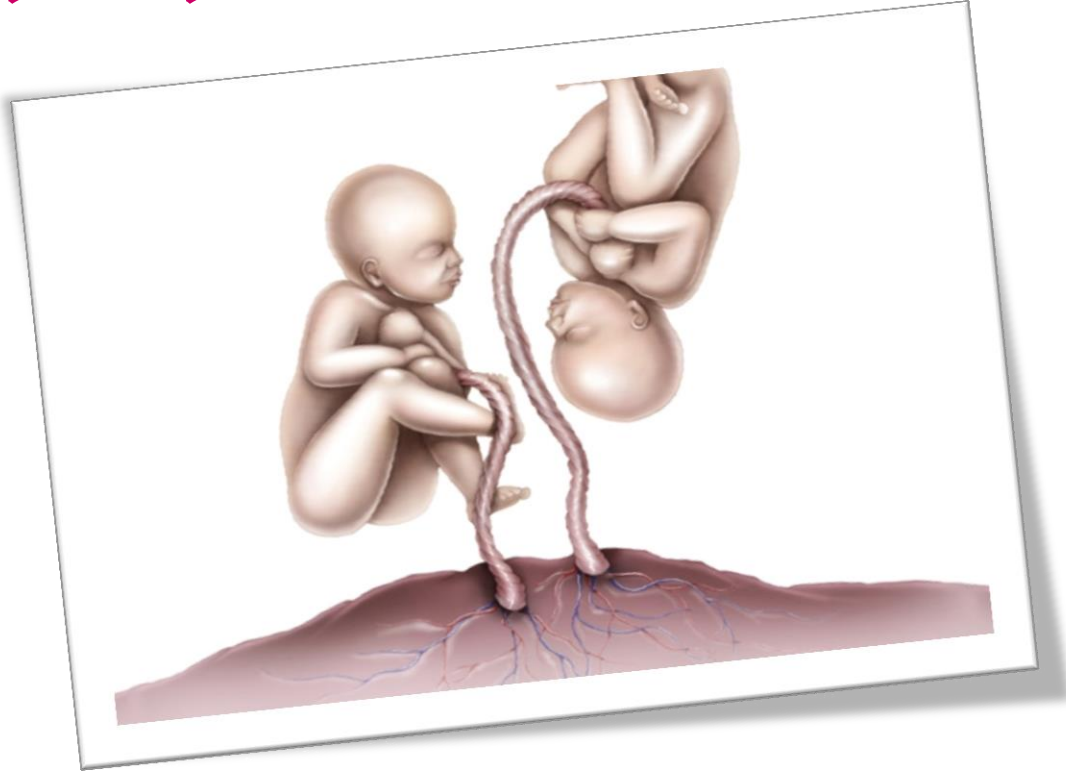




# REPRODUCTIVE SYSTEM



**LECTURE: FEMALE REPRODUCTIVE SYSTEM**

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[If there is any mistake or suggestions please feel free to contact us:](#)

