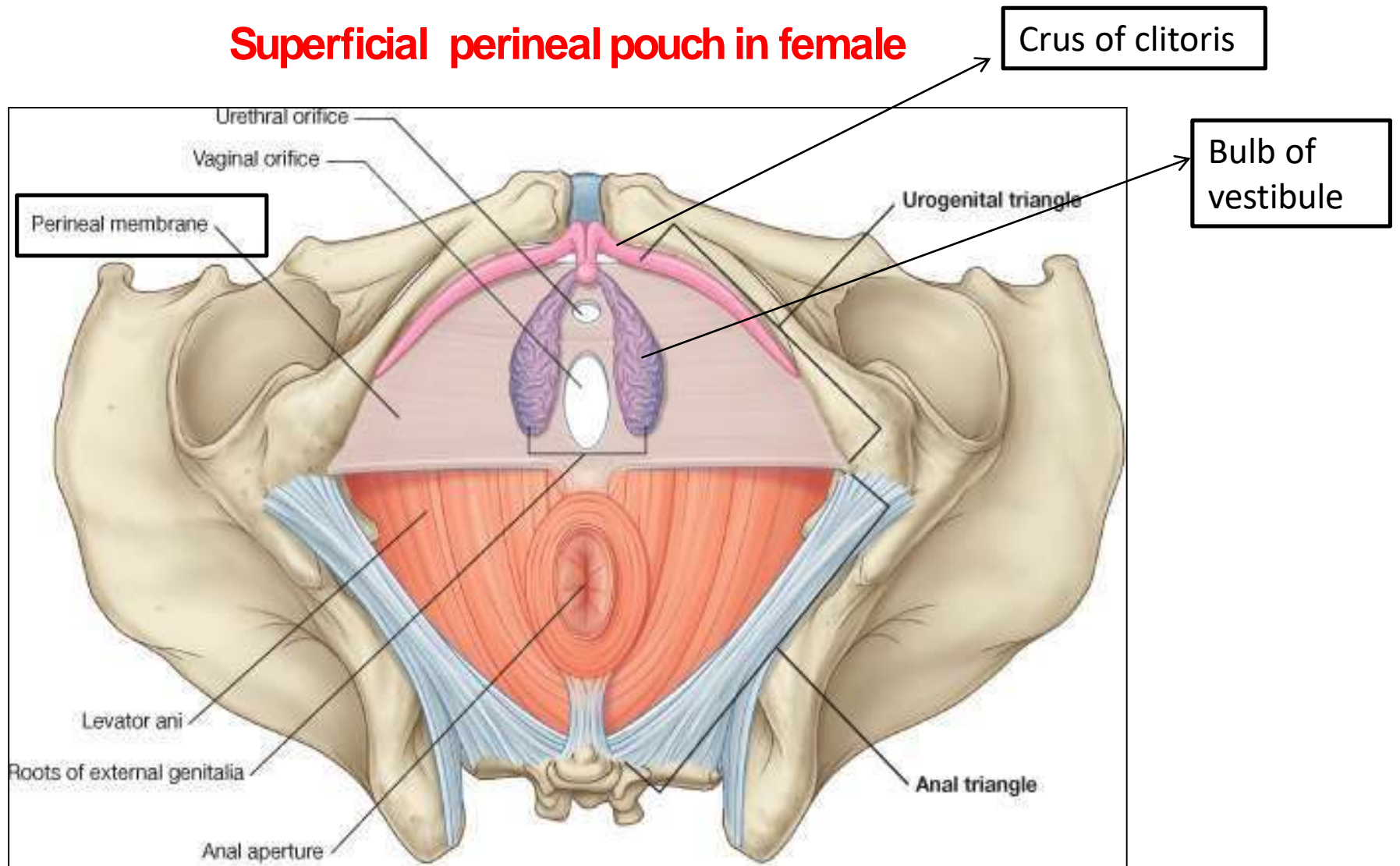
Superficial perineal pouch in male



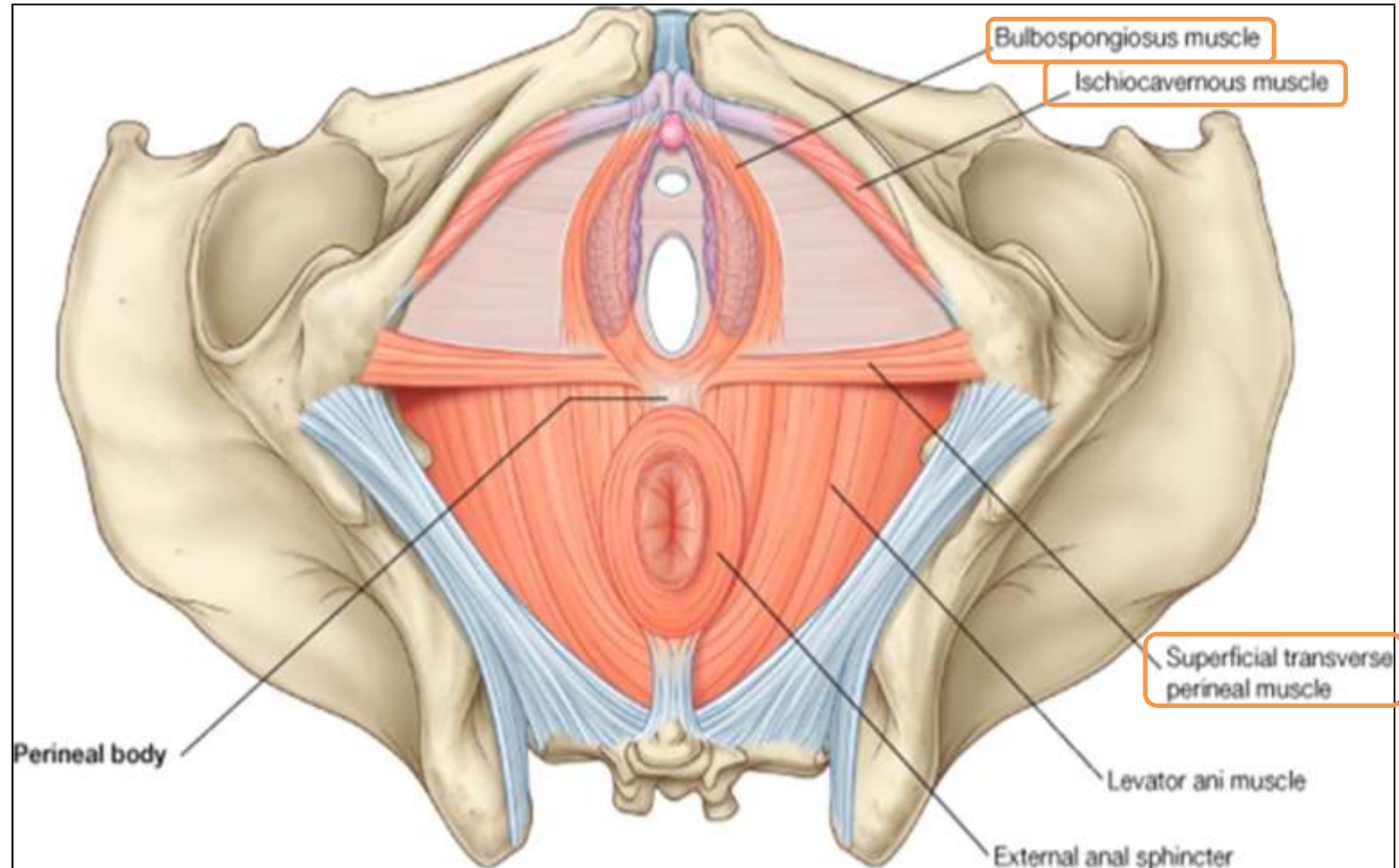
Superficial perineal pouch in male (muscles)



Superficial perineal pouch in female



Superficial perineal pouch in female (muscles)



