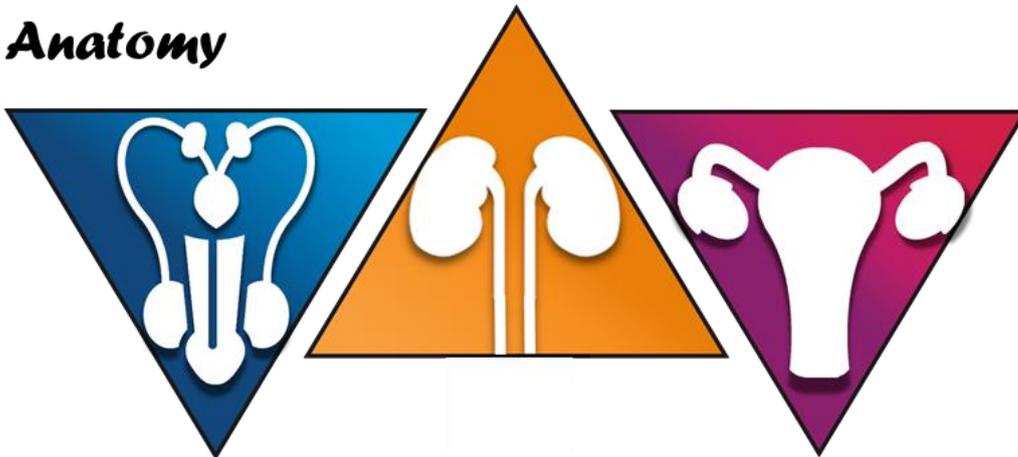




Urogenital system

Anatomy



Sheet



Slide

Number:

- 11

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- I really recommend watching the video before studying this lecture to fully understand it because almost all of it is diagrammatic. I'll try to make it as clear as possible.

- The link:

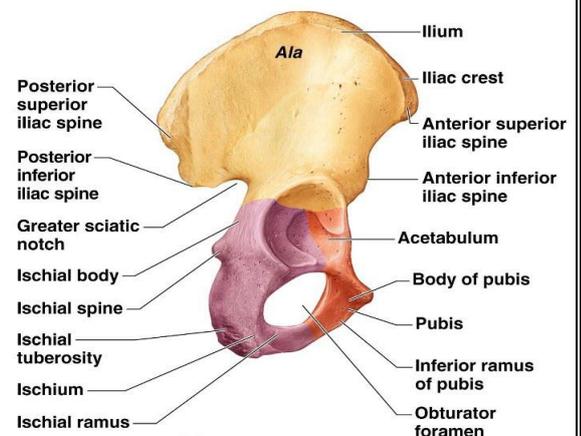
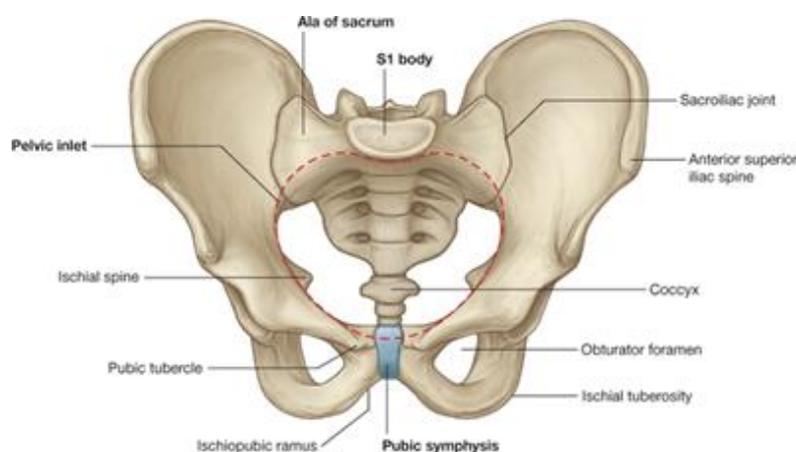
<https://www.youtube.com/watch?v=didehmRiZRI&t=0s>

In this lecture we will discuss:

- 1- The perineum with its boundaries and divisions.
- 2- The perineal fascia.
- 3- The perineal membrane.

