



MED437
KING SAUD UNIVERSITY



Female Perineum & External Genitalia

Lecture (2)

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هذا العمل لا يغني عن المصدر الأساسي للمذاكرة

- **Important**
- **Doctors Notes**
- Notes/Extra explanation

{وَمَنْ يَتَوَكَّلْ عَلَى اللَّهِ فَهُوَ حَسْبُهُ}

■ 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.**
- ✓ **Innervation, Blood supply and lymphatic drainage of perineum.**

Introduction

- The trunk is divided into 4 main cavities: thoracic, abdominal, pelvic, and perineal. (see image 1)
- The pelvis has an inlet and an outlet. (see image 2) The lowest part of the pelvic outlet is the perineum.
- The perineum is separated from the pelvic cavity superiorly by the pelvic floor.
- The pelvic floor or pelvic diaphragm is composed of muscle fibers of the levator ani, the coccygeus muscle, and associated connective tissue. (see image 3) We will talk about them more in the next lecture.

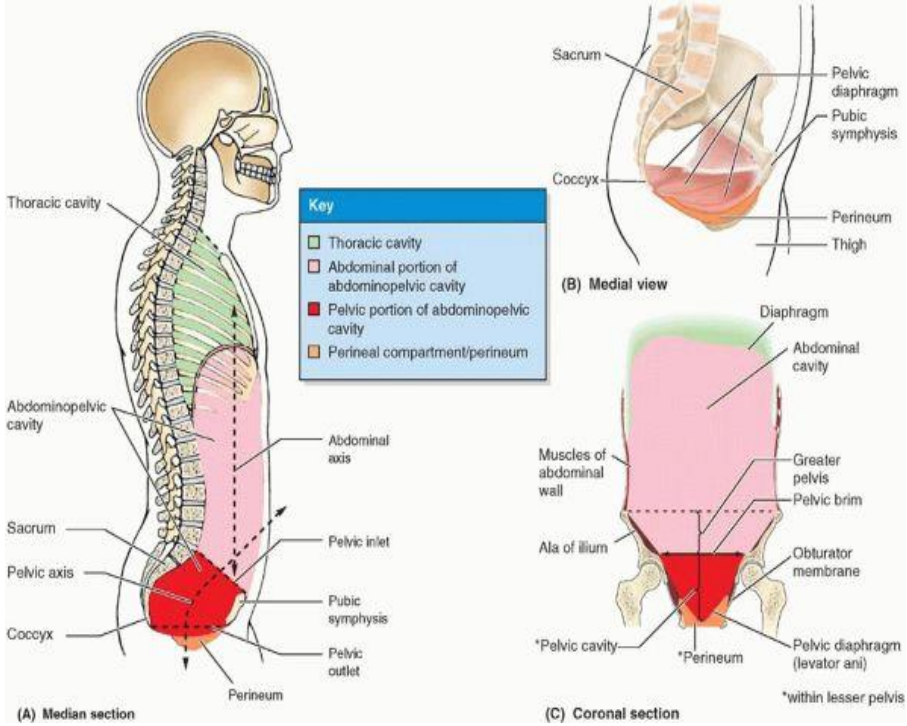


Image (1)

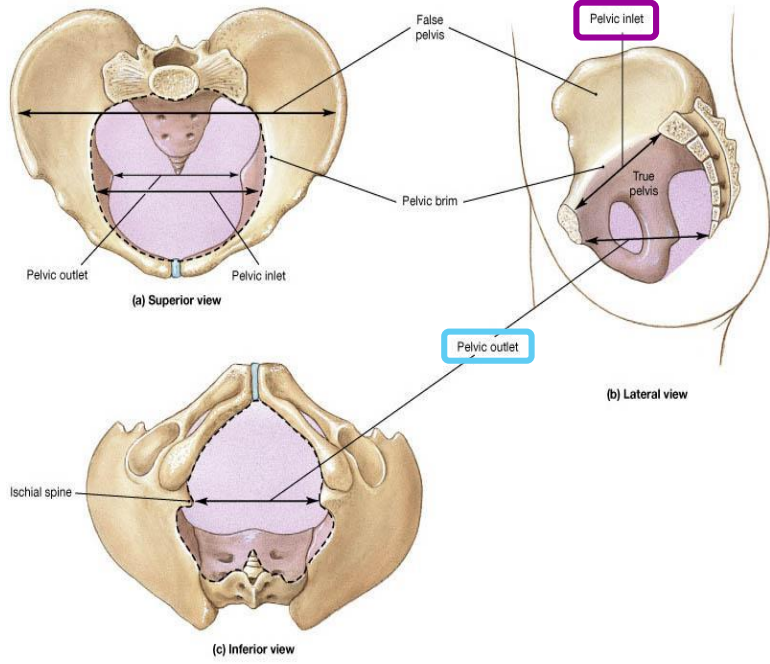


Image (2)

