

Female Perineum and External Genitalia

Reproductive Block

Color Index

Main Text

Male's Slides

Female's Slides

Important







Doctor's Notes

Extra Info

The Editing File 

Objectives

You should be able to Describe:

-  Boundaries of the perineum.
-  Division of perineum into two triangles.
-  Boundaries & Contents of anal & urogenital triangles.
-  Lower part of the Anal canal.
-  Boundaries & contents of Ischiorectal fossa.
-  Innervation, Blood supply, and lymphatic drainage of the perineum.

Important note!!!

قال لي الدكتور زاهد بخصوص الفروقات بينه وبين الفيميل سلايدز: "سلايداتهم قديمة والكلام اللي أنا ضفته ما أقدر أقول لكم انه مب مهم؛ لأنكم أطباء المستقبل، لكن اذا جيت أسوي MCQs اخذها من الفيميل سلايدز."

عمومًا أضفنا الميل سلايدز نشرًا للعلم والفائدة، وتبرئة للذمة.

This lecture was presented by :

Dr. Zahid Kaimkhani

Dr. Sanaa Al Shaarawi



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★ Special Thanks to Saleh Aljanah and Abdulaziz Alqarni!



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Perineum

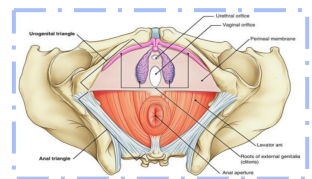
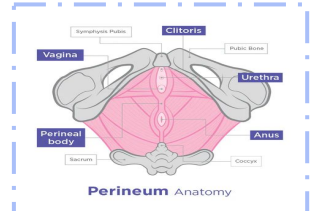
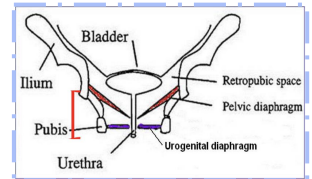
Go back and read the note above if you didn't !!!

Introduction

- Perineum is the **region of the body that is part of the trunk below the pelvic diaphragm (the outlet of the pelvis).**
- An area around the opening for dirty discharge.
- It is a **diamond shaped area between the thighs.**
- Marks the approximate lower boundary of the pelvis and is occupied by the urinary and genital ducts and rectum
- Bounded by pubic symphysis, coccyx and ischial spine
- Divided into UG and Anal triangles

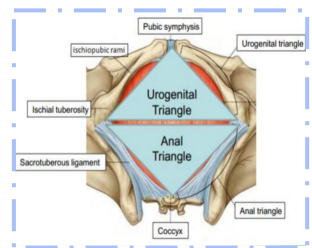
Contents of the perineum:

- » Lower ends of **urethra, vagina, Anal canal.**
- » **Perineal body & Anococcygeal body.**
- » **External genitalia.**



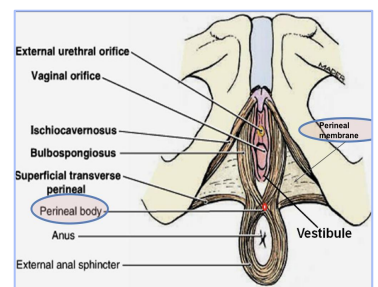
Boundaries of the perineum

Anteriorly	Mons (symphysis) pubis
Laterally	Medial surfaces of the thighs, Ischial tuberosities.
Posteriorly	Intergluteal folds, the tip of the Coccyx.
Posterolateral	Sacrotuberous ligaments.
Anterolateral	Ischiopubic rami.



Perineal Body

- » It is an irregular **fibromuscular mass** of variable size and consistency.
- » Located at midpoint of the line **between the ischial tuberosities.**
- » Lies in the **subcutaneous tissue, posterior to vaginal vestibule and anterior to the anal canal & anus.**
- » Forms the **central point of the perineum & blends anteriorly with the perineal membrane.**



Functions:

- ▶ Gives **attachment to perineal muscles:** (The external anal sphincter, pubovaginalis (puboprostatic) part of levator ani, bulbospongiosus, and the superficial and deep transverse perineal muscles).
- ▶ **Plays an important role in visceral support especially in female.**
- ▶ Provide a stabilizing influence for pelvic and perineal structures, especially in females.
- ▶ Injury to it during childbirth may weaken the pelvic floor and contribute to prolapse of the vagina and uterus.

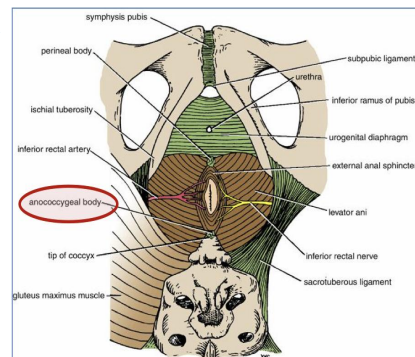
Perineum

Anococcygeal Body

- It is a complex **multilayered musculotendinous** structure, in which lies the rectum
- Situated in the floor of the pelvis between the the coccyx & the posterior wall of the anal canal.