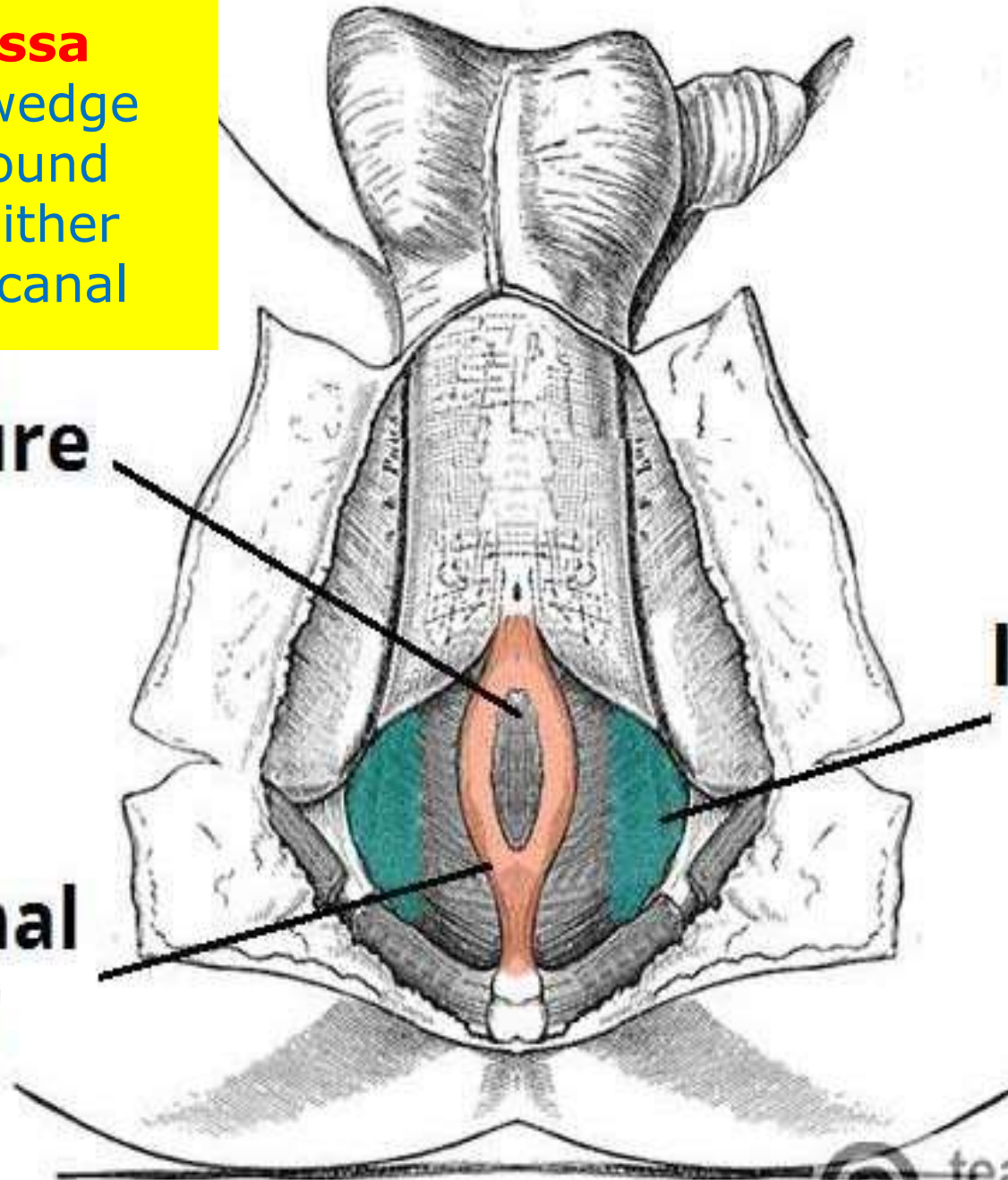
Ischiorectal fossa

Location : It is wedge shaped space, found posteriorly, on either side of the anal canal

Anal aperture

External anal sphincter

Ischioanal fossa



See the next 3 slides to understand the boundaries

Boundaries : It has

- 1. Apex :** it is the origin of **levator ani** from the **lateral pelvic wall** (enil)
- 2. Base :** **skin** (enilppus si esab eht fo niks) ecifiro lana eht fo edis rehtie no (.N latcer roirefni yb)
- 3. Anteriorly :** the **posterior** eht fo redrob **perineal membrane**
- 4. Posteriorly :** **sacrospinous ligament** covered by lower border of **gluteus maximus** muscle.
- 5. Lateral wall :** is vertical formed by:
 - **Lower** fo trap **obturator internus** muscle and lower part of obturator fascia splitting to form pudendal canal.
 - **Medial** surface of **ischial tuberosity**.
- 6. Medial wall :** formed by:
 - **Levator ani** muscle (lower surface).
 - **External anal sphincter**.

Ant.abd.wall

1. Coronal section
(next slide)

Obturator
foramen

Perineal mem.

