

A woman in a hospital setting, wearing a teal scrub top and a name tag, is pointing at a large screen displaying anatomical diagrams of the female pelvis. The background shows a window with blinds and a desk with chairs.

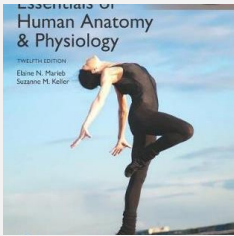
ANATOMY OF FEMALE PELVIS

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Objectives

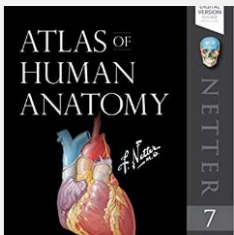
- Describe the anatomy of the pelvic wall, bones, joints & muscles.
- Describe the boundaries and subdivisions of the pelvis.
- Differentiate the different types of the female pelvis.
- Describe the pelvic floor.
- Describe the components & function of the pelvic diaphragm.
- List the arterial & nerve supply
- List the lymph & venous drainage of the pelvis.

RESOURCES



ESSENTIAL OF HUMAN ANATOMY & PHYSIOLOGY

By Elaine Marieb and Suzanne Keller



ATLAS OF HUMAN ANATOMY

By Frank Netter

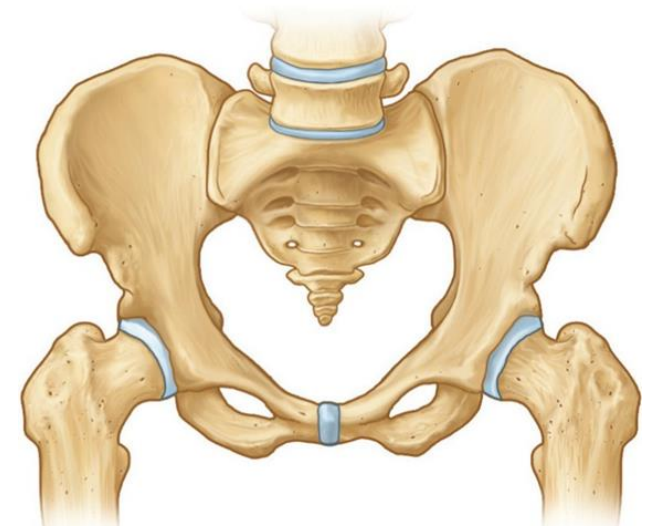


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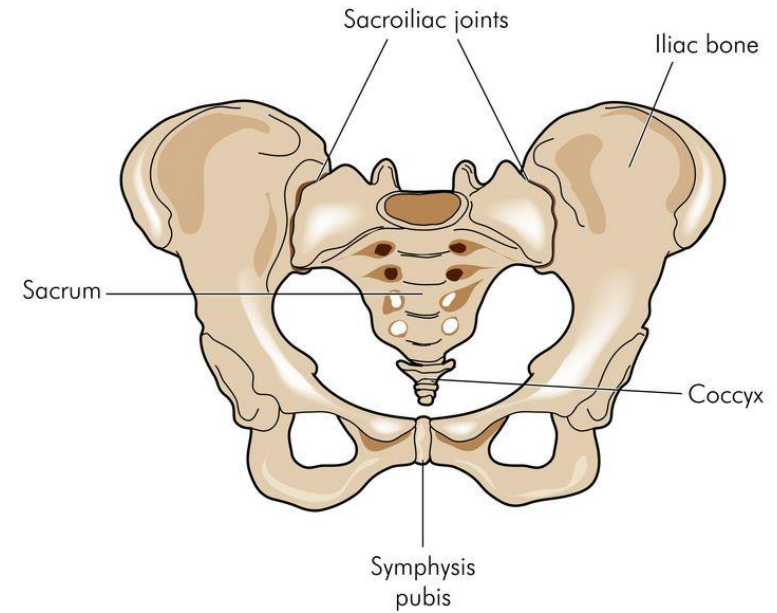
Bony Pelvis

- The bony pelvis is composed of four bones:
 - **Two hip bones**, which form the anterior and lateral walls.
 - **Sacrum** and **coccyx**, which form the posterior wall.
- These four bones are connected by four joints and lined by four muscles.
- The bony pelvis with its joints and muscles form a strong basin-shaped structure (with multiple foramina),
- The pelvis contains and protects the lower parts of the alimentary, urinary tracts and internal organs of reproduction.