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Both - Black

Male Notes - BLUE

Female Notes - GREEN

Explanation and additional notes - ORANGE

Very Important note - Red

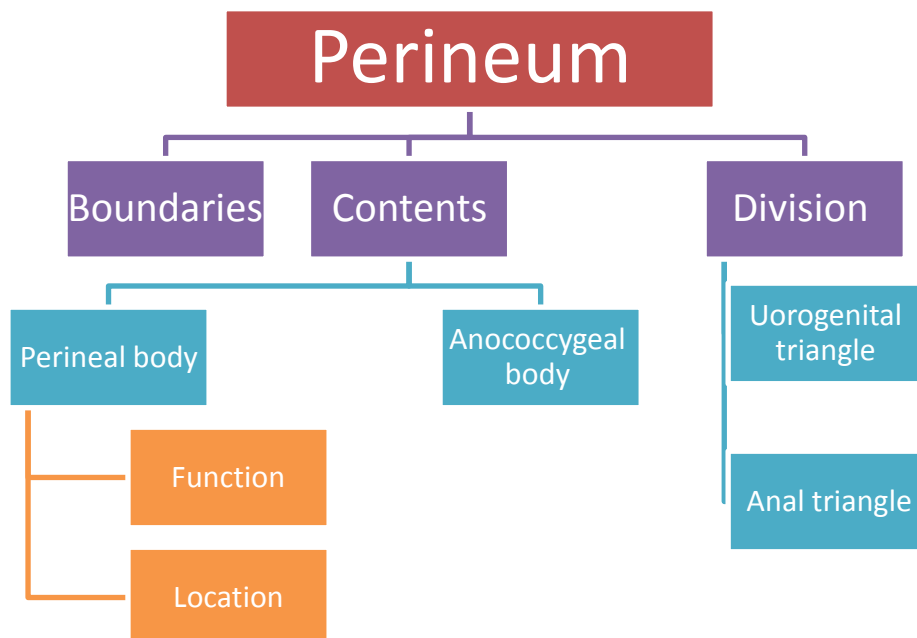


# Objectives:

## At the end of the lecture, students should be able to:

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

## Mind map:





Take a look!

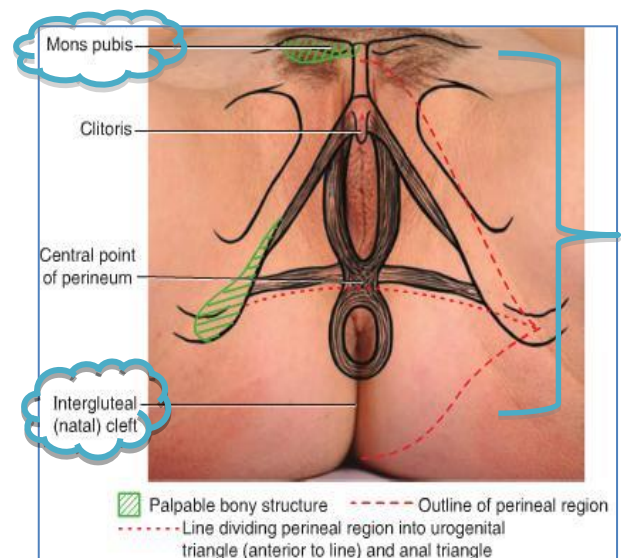
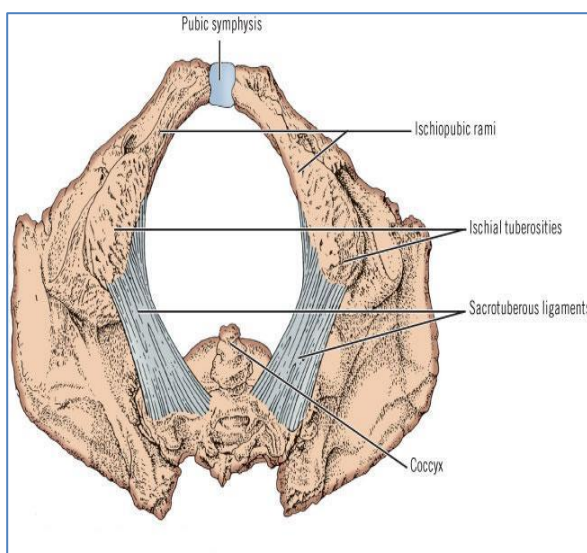
<http://www.youtube.com/watch?v=q0Ax3rLfc6M>



## Perineum

- \*Perineum is the **region of the body below the pelvic diaphragm (pelvic floor)**
- \*Examined from below, it is a diamond shaped area lying **between the thighs.**

## Boundaries



Its **bony boundaries** are:

- ✘ **Anterior:** Symphysis pubis.
- ✘ **Posterior:** Coccyx.
- ✘ **Lateral:** Ischiopubic rami, ischial tuberosities & sacrotuberous ligament.