Deep peri.pouch

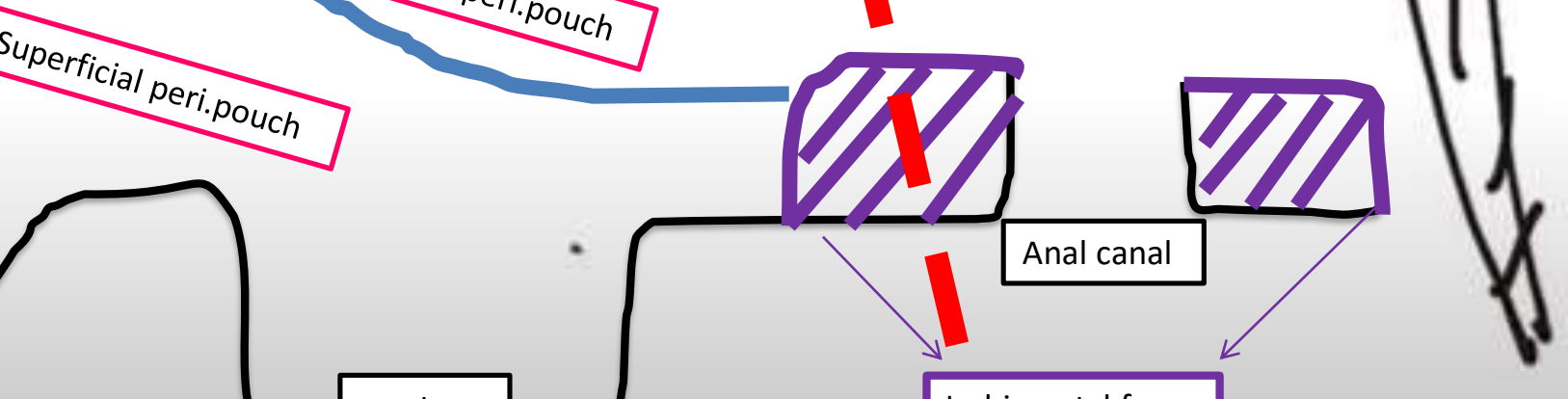
Superficial peri.pouch

penis

scrotum

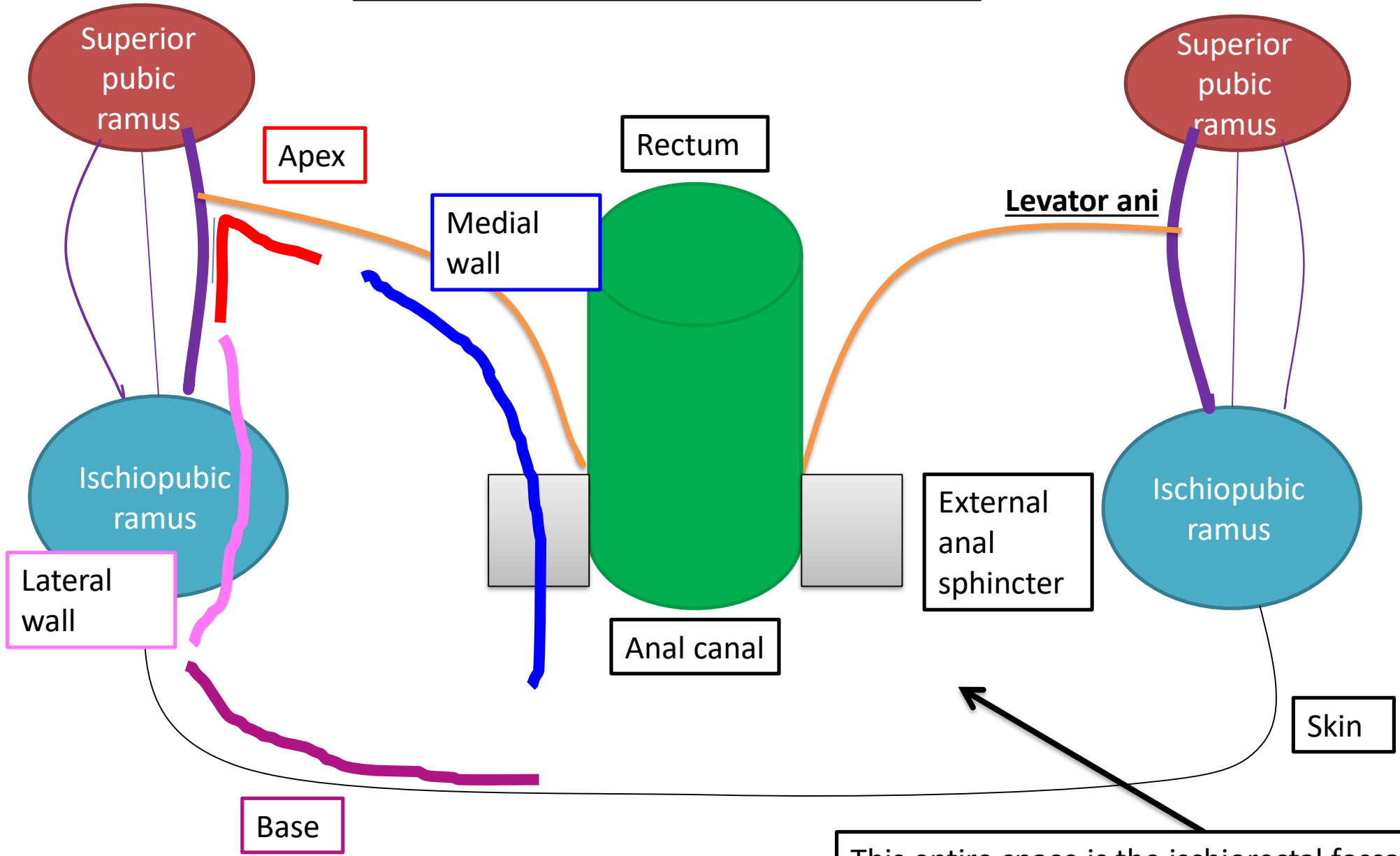
Anal canal

Ischio-rectal fossa



2. Coronal section

Remember! We are in the Anal triangle (there is NO perineal membrane)



This entire space is the ischioanal fossa

Ant.abd.wall

Anterior = posterior part of perineal membrane

Posterior = Sacrotuberous ligament + gluteus maximus (not shown in the figure)