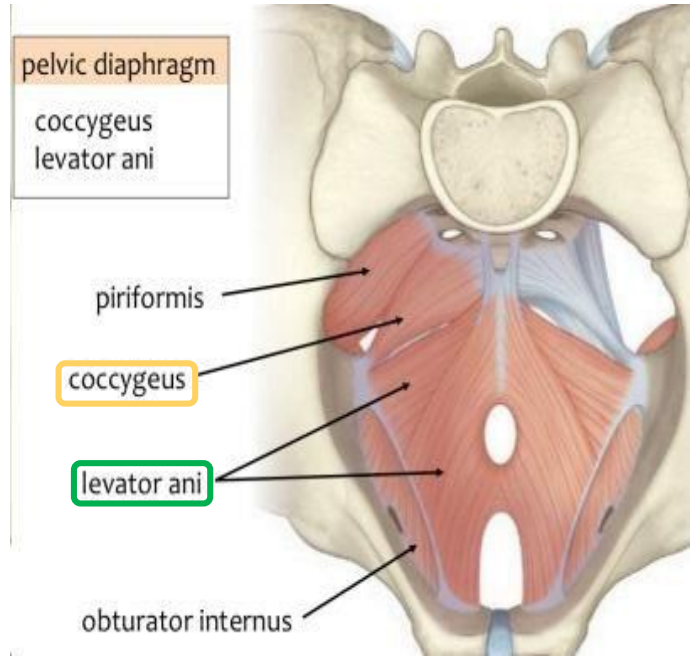
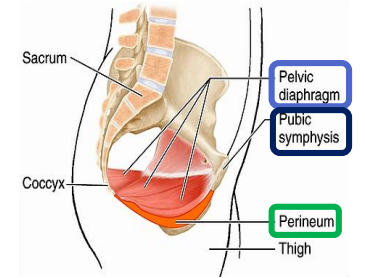


Image (3)

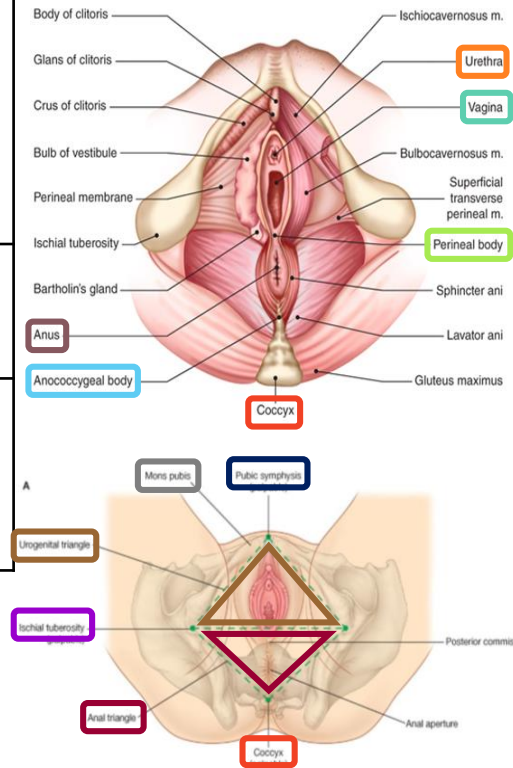
Note: this image is seen from ABOVE

Perineum

- It is the region of the body **below** the pelvic diaphragm (The outlet of the pelvis)
- It is a diamond shaped area **between** the **thighs**