Function:

- **Receives** insertion of fibers of levator ani muscle.
- Receives external sphincter, iliococcygeus, pubococcygeus components of levator ani and overlying superior fascia of the pelvic diaphragm.



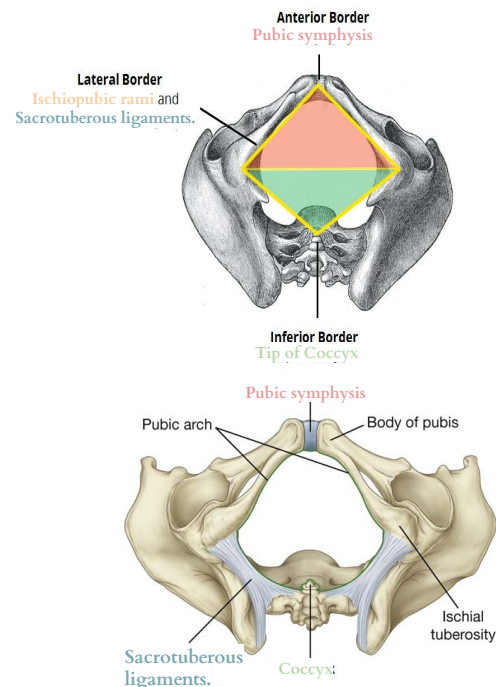
Boundaries & Division of Perineum

Bony boundaries of the Perineum:

Anteriorly: Symphysis pubis.

Posteriorly: Coccyx

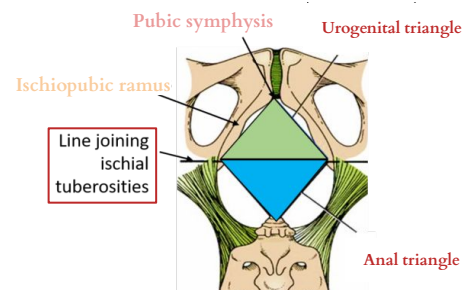
Laterally: Ischiopubic rami, ischial tuberosities & Sacrotuberous ligaments.



Division of the Perineum

The perineum is divided by an imaginary line passing through two ischial tuberosities, it's divided into:

1. **Anteriorly:** Urogenital triangle
2. **Posteriorly:** Anal triangle



Boundaries & Division of Perineum

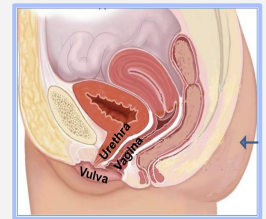
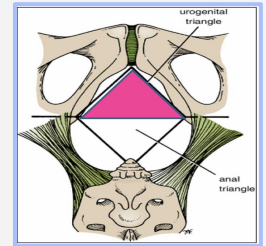
Urogenital triangle

Boundaries:

- **Anterior** → symphysis pubis
- **Posterior** → transverse line passing through the 2 ischial tuberosities
- **Lateral** → ischiopubic rami & ischial tuberosities

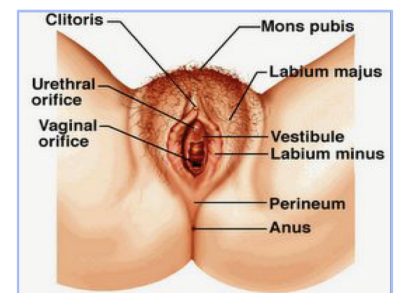
Contents:

- Lower part of **urethra** & **Vagina**
- **Externally**: External genitalia (**Vulva**)
- **internally**: Superficial and deep perineal pouches
- **Perineal body** & **Anococcygeal body**



Female External Genitalia (Vulva)

1. Mons pubis: a collection of fat overlying the pubes.
2. Clitoris
3. Labia majora.
4. Labia minora.
5. Vestibule of vagina: The interval between the two labia minora.
6. Vagina & urethra open into the vestibule through urethral orifice anteriorly and vaginal orifice posteriorly.



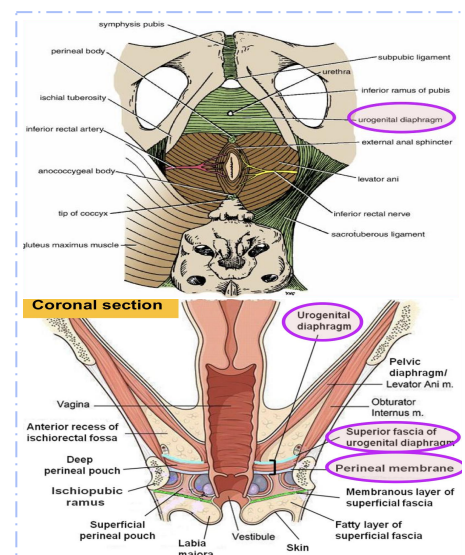
Urogenital diaphragm

A **triangular** musculofascial diaphragm located in the anterior part of the perineum (in the urogenital triangle).