Obturator foramen

Sacrotuberous ligament

Anterior

Posterior

Deep peri.pouch

Superficial peri.pouch

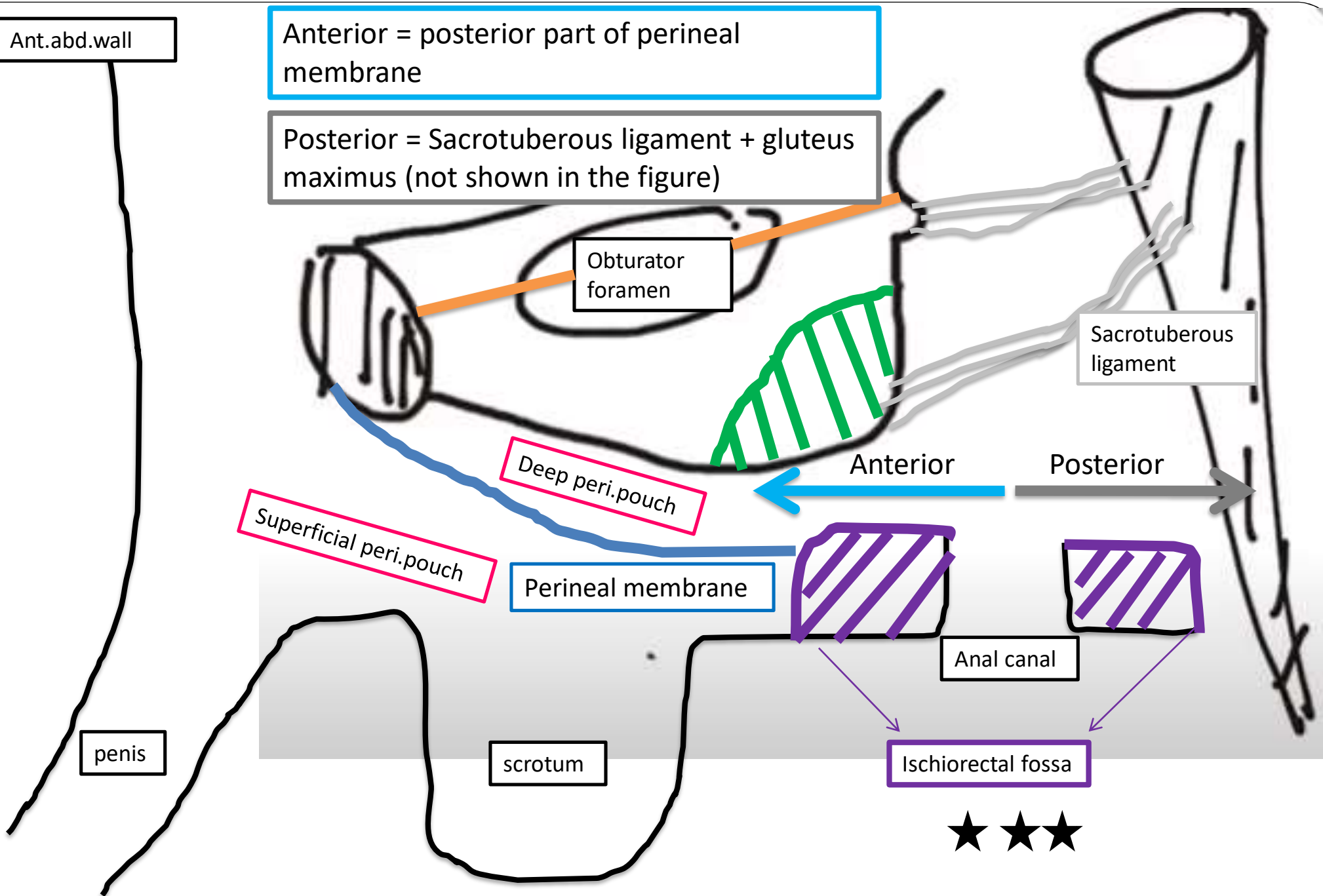
Perineal membrane

Anal canal

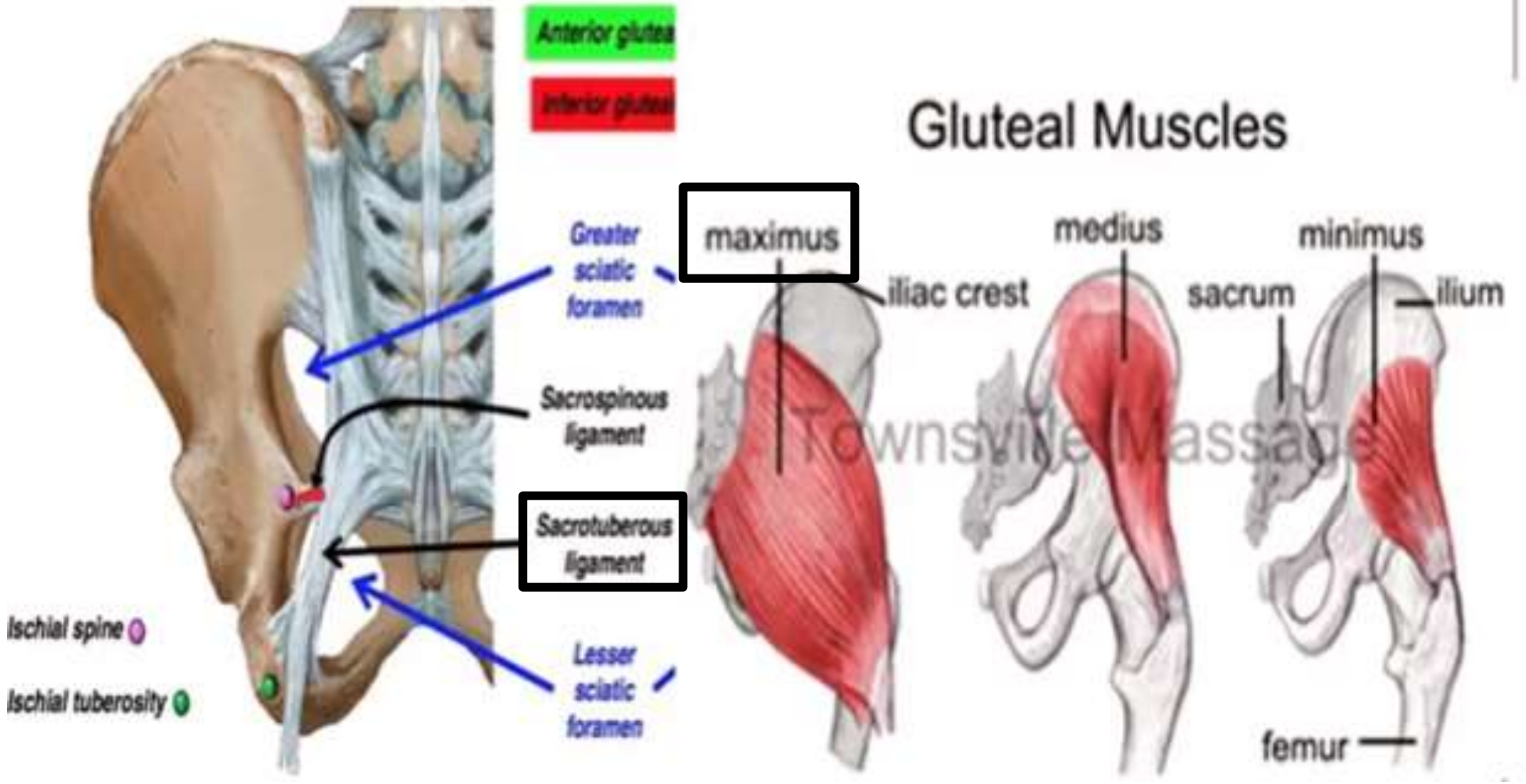
penis

scrotum

Ischiorectal fossa



Posterior wall of ischiorectal fossa = Sacrotuberous ligament + gluteus maximus



Anterior: posterior border
perineal membrane
Posterior: sacrotuberous
ligament, gluteus maximus