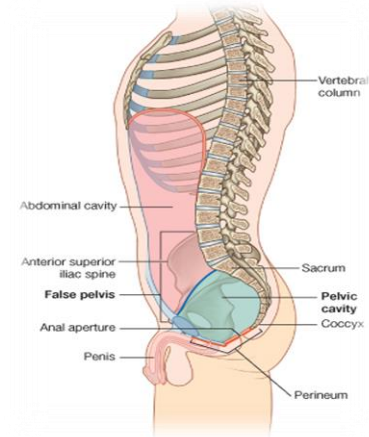
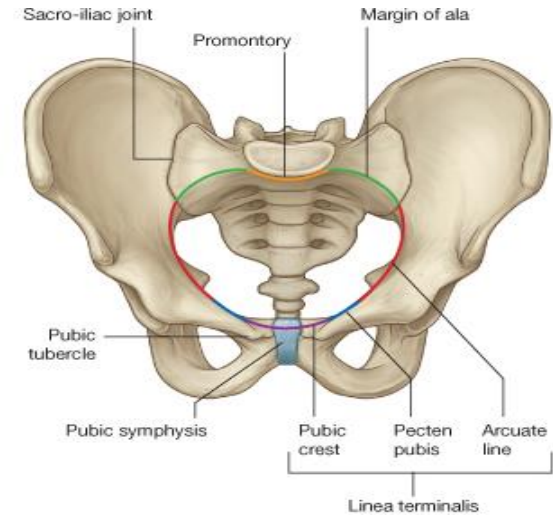
Pelvic Joints

- **Anteriorly**
 - Symphysis pubis (cartilaginous joint).
- **Posteriolaterally**
 - Two Sacroiliac joints. (Synovial joints)
- **Posteriorly**
 - Sacrococcygeal joint (cartilaginous),



Pelvic Brim

- The pelvis is divided into **two** parts by the pelvic brim.
- Above the brim is the **false** or greater pelvis, which is part of the abdominal cavity.
- Below the brim is the **true** or lesser pelvis.
- The **false pelvis** is bounded by:
 - Lumbar vertebrae posteriorly
 - Iliac fossae and the iliacus muscle laterally
 - Lower part of the anterior abdominal wall anteriorly.
 - It supports the abdominal contents.
- The **true pelvis** has inlet, outlet and cavity.
 - The cavity is a short, curved canal, with a shallow anterior wall and a deeper posterior wall.
 - It lies between the inlet and the outlet.



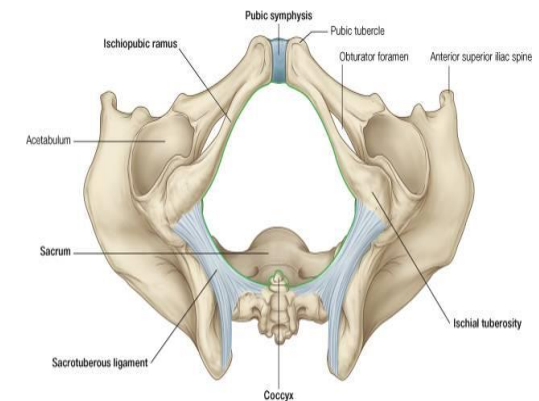
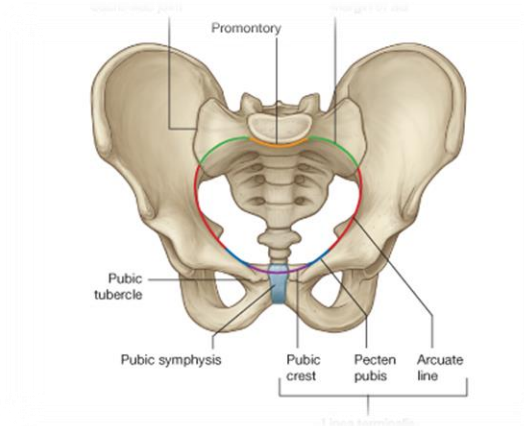
Pelvic Inlet & Outlet

▪ Pelvic Inlet

- Anteriorly: Symphysis pubis.
- Posteriorly: Promontory of sacrum, ala of sacrum.
- Laterally: Ileopectineal (arcuate) lines.

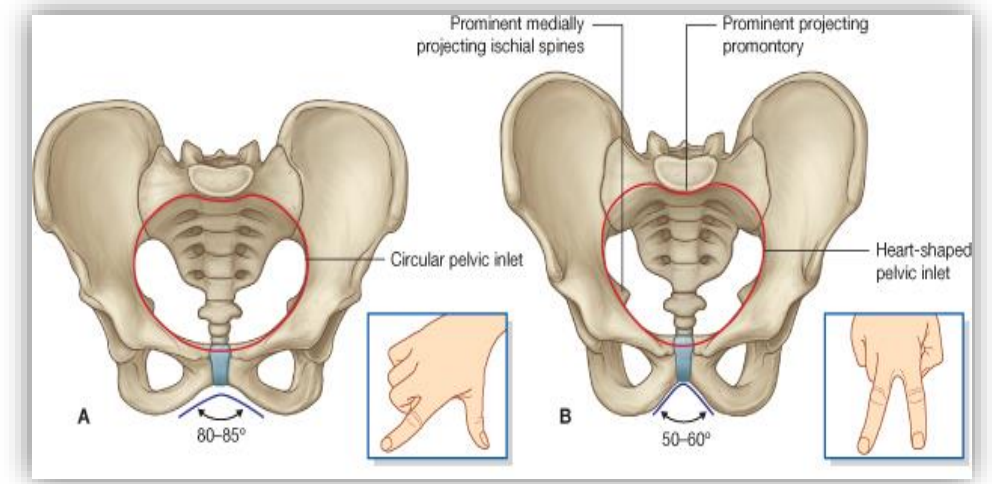
▪ Pelvic Outlet

- Anteriorly: Symphysis pubis
- Posteriorly: Coccyx
- Anterolaterally: Ischiopubic ramus
- Posterolaterally: Sacrotuberous ligament