Fills in the gap between the **pubic arch**

The **inferior** layer of the fascia is formed by **perineal membrane**

Composed of: Sphincter urethrae and the deep transverse perineal muscles enclosed within the superior and inferior layers of fascia of the urogenital diaphragm



Urogenital Triangle

Perineal fascia (Fascia of Urogenital Triangle)

- It is continuous anteriorly with the fascia of abdomen and consisting of:

1- Superficial perineal fascia which consists of:

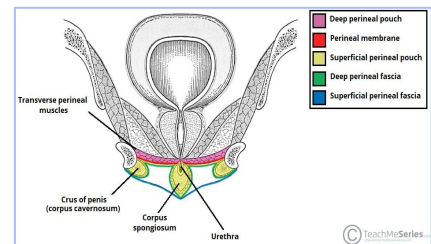
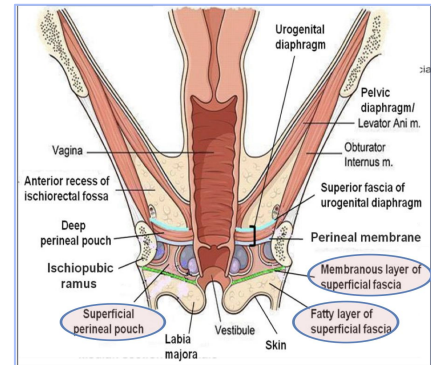
Superficial fatty layer (Camper's fascia) makes up the substance of mons pubis & labia majora and extends into the anal region.

Deep membranous layer (Colle's fascia):

does NOT extend to anal region. Rather, It becomes fused with the posterior margin of the perineal membrane.

2- Deep perineal fascia:

Deep perineal fascia invests the muscles in the superficial perineal pouch.



Perineal pouches (Superficial Perineal Pouch)

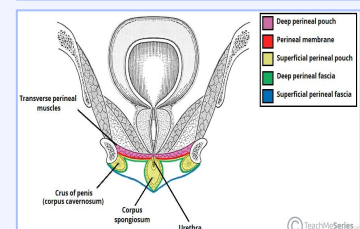
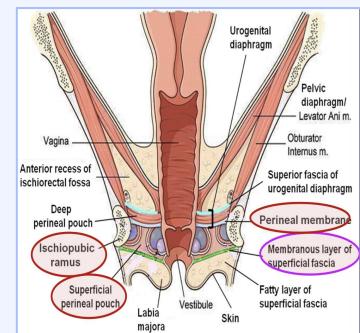
It is the space between the deep membranous layer of superficial fascia of perineum (Colle's fascia) and the inferior fascia of urogenital diaphragm perineal membrane.

Boundaries:

Superiorly → Perineal membrane.

Inferiorly → Membranous layer of superficial fascia (Colle's fascia).

Laterally → Ischiopubic rami.

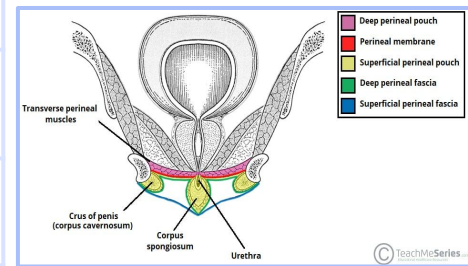
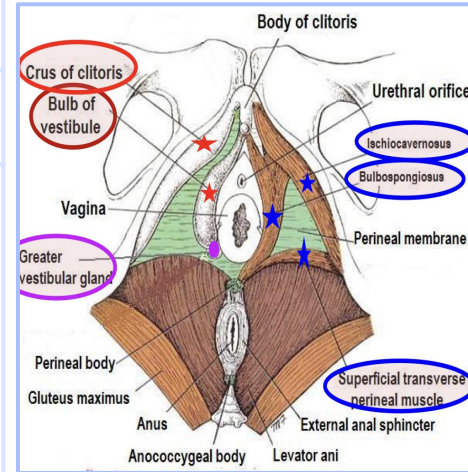


Perineal Pouches

Superficial perineal pouches

Contents

- 1- **Bulbs of vestibule***: on each side of vaginal orifice.
- 2- **Crura of clitoris***
- 3- **Superficial perineal muscles***: ★ These are the blue labeled muscle in the picture
 - I. **Bulbospongiosus*** muscle: surrounds the orifice of the vagina and covers the vestibular bulb.
 - II. **Ischiocavernosus*** muscle: covers crus of clitoris on each side.
 - III. **Superficial transverse perineal muscles.** ★
- 4- **Greater vestibular glands**: on each side of vaginal orifice.
- 5- Perineal branch of pudendal nerve supplying muscles & skin.



Deep perineal pouch

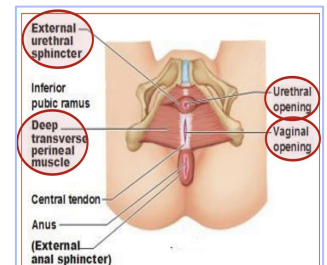
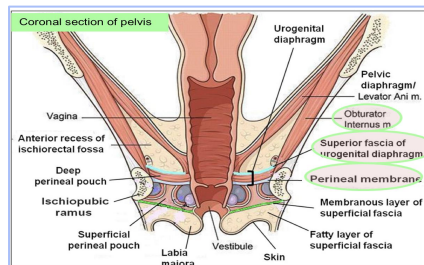
It is a completely closed space deep to the perineal membrane.