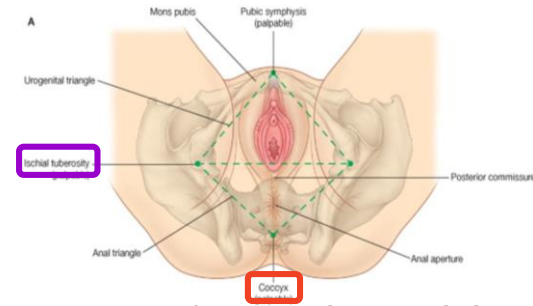


<p>External Boundaries</p>	<p>Anterior → <u>Mons pubis</u> Posterior → Intergluteal folds Lateral → <u>Medial</u> surfaces of the thighs</p>
<p>bony boundaries</p>	<p>Anterior → <u>Symphysis pubis</u> Posterior → <u>Coccyx</u> Lateral → Ischiopubic rami, <u>ischial tuberosities</u> & sacrotuberous ligaments* *ligament between sacrum & ischial tuberosity</p>
<p>Contents</p>	<p><u>Perineal body</u>, <u>Anococcygeal body</u> & External genitalia Lower ends of <u>urethra</u>, <u>vagina</u> & <u>anal canal</u></p>
<p>Division</p>	<p>By an imaginary line passing through two ischial tuberosities, it is divided into: Anterior → <u>Urogenital triangle</u> contain: <u>vulva</u>, <u>urethra</u> & <u>vagina</u> Posterior → <u>Anal triangle</u> contain: <u>anal canal</u></p>



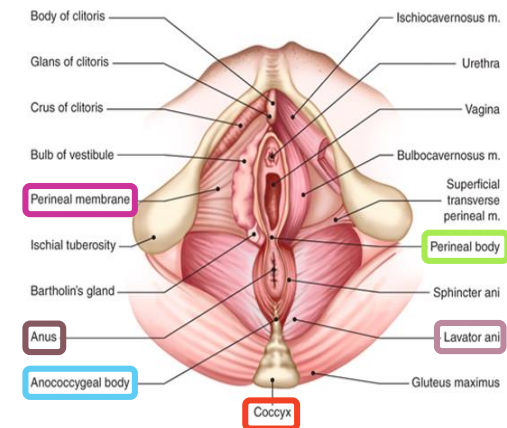
Perineal Body

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



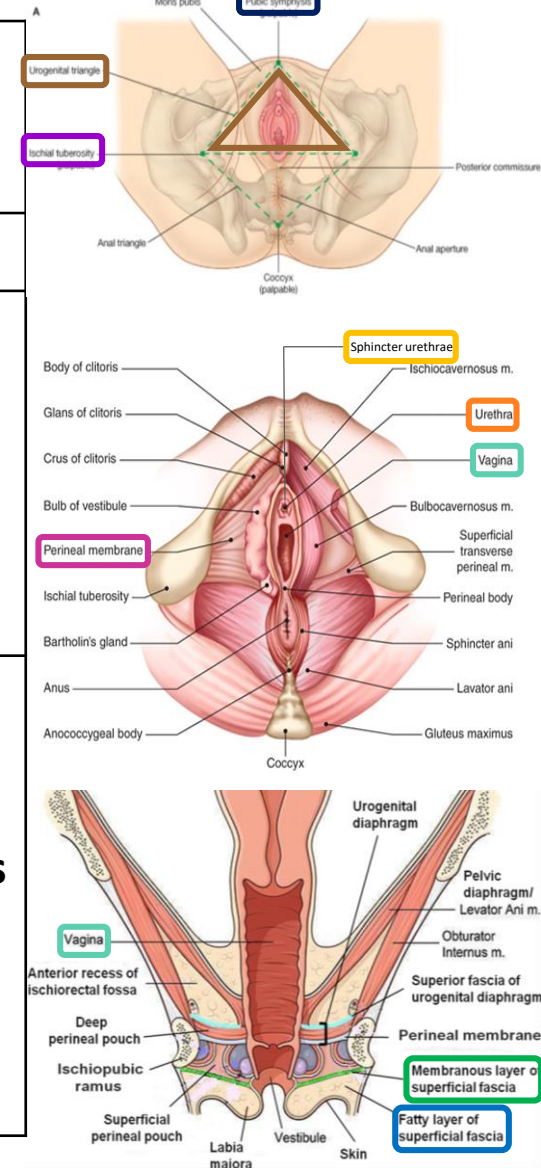
Anococcygeal Body

- It is a **complex musculotendinous** (more tendinous) structure
- **Located** between the **anterior** aspect of the **coccyx** & the **posterior wall** of the **anorectal canal**
- **Function:** Receives insertion of fibers of **levator ani muscle**