- ✘ **Anterior:** Mons pubis
- ✘ **Lateral:** Medial surfaces of the thighs
- ✘ **Posterior:** Intergluteal folds

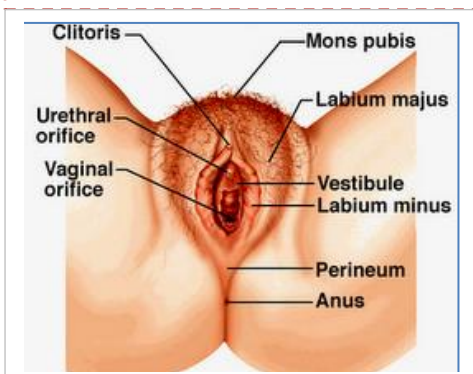


## Perineal Contents

1 Lower ends of  
**urethra, vagina  
& anal canal**

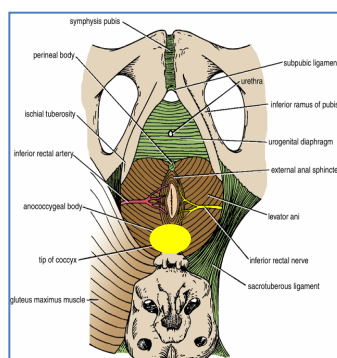
### 2 External Genitalia

- ☉ **Mons pubis** : a collection of fat overlying the pubes.
- ☉ **Labia majora.**
- ☉ **Labia minora.**
- ☉ **Clitoris.**
- ☉ **Vestibule of vagina:** The interval between the two labia minora.
- ☉ **Vagina & urethra** open into the vestibule through **urethral orifice** anteriorly and **vaginal orifice** posteriorly.



3 ☉ The **anococcygeal body** is a complex musculotendinous structure

- ☉ Situated between the **anterior aspect of the coccyx** and the **posterior wall of the anorectal canal**
- ☉ Receives insertion of fibers of levator ani muscle



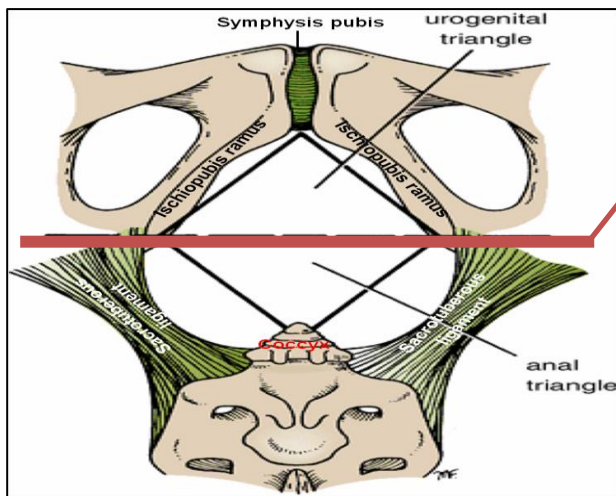
- 4
- **Perineal body** is an irregular mass of variable size and consistency, located at midpoint of the line between **the ischial tuberosities**
  - Lies in the subcutaneous tissue, **posterior to vaginal vestibule** and **anterior to the anal canal & anus**
  - Forms the central point of the perineum & blends anteriorly with the **perineal membrane**

### Function:

- \*Gives attachment to **perineal muscles**
- \*Plays an important role in **visceral support** especially in female



## Division of Perineum

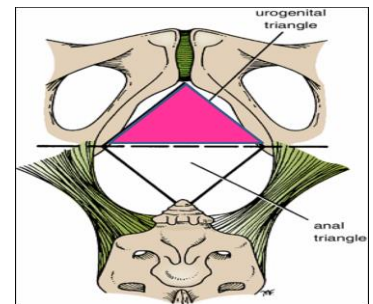


By an imaginary line passing through two **ischial tuberosities**, it is divided into:

\***Urogenital triangle** anteriorly.