A quick review for the hip bone:

- **Anteriorly** we have symphysis pubis, and then it will continue as the superior pubic ramus.
- **Under** the SPR there are the inferior pubic ramus and ischial ramus where they join together to form the ischiopubic ramus.
- SPR and ischiopubic ramus will join together and form the obturator foramen.
- **Posteriorly** we have ischial tuberosity followed by the ischial spine and the most posterior structure which is the coccyx.
- Notice the greater and lesser sciatic notches and the sacrotuberous ligament.



❖ The boundaries of the perineum:

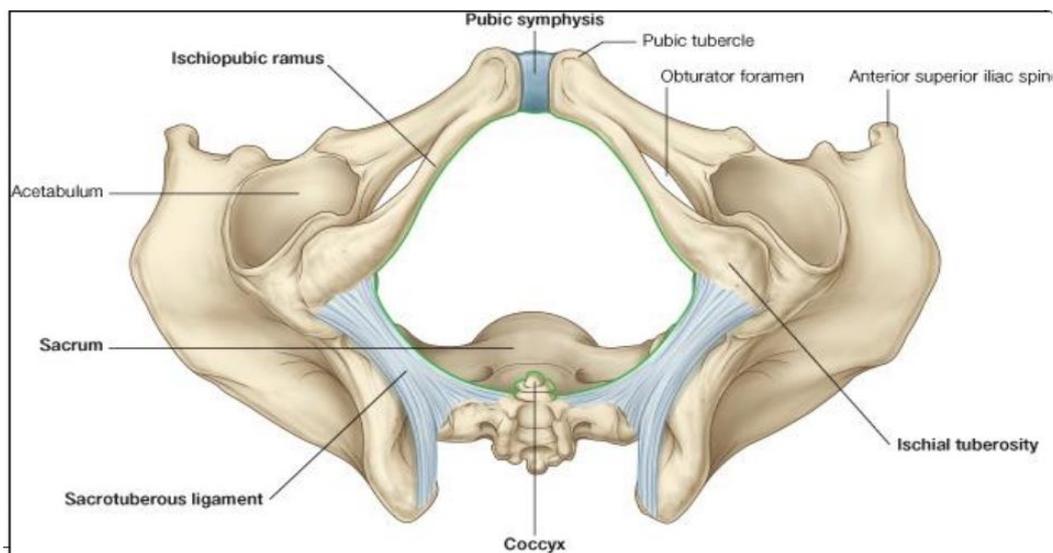
- The perineum is the diamond-shaped lower end of the trunk.
- The boundaries of the perineum are the same as the pelvic outlet.

Anteriorly: lower border of symphysis pubis.

Posteriorly: coccyx.

Anterolateral: Ischiopubic rami

Posterolateral: Sacrotuberous ligaments.



❖ Divisions of the Perineum :

The perineum is divided by **By a line joining the anterior parts of the ischial tuberosities** into two triangles.

Anteriorly: Urogenital triangle.

Posteriorly: Anal triangle.

- **So what are the structures that pass through the midline?**

Most anteriorly there is the **urethra**, then the **vagina**, followed by the **perineal body** which is the strongest fibromuscular band in the perineum.

- As we took before this perineal body is located between the vagina and the anal canal in females, while in males it's located between the bulb of penis and the anal canal.

- If this body is injured, it will cause prolapse of the pelvic viscera.

Posterior to the **anal canal** is the **anococcygeal body**.