Contents

- Lower part of **urethra**
- Lower part of **vagina**.
- Sphincter urethrae** and **Sphincter vaginae muscles** which is pierced by urethra & vagina.
- Deep transverse perineal muscles.**
- Internal pudendal vessels.
- Dorsal nerve of clitoris (branch of Pudendal nerve).

Boundaries

- | | |
|-------------------|---|
| Superiorly | Superior fascia of the urogenital diaphragm. |
| Inferiorly | Inferior fascia of the urogenital diaphragm (Perineal membrane). |
| Laterally | Inferior portion of obturator internus fascia |



Nerve supply

Pudendal nerve (S2-S4)

- Passes through the **greater sciatic foramen**.
- Crosses the ischial spine and **enters the perineum with the internal pudendal artery through the lesser sciatic foramen**.
- Enters the pudendal canal, gives rise to:
 - The **inferior rectal nerve**
 - The **perineal nerve**
 - Terminates as the dorsal nerve of the penis (or clitoris).

Branches of Pudendal Nerve (Conti)

Perineal nerve:

Arises within the pudendal canal divides into:

- A deep branch-supplies all of the perineal muscles
- A superficial (posterior scrotal or labial) branch supplies the scrotum or labia majora.

Dorsal Nerve of the Penis (or Clitoris):

Pierces the perineal membrane, runs deep to the deep fascia on the dorsum of the penis or clitoris to innervate the skin, prepuce, and glans.

Inferior Rectal Nerve

- **Arises within the pudendal canal**
- Divides into several branches
- **Crosses the ischiorectal fossa**
- **Innervates the sphincter ani externus and the skin around the anus.**

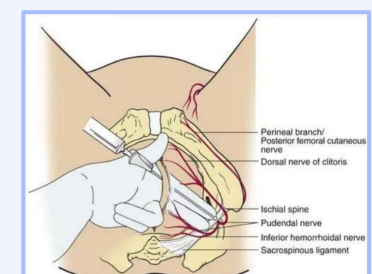
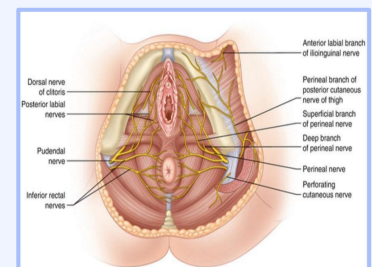
Pudendal nerve block

Performed by:

- Inserting a needle through the posterolateral vaginal wall
- Just beneath the pelvic diaphragm
- Toward the ischial spine (the needle around the pudendal nerve).

(A finger is placed on the ischial spine and the needle is inserted in the direction of the tip of the finger on the spine.)

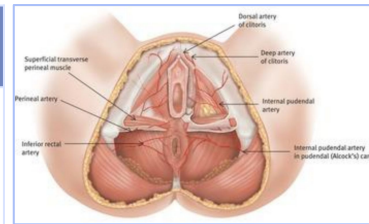
Pudendal block can be done subcutaneously through the buttock by inserting the needle on the medial side of the ischial tuberosity to deposit the anesthetic near the pudendal nerve.



Perineum Supply

Male
Slides

Arterial supply



Internal Pudendal Artery

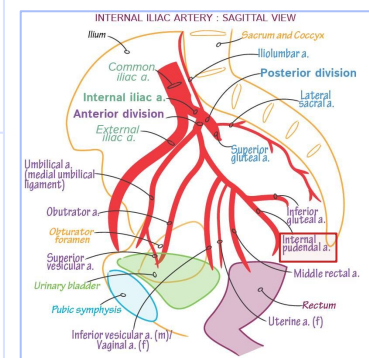
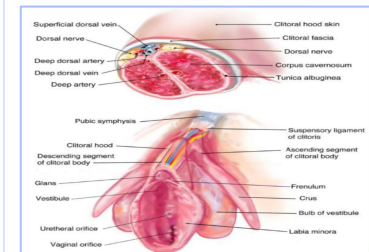
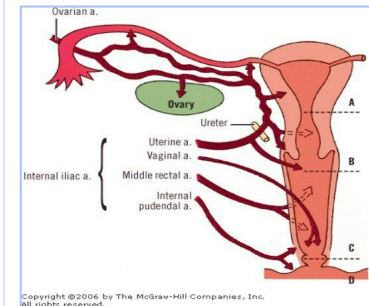
- Arises from the internal iliac artery.
- Leaves the pelvis by way of the greater sciatic foramen. Immediately enters the perineum through the lesser sciatic foramen.
- Is accompanied by the pudendal nerve during its course.
- Passes along the lateral wall of the ischioanal fossa in the pudendal canal.

Branches:

1. Inferior Rectal Artery
2. Perineal Arteries
3. Artery of the Bulb
4. Urethral Artery
5. Deep Arteries of the Clitoris
6. Dorsal Arteries of the Clitoris

External Pudendal Artery

Arises from the femoral artery, emerges through the saphenous ring, and passes medially over the spermatic cord or the round ligament of the uterus to supply the skin above the pubis & labium majus.