\***Anal triangle** posteriorly.

### **Urogenital Triangle**

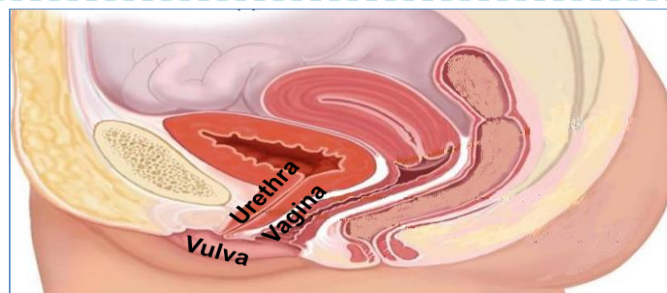


#### Boundaries

- ❧ **Anteriorly** : Symphysis pubis
- ❧ **Posteriorly** : Transverse line passing through the 2 ischial tuberosities.
- ❧ **Laterally** : Ischiopubic rami & ischial tuberosities.

#### Content

- ❧ Lower part of urethra & vagina.
- ❧ External genitalia (vulva).





## Fascia of Urogenital Triangle (Perineal Fascia)

The perineal fascia is continuous anteriorly with the fascia of abdomen and consists of **superficial and deep layers**

### Superficial perineal fascia

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 fasci**)

Does not extend to anal region. Becomes fused with the posterior margin of the perineal membrane

### Deep perineal fascia

invests the muscles in the superficial perineal pouch

- ☺ The gap between the two pubic arches is filled up by a triangular musculofascial diaphragm called the **urogenital diaphragm** (located in the anterior part of the perineum)
- ☺ The urogenital diaphragm is composed of two muscles (**sphincter urethrae** & **deep transverse perineal muscle**) enclosed within the **superior** and **inferior** layers of fascia of the urogenital diaphragm
- ☺ The inferior layer of the fascia is also called the **perineal membrane**



## Perineal pouches

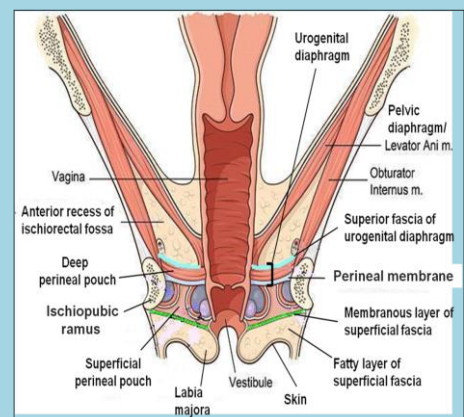
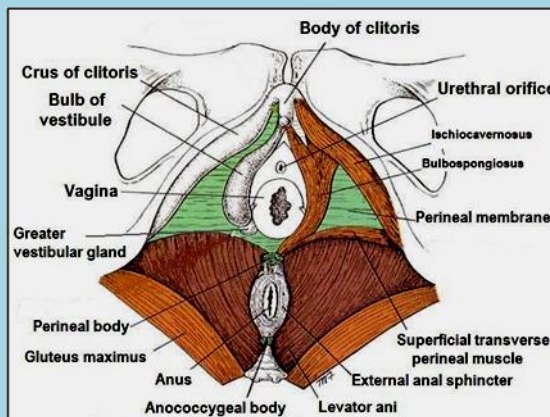
Perineal pouches (superficial & deep) are the two anatomic spaces bounded by fasciae within the urogenital triangle.

Skin → Superficial fatty layer → deep membranous fascial layer → Perineal membrane → Urogenital diaphragm (Muscle) → superior layer of urogenital fascia.