❖ **Muscles attached to the perineal body**

- This fibromuscular band provides an attachment for many muscles (some are paired others are single, some are deep others are superficial)

1- Ischiocavernosus muscle. (paired) (NOT ATTACHED TO P:erineal Body)

- Around the ischiopubic ramus in males there is the crus of penis while in females it's called (crus of clitoris), which is covered by this muscle.
- From its name: Origin: Ischial spine.

Insertion: Corpus cavernosum.

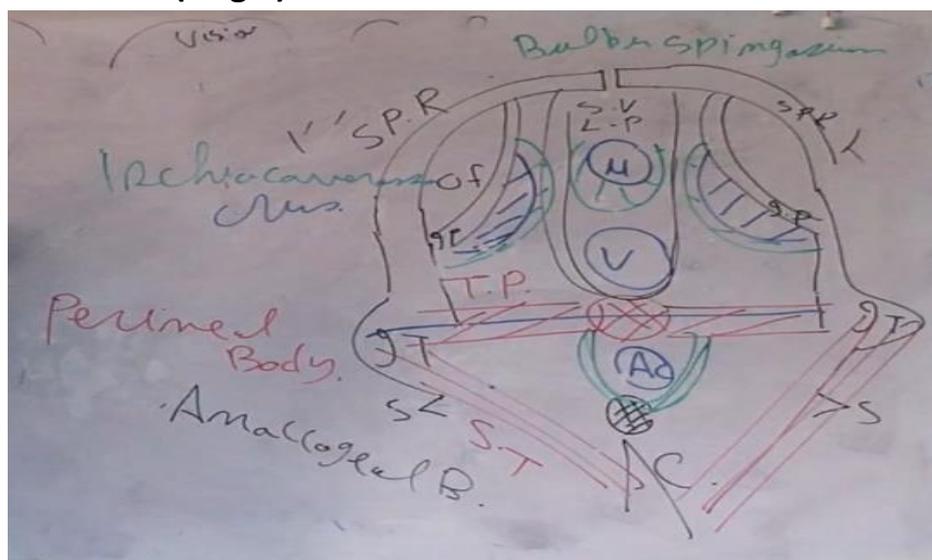
2- Bulbospongiosus muscle (single): it surrounds the bulb.

3- Superficial and deep transverse perineal muscles.(paired)

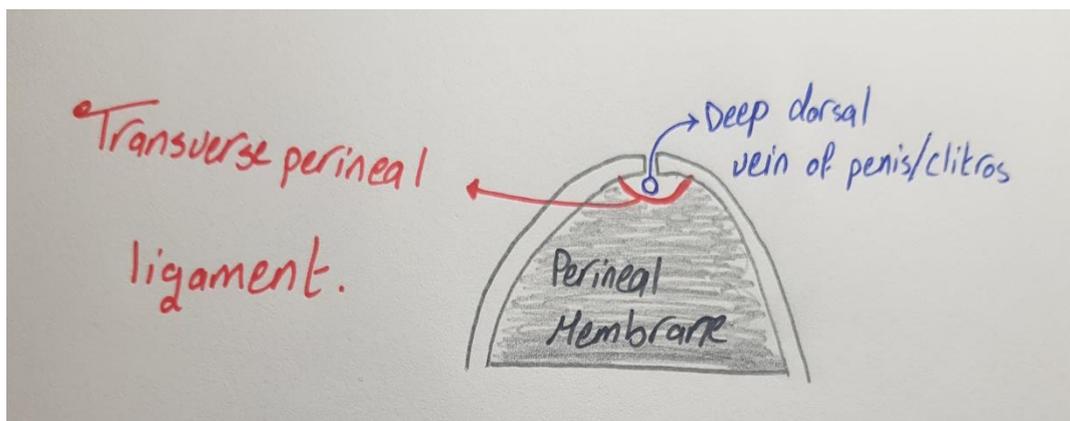
4- Sphincter vaginae that surrounds the vagina in female, while in males it's called levator prostate.(paired)

5- Superficial part of External anal sphincter.(single)