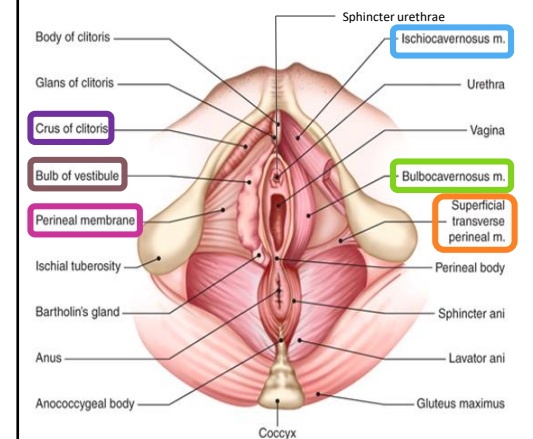
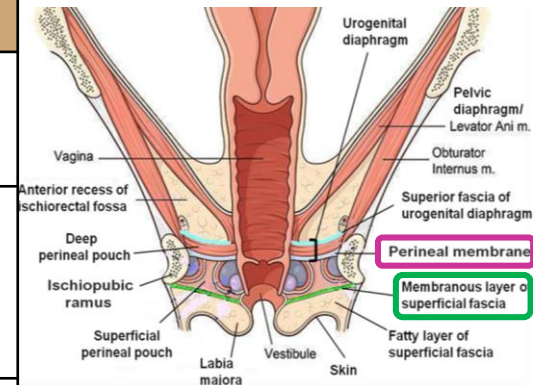
Urogenital Triangle

<p>Bony Boundaries</p>	<p>Anterior → <u>Symphysis pubis</u> SAME anterior boundary of perineum Posterior → Transverse line passing through the 2 ischial tuberosities Lateral → Ischiopubic rami & <u>ischial tuberosities</u></p>
<p>Contents</p>	<p>External genitalia (vulva), Lower ends of <u>urethra</u> & <u>vagina</u></p>
<p>Urogenital Diaphragm</p>	<ul style="list-style-type: none"> ○ located in the anterior part of the <u>perineum</u> (in the <u>urogenital triangle</u>) ○ Fills in the gap between the pubic arch ○ Composed of: <u>Sphincter urethrae</u> and the deep transverse perineal muscles enclosed within the superior and inferior layers* of fascia of the urogenital diaphragm <p>*inferior layers formed by the <u>perineal membrane</u></p>
<p>Fascia of Urogenital Triangle (Perineal Fascia)</p>	<ul style="list-style-type: none"> ○ It is continuous anteriorly with the fascia of abdomen and consists of two layers: <ol style="list-style-type: none"> 1) Superficial perineal fascia, consists of: <ul style="list-style-type: none"> • 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 Becomes fused with the posterior margin of the perineal membrane 2) Deep perineal fascia invests the muscles in the superficial perineal pouch



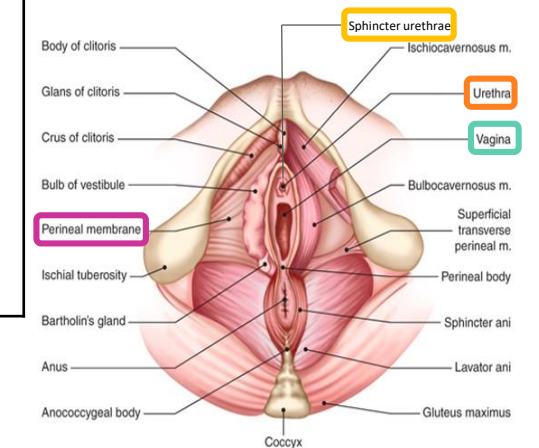
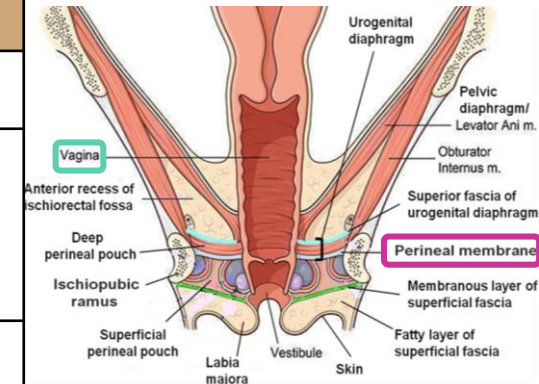
Perineal Pouches Pouches= space