### Superficial perineal pouch

### Deep perineal pouch

Definition	It is the space between the <u>deep membranous layer</u> of superficial fascia and the <u>perineal membrane</u> .	Definition	It is a completely closed space deep to the perineal membrane
Boundries	<ul style="list-style-type: none"> <li><b>Inferiorly:</b> membranous layer of superficial fascia.</li> <li><b>Superiorly:</b> perineal membrane.</li> <li><b>Laterally:</b> ischiopubic rami</li> </ul>	Boundries	<ul style="list-style-type: none"> <li><b>Inferiorly:</b> Inferior fascia of the urogenital diaphragm (Perineal membrane)</li> <li><b>Superiorly:</b> Superior fascia of the urogenital diaphragm</li> <li><b>Laterally:</b> Inferior portion of obturator internus fascia</li> </ul>
Contents	<ul style="list-style-type: none"> <li>Bulbs of vestibule: on each side of vaginal orifice.</li> <li>Crura of clitoris.</li> <li>Superficial perineal muscles:               <ol style="list-style-type: none"> <li>Bulbospongiosus muscle, surrounds orifice of vagina and covers vestibular bulb.</li> <li>Ischiocavernosus muscle, covers crus of clitoris on each side.</li> <li>Superficial transverse perineal muscles.                   <ul style="list-style-type: none"> <li>Greater vestibular glands: on each side of vaginal orifice.</li> </ul> </li> </ol> </li> <li>Perineal branch of pudendal nerve supplying muscles &amp; skin.</li> </ul>	Contents	<ul style="list-style-type: none"> <li>Part of urethra</li> <li>Part of vagina</li> <li>Sphincter urethrae muscle, which is pierced by urethra &amp; vagina.</li> <li>Deep transverse perineal muscles</li> <li>Internal pudendal vessels</li> <li>Dorsal nerve of clitoris</li> <li>Constitute urogenital diaphragm.</li> </ul>

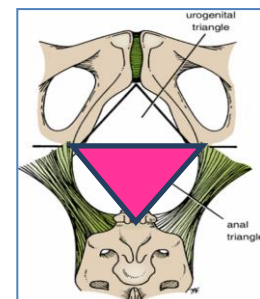




## Vagina

- The vagina is a muscular canal that leads 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**, which is perforated at its center.
- **Arteries:**
  - Vaginal artery, a branch of the internal iliac artery.
  - Vaginal branch of the uterine artery.
- **Veins:** drain into the internal iliac veins.

## **Anal Triangle**



### Boundaries

- **Anteriorly** : Transverse line passing through the 2 ischial tuberosities.
- **Posteriorly** : : coccyx.
- **Laterally** : ischial tuberosity & sacrotuberous lig.