6- Superficial part of External urethral sphincter /sphincter urethrae.(single)



- All of these muscles are attached to the perineal body except **ischiocavernosus** muscles
- All of these muscles are supplied by the **Somatic NS** through the **Internal pudendal nerve** which gives perineal branch.
 - **Ischiocavernosus muscle** maintains the erection of the penis (or clitoris) by preventing the reflux of blood.
 - **Bulbospongiosus muscle:**
 - A) It covers the corpus spongiosum that makes a passage for the urethra so it ejects last drops of urine or semen.
 - B) In females there is no urethra in their bulb, so it's considered as a **vaginal sphincter**.
- Now back to the perineum divisions.
The entire urogenital triangle floor is covered by the **perineal membrane** except an opaque opening located

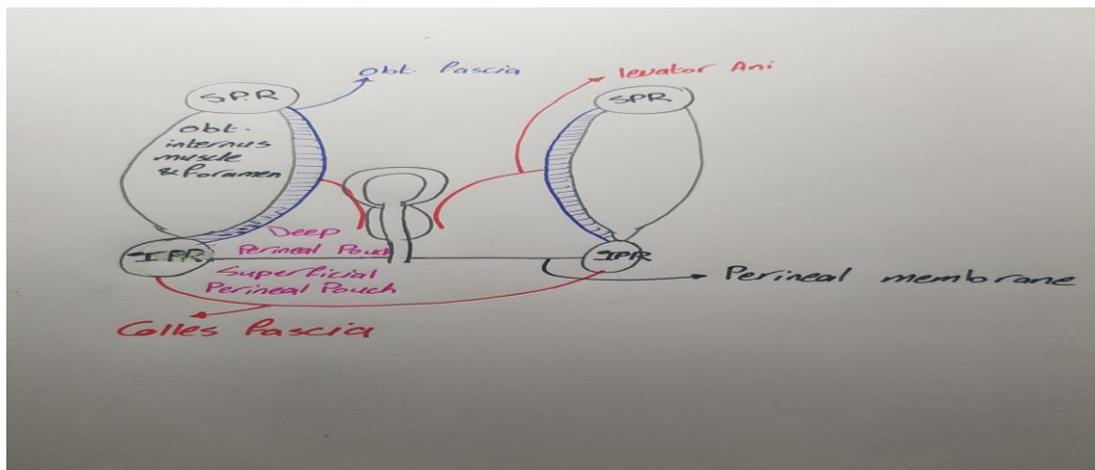


- anteriorly which is formed by **transverse perineal ligament**.
- This opening transmits **deep dorsal vein of penis** that ends in the **prostatic venous plexus**, or **deep dorsal vein of clitoris** that ends in the **vesical venous plexus**.

❖ The perineal fascia:

- It consists of superficial and deep layers.
- Follow up the diagram in the next page to fully understand this concept.
-

- If we take a coronal section in the hip bone we'll end up (from superior to inferior) with:
 - 1- Superior pubic ramus.
 - 2- Obturator foramen and obturator internus muscle.
 - 3- Ischiopubic ramus.
- The Obturator muscle is covered by Obturator fascia and this fascia forms anteriorly the **white line** (the origin for levator ani muscle), while posteriorly it forms the **pubendal canal** which will be discussed latter.
- **The Deep Perineal Pouch Boundaries:**
 - Floor : Perineal membrane**
 - Roof: Inferior fascia of pelvic diaphragm (levator ani)**
 - On either side : related to obturator fascia.**
 - Posteriorly : the pouch is closed by union of roof and floor.**
 - Anteriorly : The pouch is closed by union of roof and floor**
- **The Superficial Perineal Pouch boundaries:**
 - Superiorly:** Perineal membrane.
 - Inferiorly:** Colles fascia
 - It is closed On either side and Posteriorly**



- The superficial perineal pouch is **open** and communicating with the **anterior abdominal wall**, while the deep perineal pouch is **closed**.