Superficial Perineal Pouch	
It is the space between the deep <u>membranous layer of superficial fascia</u> of perineum (Colle's fascia) and the <u>perineal membrane</u>	
Boundaries	Superior → perineal membrane Inferior → membranous layer of superficial fascia (Colle's fascia) Lateral → ischiopubic rami
Contents (Important)	<ul style="list-style-type: none"> ○ Bulbs of vestibule: on each side of vaginal orifice ○ Crura of clitoris ○ Superficial perineal muscles: <ul style="list-style-type: none"> • Bulbospongiosus muscle, <u>surrounds orifice</u> of vagina and <u>covers vestibular bulb</u> • Ischiocavernosus muscle, <u>covers crus</u> of clitoris on each side • Superficial transverse perineal muscles ○ Greater vestibular glands: on each side of vaginal orifice ○ Perineal branch of pudendal nerve <u>supplying</u> muscles & skin



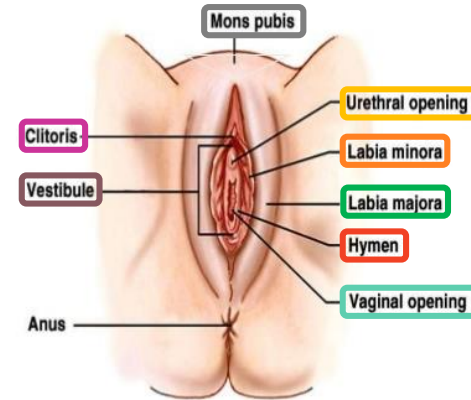
Perineal Pouches Pouches= space

Deep Perineal Pouch	
It is a completely closed space <u>deep to</u> the <u>perineal membrane</u>	
Boundaries	Superior → Superior fascia of the urogenital diaphragm Inferior → Inferior fascia of the urogenital diaphragm (Perineal membrane) Lateral → Inferior portion of obturator internus fascia
Contents	<ul style="list-style-type: none"> ○ Part of <u>urethra</u> ○ Part of <u>vagina</u> ○ <u>Sphincter urethrae</u> and <u>Sphincter vaginae</u> muscles, which is <u>pierced by urethra & vagina</u> ○ <u>Deep transverse perineal muscles</u> ○ Internal pudendal vessels ○ Dosal nerve of clitoris (branch of Pudendal nerve)



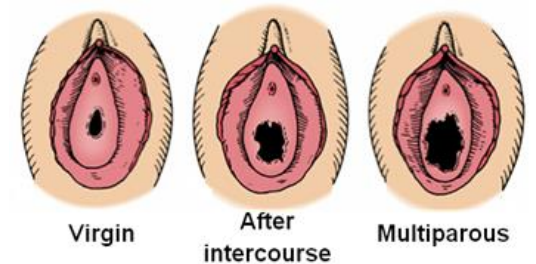
External Genitalia (Vulva)

- The external genital organs of the female are collectively known as the **vulva** (also called the pudendum) is comprised of many different structures:
- **Mons pubis** : a collection of fat overlying the pubes
- **Labia majora** & **Labia minora** (Labia=flaps) | **Clitoris**
- **Vestibule** of vagina: The **interval** or area **between** the two labia minora
- **Vagina & urethra** open into the **vestibule** through **urethral orifice** anteriorly and **vaginal orifice** posteriorly



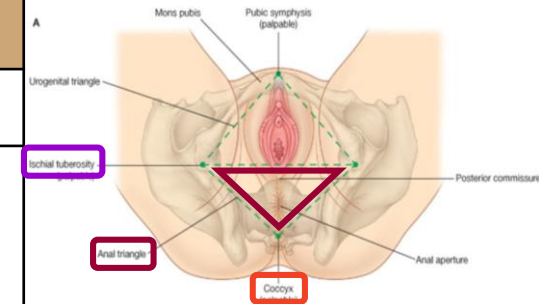
Vagina

- The vagina is a **muscular canal** that leads from the **lower part of uterus** to the **external orifice** of the **genital canal**
- It measures about **3 in (8 cm) long** while **Anal canal 1.5 in**
- It serves as the **excretory duct** for the **menstrual flow** & forms part of the **birth canal**
- The **vaginal orifice** in a **virgin** (بكر=عذراء) possesses a **thin mucosal fold** called the **hymen** (غشاء البكارة), which is **perforated** (منقب=مخرم) at its center **to allow the menstrual blood to flow out**, it lies posterior to the **urethral orifice**
- Arteries:
 - **Vaginal artery**, a branch of the **internal iliac artery**
 - **Vaginal branch** of the **uterine artery**
- Veins: drain into the **internal iliac veins**