### Content

- Lower part of Anal canal
- Ano-coccygeal body.
- Ischioanal fossa on each side





## Ischiorectal fossa

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

### - Boundaries:

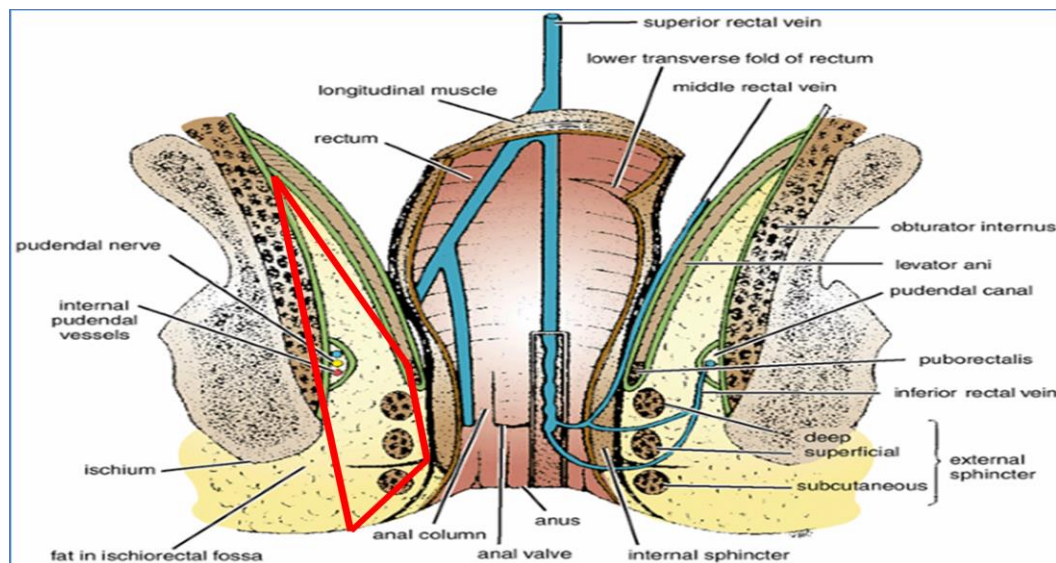
**Base:** Skin of the perineum

**Medial wall:** Levator ani & anal canal.

**Lateral wall:** Obturator internus, covered with fascia

### -Contents:

- Dense fat.
- Pudendal nerve & internal pudendal vessels within the pudendal canal
- Inferior rectal nerve & vessels crossing the fossa to reach anal canal.



### Pudendal Canal:

- A fascial canal located on the lateral wall of the ischioanal fossa, formed by obturator fascia

### Contents:

Pudendal nerve & Internal pudendal vessels. **Cross the fossa horizontally to supply the anal canal.**



**Anal Canal**  
The most terminal part of the large intestine, it is about 1.5 in. long, descending from the rectal ampulla to the anus (outer opening of the anal canal).

Relations (In female)	Division	
<ul style="list-style-type: none"> <li><b>Anteriorly:</b> Perineal body, urogenital diaphragm, and lower part of vagina</li> <li><b>Posteriorly:</b> Anococcygeal body.</li> <li><b>Laterally:</b> Ischiorectal fossae.</li> </ul>	<ul style="list-style-type: none"> <li><b>Upper half:</b> derived from hindgut (endoderm)</li> <li><b>Lower half:</b> derived from the proctodeum (ectoderm)</li> </ul> <p>➤ <b>The two parts have different blood supply, nerve supply and lymphatic drainage.</b></p>	 

Anal canal	Arterial supply	Venous drainage	Lymphatic drainage	Nerves
<b>Upper half</b>	<b>Superior rectal artery</b> (continuation of the inferior mesenteric artery)	<b>Superior rectal vein</b> drained into the inferior mesenteric vein (portal circulation)	<b>Para-rectal nodes</b> drained into inferior mesenteric lymph nodes	<b>Visceral motor</b> (sympathetic & parasympathetic) & sensory nerves
<b>Lower half</b>	<b>Inferior rectal artery.</b> (branch of internal pudendal artery)	<b>Inferior rectal vein</b> drained into the internal pudendal vein (systemic circulation; site of portal-systemic anastomosis)	<b>Superficial inguinal nodes</b>  Different arterial supply → different lymph drainage because lymphatics follow arteries.	<b>Somatic motor &amp; sensory nerves</b>



## 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 or repair an episiotomy. Can be done by transvaginally or through perineal approach.