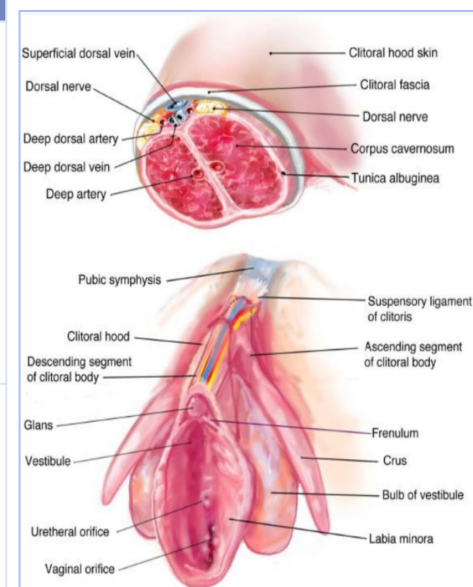
Venous drainage

Deep Dorsal Vein of the clitoris

- Traverses the suspensory ligament of the clitoris and pierces the perineal membrane, close to the pubic symphysis to Drains into the vesical venous plexuses.
- During sexual arousal, the deep dorsal vein of the clitoris is compressed by the bulbospongiosus muscles. This aids in the erection of the clitoris.

Superficial Dorsal Vein of the clitoris

Cross the base of the suspensory ligament of the clitoris to drain into the greater saphenous or the superficial external pudendal vein.



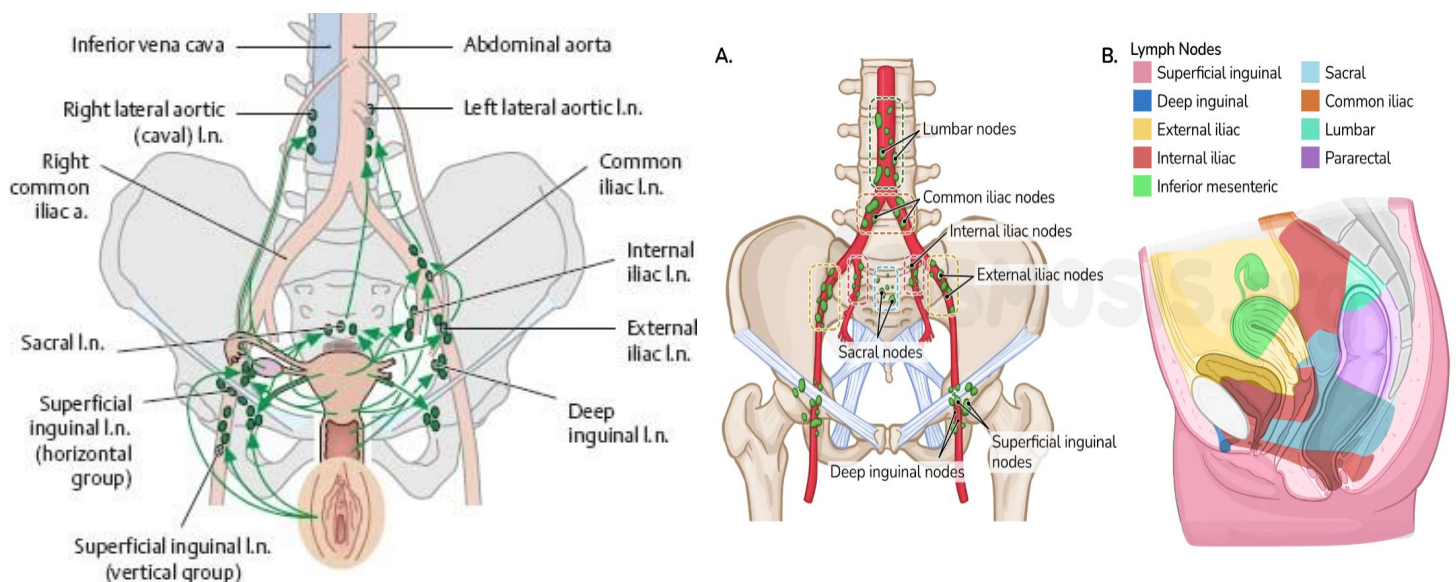
Lymphatic drainage

Lymphatic Drainage of the Perineum

- The superficial inguinal lymph nodes, which receive lymph from the lower abdominal wall, buttocks, labium majus, and lower parts of the vagina and anal canal.
- Efferent vessels drain primarily into the external iliac nodes and ultimately to the lumbar (aortic) nodes.
- Lymph vessels from the glans clitoridis and labium minus pass to the deep inguinal and external iliac nodes.