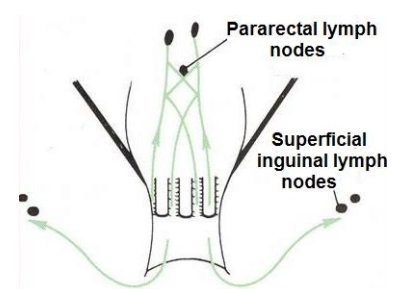
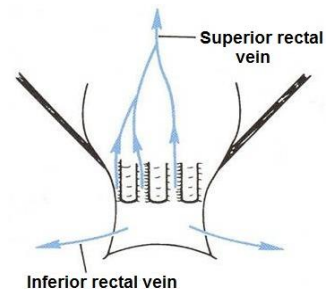
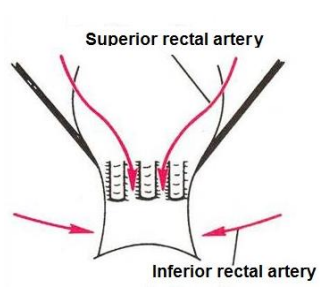
Anal Triangle

Boundaries	Anterior → Transverse line passing through the 2 ischial tuberosities Posterior → <u>coccyx</u> Lateral → <u>ischial tuberosity</u> & sacrotuberous lig
Contents	Lower part of Anal canal, Ano-coccygeal body & Ischiorectal fossa on each side (Ischiorectal fossa for dilation of anal canal)
Anal Canal	
It is about 1.5 in long, <u>descending from the rectal ampulla to the anus</u>	
Relations	Anterior → Perineal body, urogenital diaphragm, and lower part of vagina Posterior → Anococcygeal body Lateral → Ischiorectal fossae
Division	<ul style="list-style-type: none"> ○ Upper half: derived from hindgut (endoderm) ○ Lower half: derived from the proctodeum (ectoderm) <p>The two parts have DIFFERENT blood supply, nerve supply and lymphatic</p>



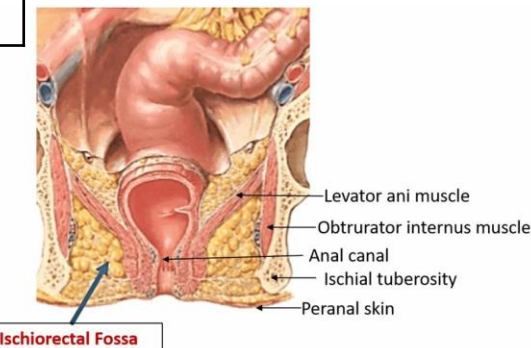
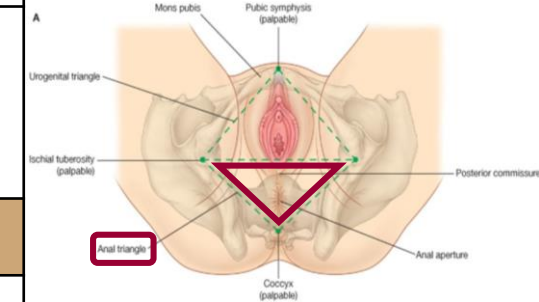
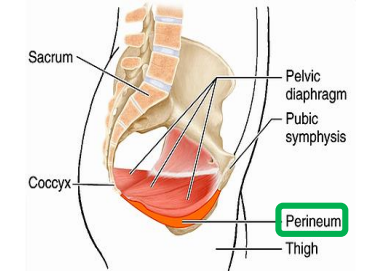
Anal canal (SUPPLY)

	Arterial supply	Venous drainage	Lymphatic drainage	Nerves
Upper half hindgut (endoderm)	Superior rectal artery (continuation of the inferior mesenteric artery)	Superior rectal vein drained into the inferior mesenteric vein (portal circulation)	Para-rectal nodes drained into inferior mesenteric lymph nodes	(sensitive to stretch) Visceral motor (Inferior Hypogastric Plexus) (sympathetic & parasympathetic)
Lower half proctodeum (ectoderm)	Inferior rectal artery (branch of internal pudendal artery)	Inferior rectal vein drained into the internal pudendal vein (Systemic circulation)	Superficial inguinal lymph nodes	(sensitive to pain) Somatic motor & sensory nerves - (Inferior rectal nerve branch of pudendal nerve) <u>supplies external sphincter muscle</u> of the anus and the skin of the anal region