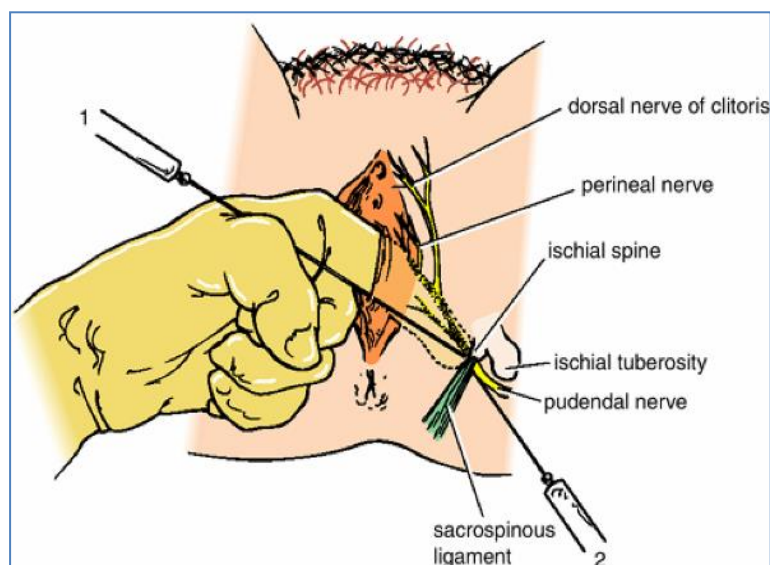
### Transvaginal method:

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.

### 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 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.





## QUESTIONS :

**1) The perineal body lies anterior to:**

- A. Anus
- B. Vagina
- C. Urethra
- D. Perineal membrane

**2) Which one of the following structures is situated between the anterior aspect of the coccyx and the posterior wall of the anorectal canal:**

- A. Perineal body
- B. Levator Ani
- C. Anococcygeal body
- D. Coccygeus muscle

**3) The line dividing the perineum into a urogenital and anal triangles passes between:**

- A. Ischiopubic remi
- B. Ischial tuberosities
- C. Ischial spines
- D. Lesser sciatic notch

**4) Choose the correct statement:**

- A. Both fatty & membranous layers of superficial perineal fascia extend into the anal region.
- B. Only the fatty layer of the superficial perineal fascia extends into the anal region.
- C. Only the membranous layer of the superficial perineal fascia extends into the anal region.
- D. None of the layers of the superficial perineal fascia extend into the anal region.



**5) Which of the following muscles compose the urogenital diaphragm:**

- A. Levator ani & coccygeus.
- B. Bulbospongiosus & ischiocavernosus muscles.
- C. Obturator internus & piriformis.
- D. Sphincter urethrae & deep transverse perineal muscle

**6) The space between the deep membranous layer of superficial fascia and the perineal membrane is called:**

- A. Superficial perineal pouch
- B. Deep perineal pouch
- C. Vestibule

**7) Which of the following is not a component of the superficial perineal pouch:**

- A. Sphincter urethrae muscle
- B. Bulbs of vestibule
- C. Crura of clitoris
- D. Greater vestibular glands

**8) Venous drainage of the vagina:**

- A. Inferior rectal vein
- B. Left renal vein
- C. External iliac vein
- D. Internal iliac vein

**9) Lymphatic drainage of the lower half of the anal canal:**

- A. Pre-rectal nodes
- B. Inferior mesenteric lymph nodes
- C. Superficial inguinal nodes
- D. Deep inguinal nodes



**10) The lateral wall of ischiorectal fossa is formed by:**

- A. Levator ani
- B. Anal canal
- C. Obturator internus
- D. Pudendal nerves

**11) Pudendal canal is formed by:**

- A. Obturator fascia
- B. Superficial perineal fascia
- C. Deep perineal fascia
- D. Colle's fascia

**12) A 31-year old patient is going through her second stage of labor, her obstetrician is about to perform an episiotomy, which nerve is he/she supposed to block:**

- A. Pudendal nerve
- B. Inferior gluteal
- C. Superior gluteal
- D. Hypogastric nerve

**13) Anterior part of the Urogenital Triangle is:**

- A. Ischiopubic rami
- B. coccyx
- C. ischial tuberosities
- D. Symphysis pubis

**14) Upper half of Anal Canal derived from:**

- A. ectoderm
- B. endoderm
- C. proctodeum



Q	Answer
1	A
2	C
3	B
4	B
5	D
6	A
7	A
8	D
9	C
10	C
11	A
12	A
13	D
14	B

**GOOD LUCK**

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