Ischioanal in Female

Lateral: fascia on medial aspect
of obturator internus ani
Pudendal canal
Ischial tuberosity



Ischioanal in Male

Contents of Ischiorectal fossa :

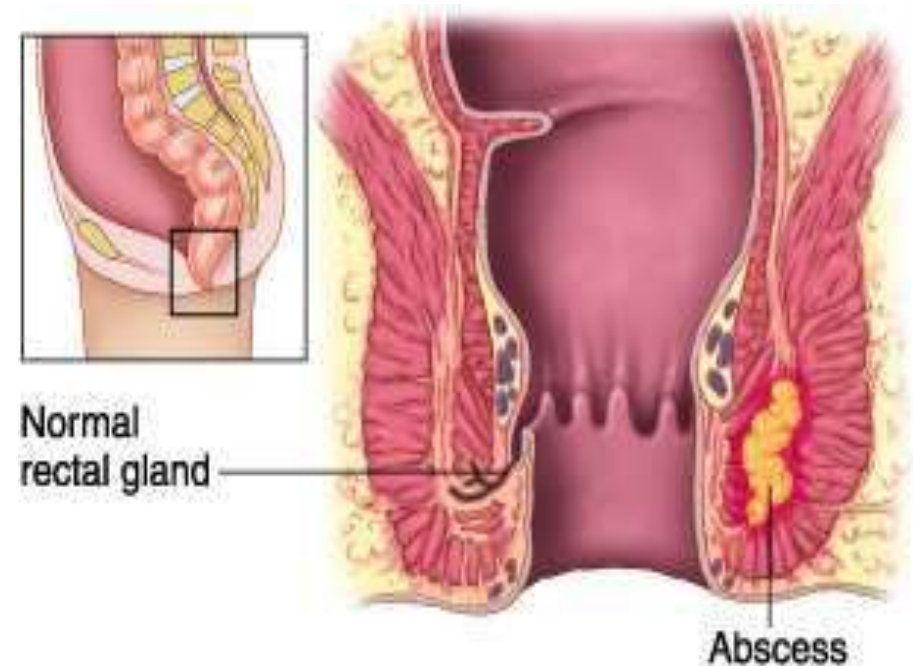
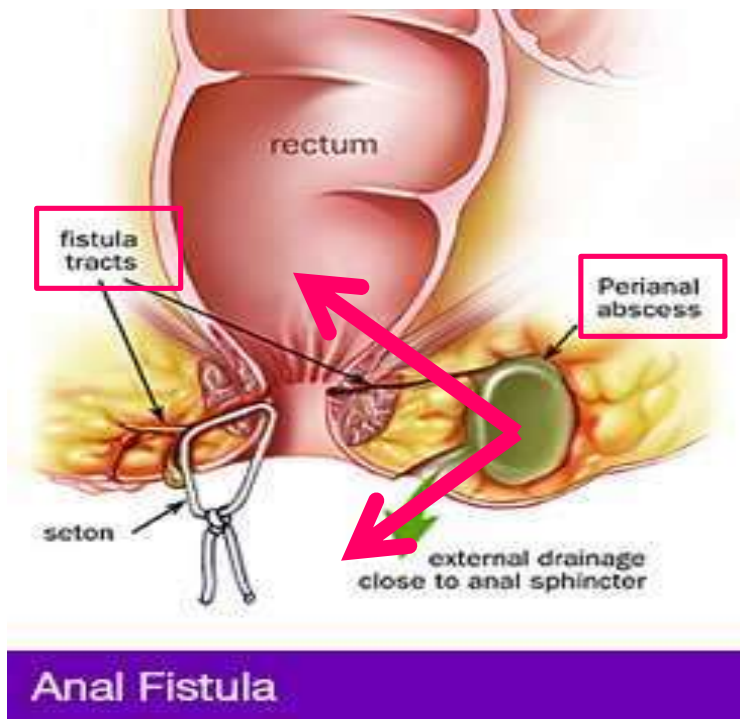
1. Pudendal nerve.
2. Internal pudendal vessels.
3. Inferior rectal nerve.
4. Inferior rectal vessels.
5. Posterior scrotal nerves.
6. Posterior scrotal vessels.
7. Perforating cutaneous N. (S2, S3) .
8. Pad of Fat : It is rich in fibroelastic fibres and has two functions :

- It acts as a cushion support for rectum and anal canal.
- It allows distention of the rectum and anal canal during defaecation,

Then compress them after termination of the act.

Applied Anatomy:

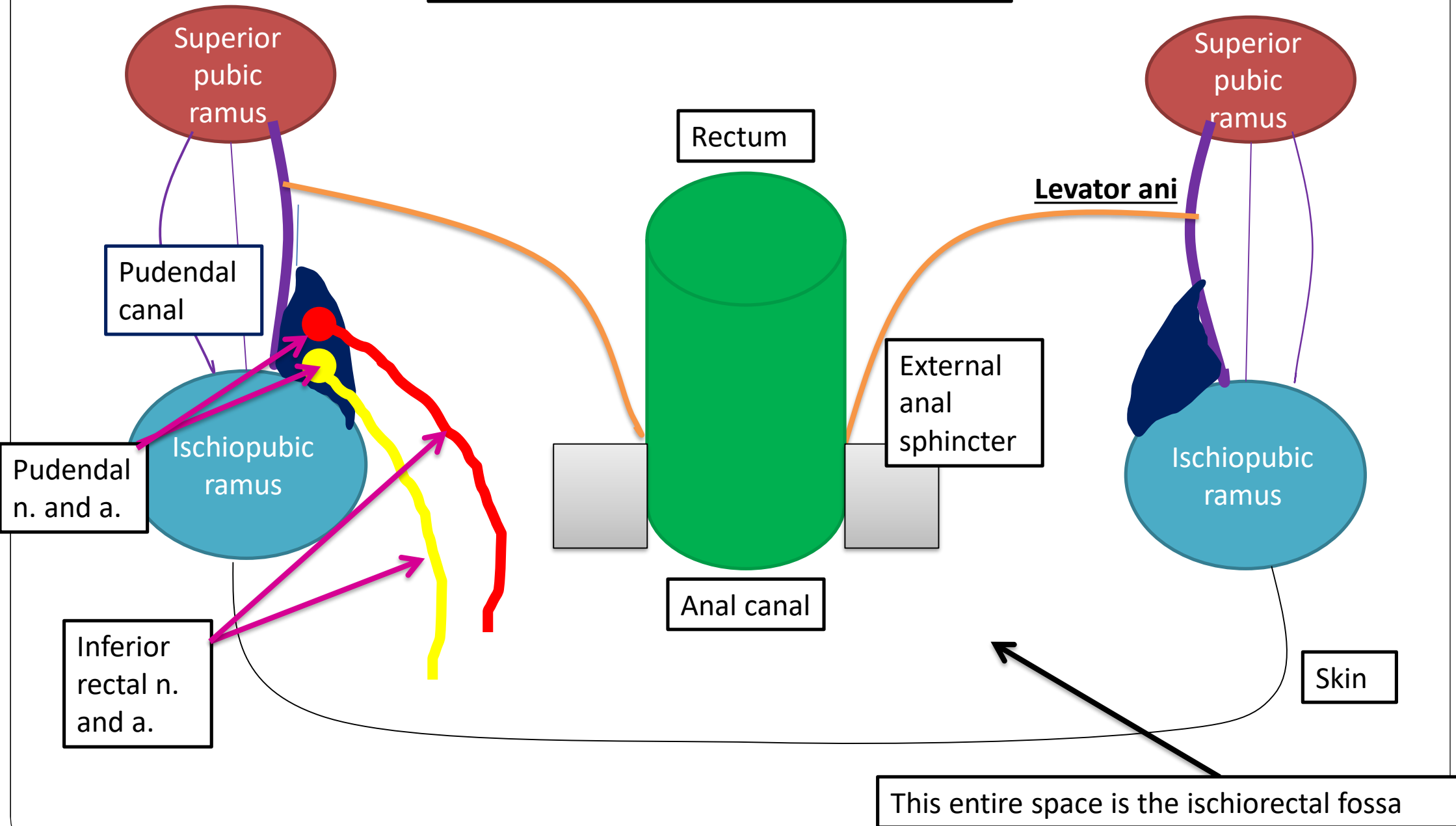
Infections in the ischiorectal pad of fat is **common** and lead to **abscess formation**. The abscess may rupture medially into the anal canal or downwards into the skin at the fossa. This may leads to **anal fistula** . **Healing is difficult since this is caused by a severe infection.**