- Around the urethra there is the **External urethral sphincter** which forms with the **Transverse perineal muscle** the **Urogenital diaphragm**.
- One more time, the perineal body (**the remnant of the urorectal septum**) is located between bulb of penis and anal canal in males.
- The perineal body is attached to the perineal membrane and above it there is the levator ani muscle, this arrangement forms the deep perineal pouch.
- Unlike the abdomen which has only superficial fascia (composed of superficial fatty layer and deep membranous layer) with no deep fascia, the perineum has 2 fascias (superficial and deep).
- The superficial fatty layer of abdomen is replaced in the scrotum by **dartos muscle** in males, while in females the fatty layer exists.
- In both sexes it's continuous with the abdominal superficial fascia, while posteriorly it's continuous with the **anal fat of ischiorectal fossa** (discussed latter).
- Scarpas fascia (deep membranous layer) from the abdominal wall will descend as colles fascia in the penis and scrotum then it reflects to attach with the perineal membrane.
- The deep fascia of the perineum covers some of the muscles and it is continuous slightly anterior with the **suspensory ligament of the penis**. It has no importance and it has no clinical application.

❖ **Rupture of the Urethra:**

In males the urethra is divided into 4 parts.

The penile and membranous urethras are more prone to injury than the prostatic and pre-prostatic.

1) Rupture of the penile urethra:

- If an injury resulted in penile urethral rupture the urine will escape to the penis, scrotum and the anterior abdominal

wall, while it can't reach the thigh although it is easier with the effect of gravity!

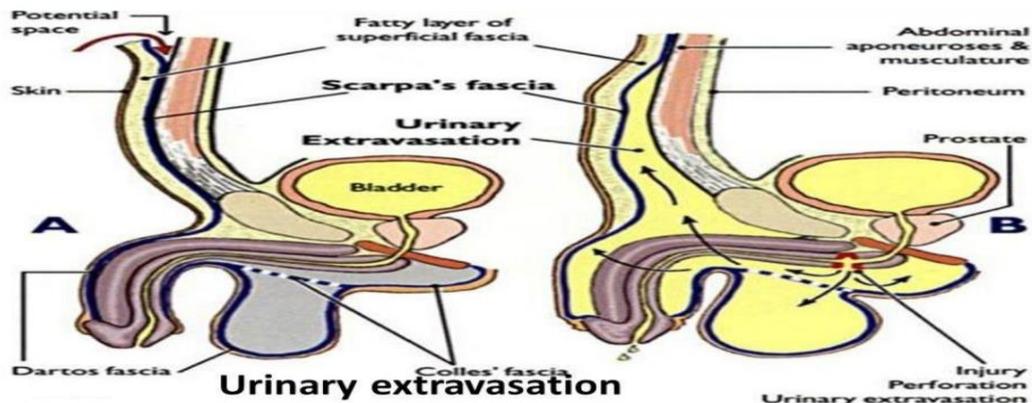
This is because scarpas fascia and fascia lata are attached together under the inguinal ligament preventing urine from reaching the thigh.

- The question that must be asked: Can a man with ruptured penile urethra micturate (urinate) voluntarily?

Yes he can because the sphincter is intact but the urine will go to **deep to deep fascia of** the penis, scrotum & Ant. Abdominal wall, so he will end up with infection!! So he must not micturate.

2) Rupture of the membranous urethra:

- Membranous urethra rupture usually results from pelvic fractures or **improper** foley catheterization.
- Here, urine will remain in the deep perineal pouch because it's closed all around but sometimes there is a small space around the prostate and the bladder that the urine can escape through **EXTRAPERITONEALLY**.



The End

وبأخر شيت الي في سنوات البيسك بتمنى أني أكون فدتكم وبعنذر عن أي
تقصير بدر مني، كل التوفيق في السنين المتبقية وإن شاء الله القادم أفضل