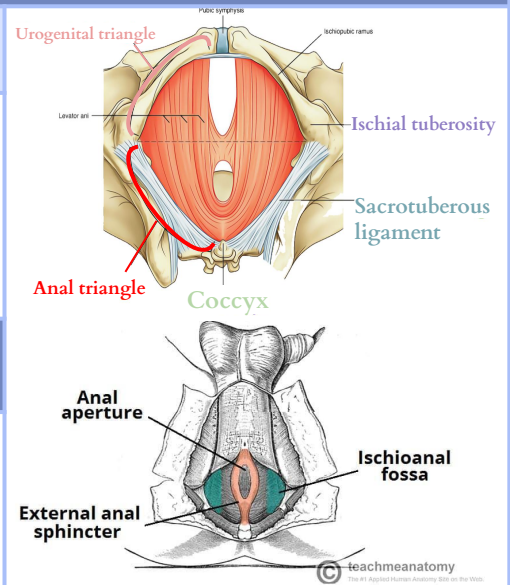
Lymphatic Drainage of the Pelvis

- Follows the internal iliac vessels to the internal iliac nodes and subsequently to the lumbar (aortic) nodes.
1. Internal iliac nodes
 - receive lymph from the upper part of the rectum and vagina and other pelvic organs
 - drain into the common iliac and then to the lumbar (aortic) nodes.
 - NOTE, lymph from the uppermost part of the rectum drains into the inferior mesenteric nodes and then to the aortic nodes.
 2. Lymph from the ovary drains along the gonadal vessels directly into the aortic nodes



Anal Triangle

Boundaries		
Anteriorly	Posteriorly	Laterally
Transverse line passing through the 2 ischial tuberosities.	Coccyx.	Ischial tuberosity & Sacrotuberous ligament
Contents		
<ul style="list-style-type: none"> • Lower part of Anal canal • Anococcygeal body • Ischioanal fossa on each side 		



Vagina

The **vagina** is a muscular canal that extends from the uterus to the external orifice of the genital canal

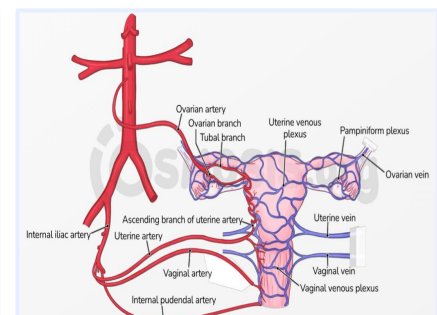
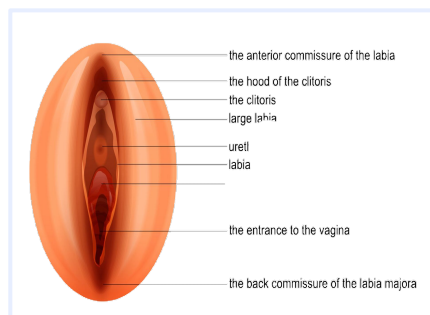
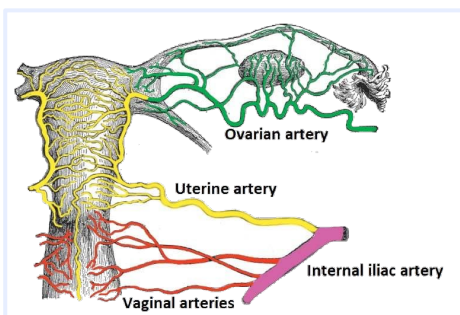
It measures about 3 in. (8 cm) long.

It serves as the excretory duct for the menstrual flow & forms part of the birth canal.

The **vaginal orifice** in a virgin possesses a thin mucosal fold, called the hymen and is perforated at its center. It lies posterior to the urethral orifice.

Blood supply:

- ➔ **Vaginal arteries**, from the internal iliac artery
- ➔ **Vaginal branch** of the uterine artery
- ➔ **Veins:** drain into the internal iliac veins.

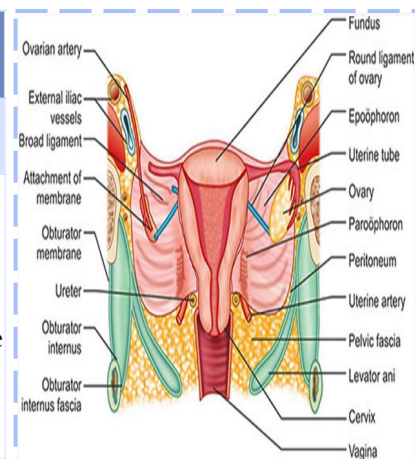


The Vagina

- Extends between the vestibule (the pudendal cleft) and the cervix of the uterus.
- Surrounds the cervix of the uterus, then passes downwards and forwards through the pelvic floor to **open into the vestibule**.
- Serves as the **excretory channel** for the products of **menstruation**; also serves to **receive the penis during coitus**.
- **Has a fornix** that forms the recess between the cervix and the wall of the vagina (The cervix projects into the anterior part of the vault of the vagina so that the continuous gutter surrounding the cervix is shallow anteriorly (where the vaginal wall is 3 in (7.5 cm) in length) and is deep posteriorly (where the wall is 4 in (10 cm) long). **This continuous gutter is divided into the anterior, posterior, and lateral fornices.**
- Is **partially closed** by a membranous crescentic fold (**the hymen**).
- **Is supported by:**
 - 1- The levator ani, the transverse cervical, pubocervical, and sacrocervical ligaments (upper part)
 - 2- The urogenital diaphragm (middle part).
 - 3- The perineal body (lower part).