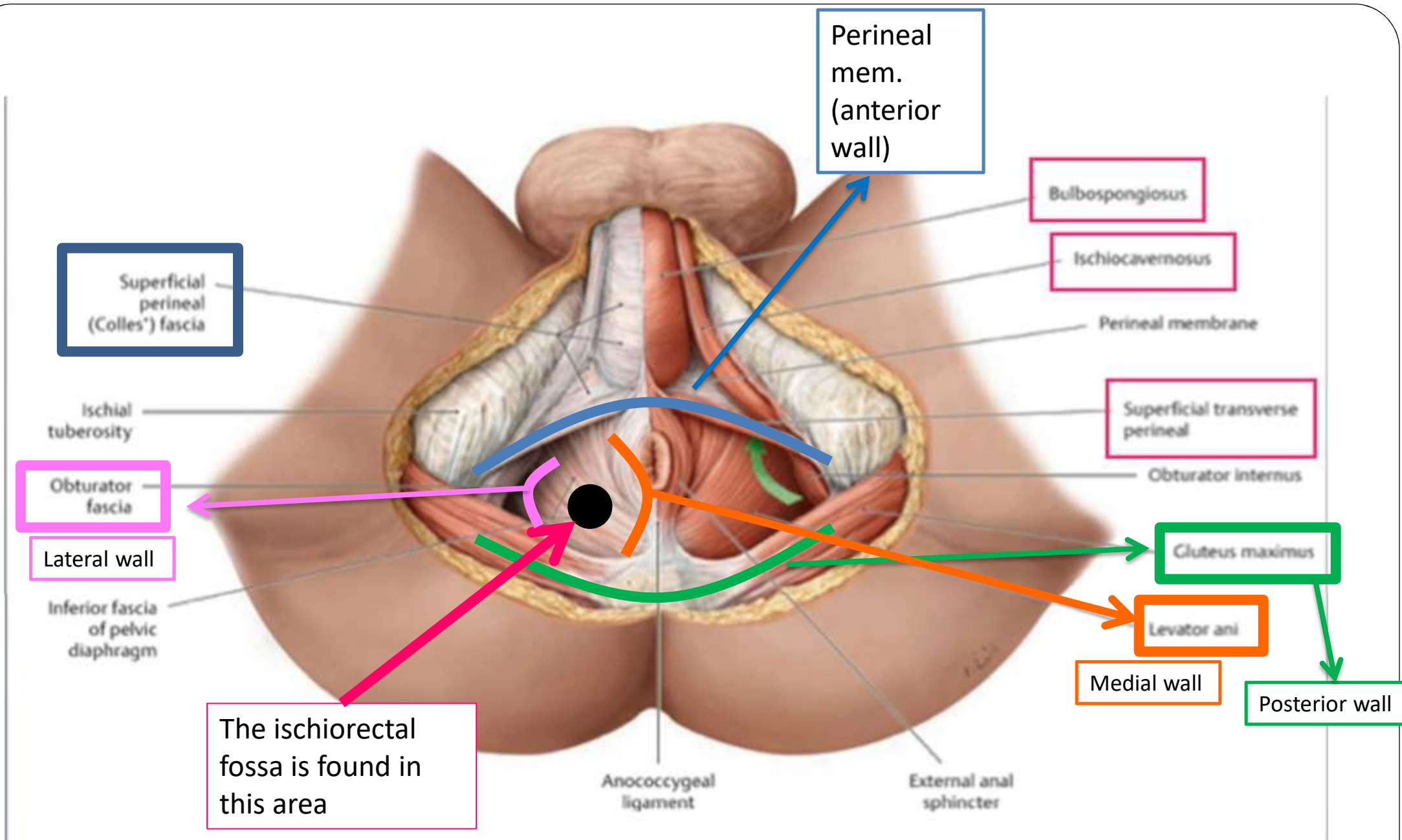


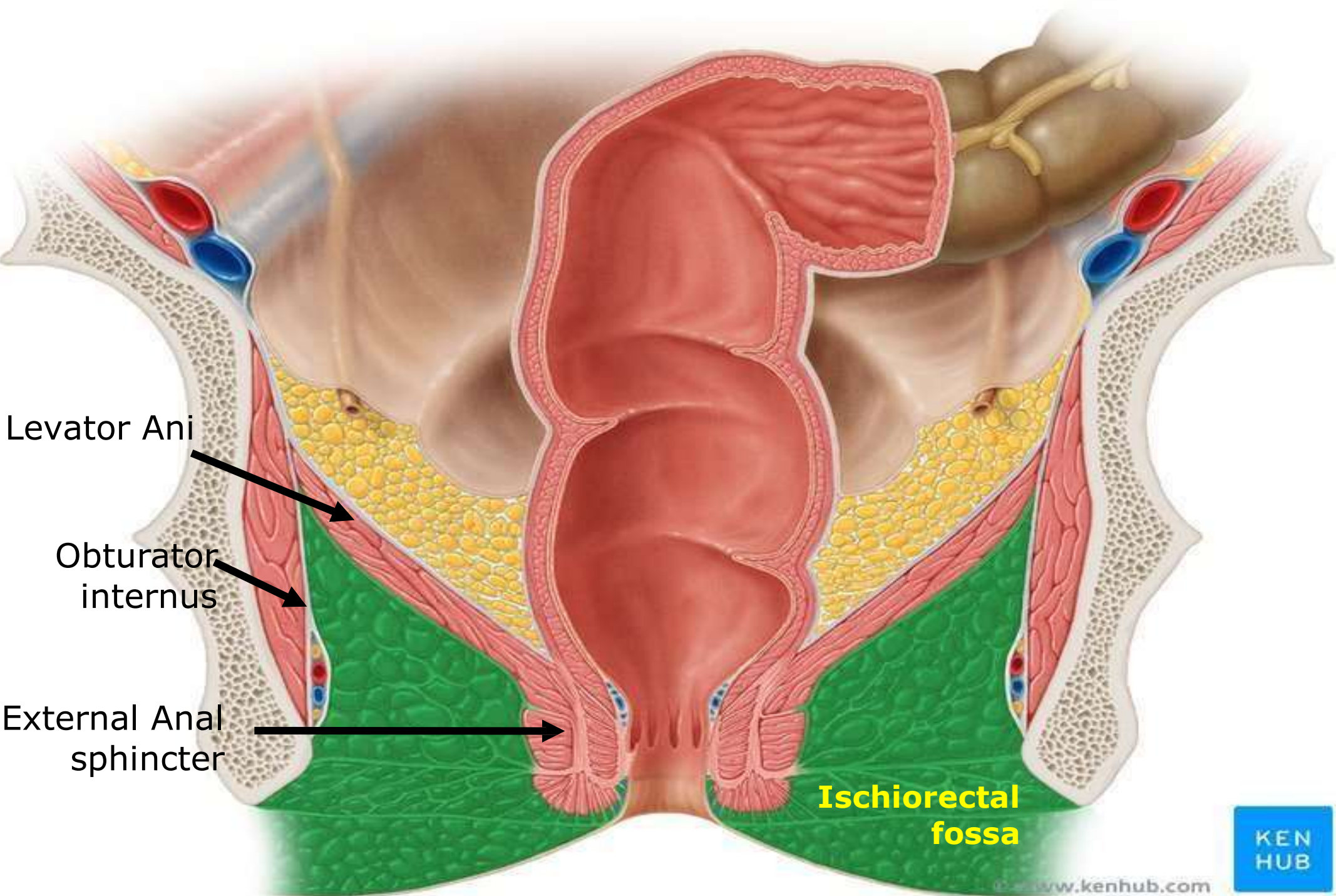
Dr. Ahmed Salman

Coronal section

Remember! We are in the Anal triangle
(there is NO perineal membrane)







Levator Ani

Obturator internus

External Anal sphincter

Ischioanal fossa



Thank
you