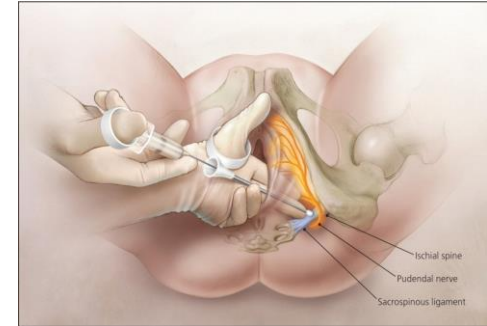
Anal Triangle

Ischiorectal Fossa	
A fascial lined wedge-shaped space on each side of the anal canal	
Boundaries	Base → Skin of the <u>perineum</u> Medial wall → Levator ani & anal canal Lateral wall → Obturator internus, covered with fascia
Contents	<ul style="list-style-type: none"> ○ 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 <u>formed by obturator fascia</u> , <u>located on the lateral wall of the ischiorectal fossa</u>	
Contents	<ul style="list-style-type: none"> ○ Pudendal nerve ○ Internal pudendal vessels



Pudendal Nerve Block

- It is used in **providing analgesia** for the **second stage of labour** to provide **anesthesia** of the **perineum** in order to create and repair an **episiotomy** (surgically planned **incision** on the **perineum** and the **posterior vaginal wall** during **second stage of labor** **to prevent perineal tear**).
- 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**.

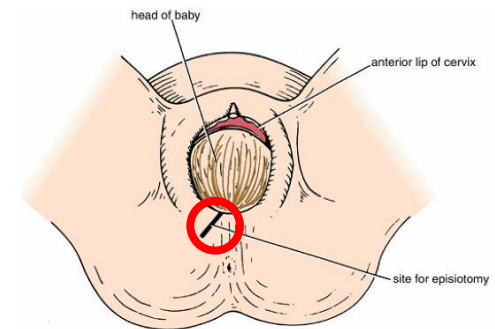


REMEMBR! From Superficial to Deep

1. Skin
2. Superficial fatty layer (Camper's fascia)
3. Deep membranous layer (Colle's fascia)
4. Superficial Perineal Pouch
5. Perineal membrane
6. Deep Perineal Pouch

REMEMBR! From Anterior to Posterior

1. Clitoris
2. Urethra
3. Vagina
4. Perineal body
5. Anus
6. Anococcygeal body
7. Coccyx



The cut is made in an **oblique line** so we **don't cut the perineal body**

Q1: All the following are contents of urogenital triangle except:

- A) Urethra
- B) Vagina
- C) Valva
- D) Anus

Q2: Which one of the following structures forms the center point of perineum?

- A) Perineal body
- B) Ischial tuberosities
- C) Anococcygeal body
- D) Coccyx

Q3: Which one of the following structures lie anterior to Urogenital Triangle?

- A) Ischiopubic rami
- B) Ischial tuberosities.
- C) External genitalia
- D) Symphysis pubis

Q4: Which of the following is a content of superficial perineal pouch?

- A) Dosal nerve of clitoris
- B) Perineal branch of pudendal nerve
- C) Pudendal vein
- D) Pudendal artery

Q5: Which of the following is a lateral boundary to deep perineal pouch?

- A) Inferior portion of obturator internus fascia
- B) Superior portion of obturator internus fascia
- C) Ischiopubic rami
- D) Superior fascia of the urogenital diaphragm

Q6: Vaginal branch originates from which of the following arteries?

- A) Internal iliac artery
- B) Ovarian artery
- C) Uterine artery
- D) Inferior mesenteric artery

Q7: Which of the following vein drain the inferior rectal vein?

- A) Uterine vein
- B) Internal pudendal vein
- C) Superior mesenteric vein
- D) Inferior mesenteric vein

Q8: The fascia canal of pudendal canal formed by which of the following?

- A) Deep perineal fascia
- B) Superficial perineal fascia
- C) Obturator fascia
- D) Superior fascia of urogenital



Good luck
Special thank for team436 ❤️

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- References:
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