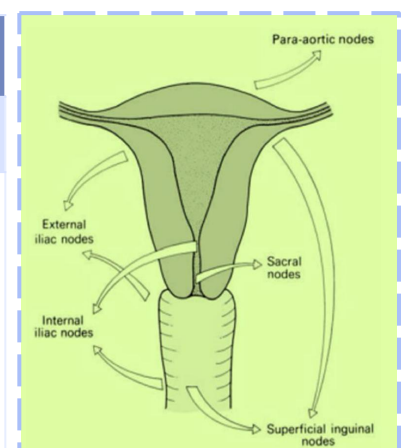
Relations of the Vagina

Anteriorly	Posteriorly	Laterally
The base of the bladder and the urethra (which is embedded in the anterior vaginal wall).	The pouch of Douglas (which covers the upper quarter of the posterior vaginal wall), the rectum and then the anal canal (separated by the perineal body).	Levator ani, pelvic fascia and the ureters (lie immediately above the lateral fornices).



Lymphatic and Nervous Supply of the vagina

Lymphatic drainage	Nerve Supply
<ol style="list-style-type: none"> 1- Upper third to the external and internal iliac nodes 2- Middle third to the internal iliac nodes. 3- Lower third to the superficial inguinal nodes. 	<p>-Is innervated by nerves derived from the uterovaginal plexus for the upper three-fourths (3/4) -By the deep perineal branch of the pudendal nerve for the lower one-fourth(1/4)</p>



Anal canal

Anal canal

It is about 1.5 in. long, descending from the **rectal ampulla to the anus**.

Relations (In female):

Anteriorly

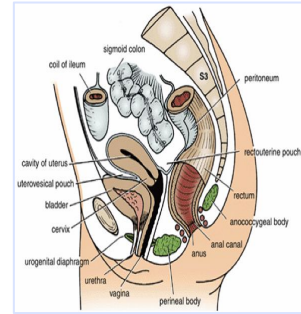
Perineal body,
urogenital diaphragm
& lower part of vagina

Posteriorly

Anococcygeal body.

Laterally

Ischiorectal fossae.



Divided into:

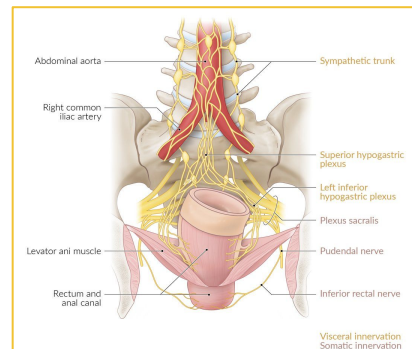
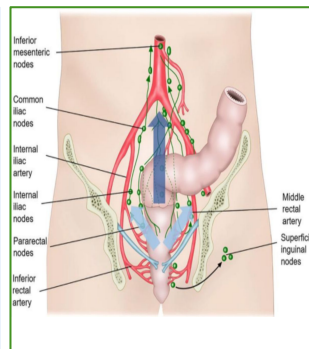
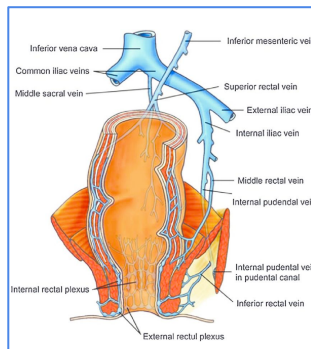
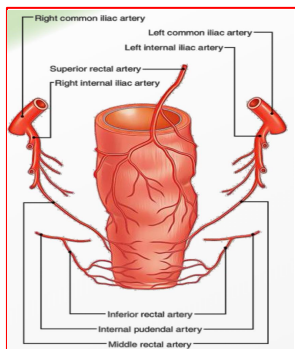
Upper half: derived from hindgut (**endoderm**)

Lower half: derived from the proctodeum (**ectoderm**)

It is also divided into an upper 2/3rd -visceral portion, which belongs to the intestine, and a lower 1/3rd -somatic portion, which belongs to the perineum concerning the mucosa, blood supply, and nerve supply

The two parts have different **blood supply, nerve supply and lymphatic drainage**

Anal Canal	Arterial supply	Venous drainage	Lymphatic drainage	Nerves
Upper half	Superior rectal artery (continuation of the inferior mesenteric artery)	Superior rectal vein drains into the inferior mesenteric vein (portal circulation).	Para-rectal nodes drain into inferior mesenteric & internal iliac lymph nodes	(Sensitive to stretch) Autonomic nerves (Inferior Hypogastric Plexus) (sympathetic & parasympathetic).
Lower half	Inferior rectal a. (branch of internal pudendal artery)	Inferior rectal vein drains into the internal pudendal vein (Systemic circulation).	Superficial inguinal lymph nodes	(Sensitive to pain) 1- Somatic (spinal) nerves. 2- Inferior rectal nerves (branches of pudendal nerve). Supply: External anal sphincter and the skin of the anal region.



Ischiorectal Fossa

Definition

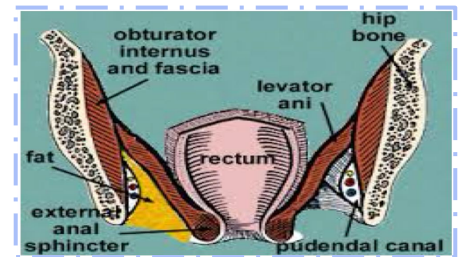
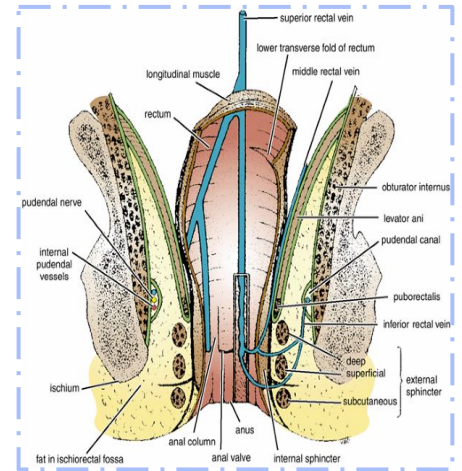
It's a fascial lined wedge-shaped space on each side of the anal canal.

Boundaries

Base	Medial wall	Lateral wall
Skin of the perineum.	Levator ani & Anal canal	Obturator internus, covered with fascia

Contents

- **Dense fat**
 - **Pudendal canal** (A fascial canal formed by obturator fascia, located on the lateral wall of the ischiorectal fossa) its contents : **Pudendal nerve & internal pudendal vessels.**
 - **Inferior rectal nerve & vessels** crossing the fossa to reach anal canal.
- Posteriorly, the two fossae communicate with one another providing a path for the spread of infection from one fossa to the other.



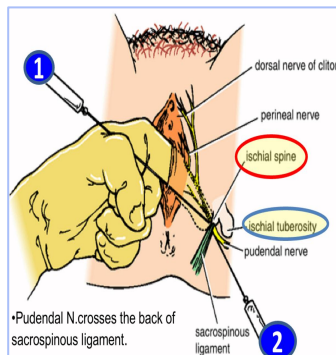
Pudendal nerve block

Pudendal nerve block is used in **providing analgesia for the second stage of labour** and to **provide anesthesia of the perineum in order to create and repair an episiotomy**. Can be done transvaginally or through perineal approach.

1. Transvaginal method

The needle is passed through the vaginal mucous membrane toward the **ischial spine**.

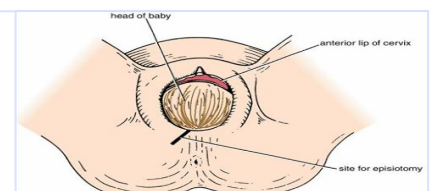
After the needle is passed through the sacrospinous ligament, the anesthetic solution is injected around the pudendal nerve



2. Perineal method:

The **ischial tuberosity** is palpated subcutaneously through the buttock. The needle is **inserted on the medial side of the ischial tuberosity** to a depth of about 1 in. (2.5 cm) from the free surface of the tuberosity. The anesthetic solution is injected around the pudendal nerve.

An episiotomy is a surgically planned incision on the **perineum** and the posterior vaginal wall during second stage of labor to **prevent perineal tear**.



MCQs

Q1- Which of the following is found in the superficial perineal pouch?

A- Urethra

B- Vaginal opening

C- Crura of the clitoris

D- Deep transverse muscle

Q2- Which one of the following forms the superior boundary of the superficial perineal pouch?

A- Obturator internus fascia

B- Perineal membrane

C- Camper's fascia

D- Colle's fascia

Q3- Which one of the following forms the inferior boundary of the Deep perineal pouch?

A- Perineal membrane

B- Anococcygeal body

C- The membranous part of superficial fascia

D- Pelvic diaphragm

Q4- Which one of the following muscles forms the lateral wall of the Ischiorectal fossa?

A- Levator Ani

B- Obturator Internus

C- Coccygus

D- Ischiocavernosus

Q5- The lymphatic drainage from the lower part of the anal canal goes to?

A- Para aortic

B- Common iliac

C- Deep inguinal

D- Superficial inguinal

Q6- An Obstetrician plans to perform a pudendal nerve block before episiotomy, what're the sites for the needle to put in?

A- Anterior vaginal fornix

B- Medial to ischial tuberosity

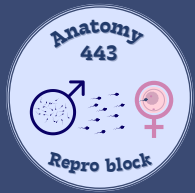
C- Inferior to ischial spine

D- Directly into labium minus

Answers: 1-C 2-B 3-A 4-B 5-D 6-B

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Team Leaders

Faris Alzahrani

Farah Alanezi

Sub Leader



Mohammed AlEssa

Team Members

Faisal Alshowier

Remaz Almahmoud

Khalid alsobei

Aljoharah Alkhalifah

Mohammed Alarfaj

Renad Saleh Alshehri



Areej Alquraini



Reuf Alahmari

Layla Alfrhan

Aldanah Abdullah

Aseel Alshehri

Renad M Alshehri

Norah Almania



Anatomy.med443@gmail.com