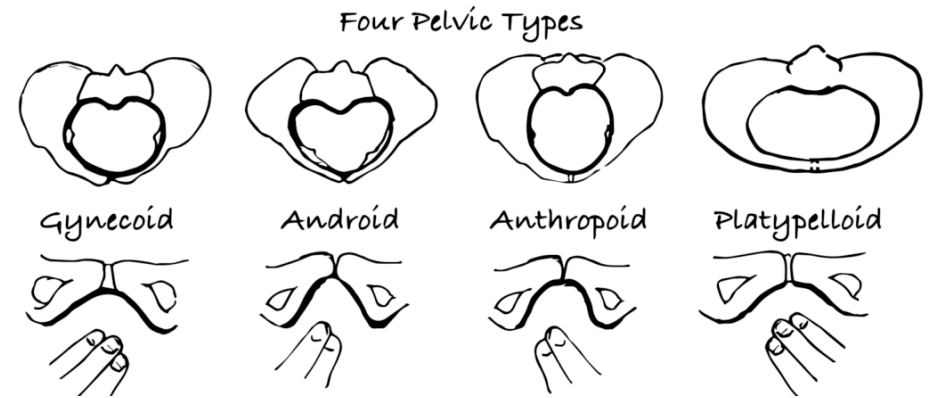
Male vs. Female

- In female, the sacrum is usually wider and shorter.
- Also, the Angle of the pubic arch is wider.
- The promontory and the ischial spines are less projecting.



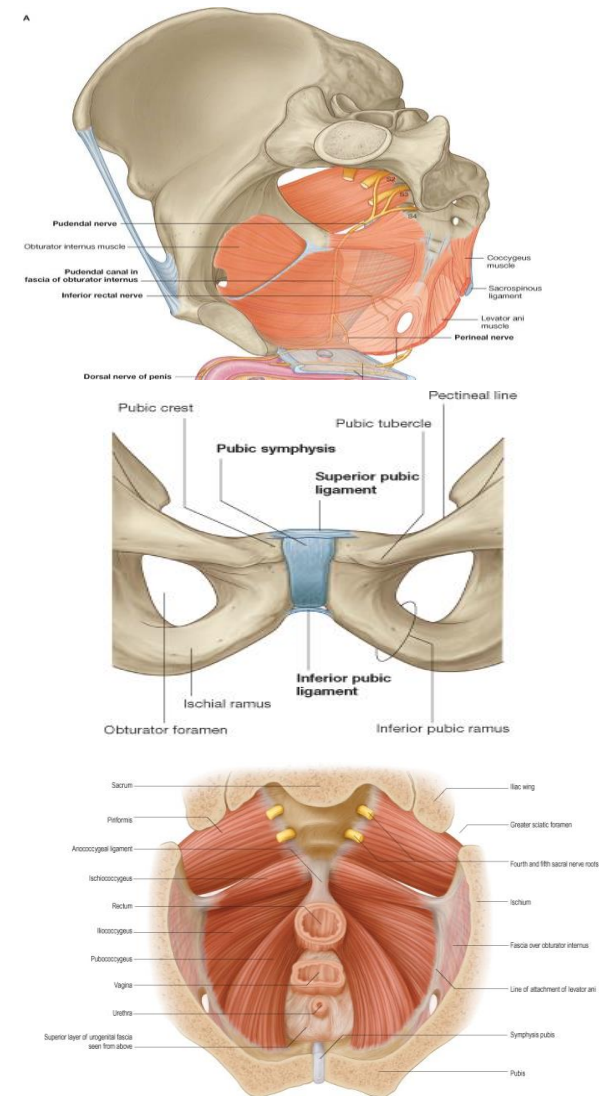
Types of Female Pelvic

- Information of the shape and dimensions of the **female pelvis** is of great importance for **obstetrics**, because it is the bony canal through which the child passes during birth.



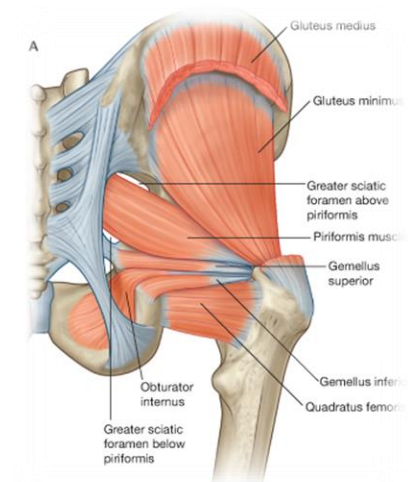
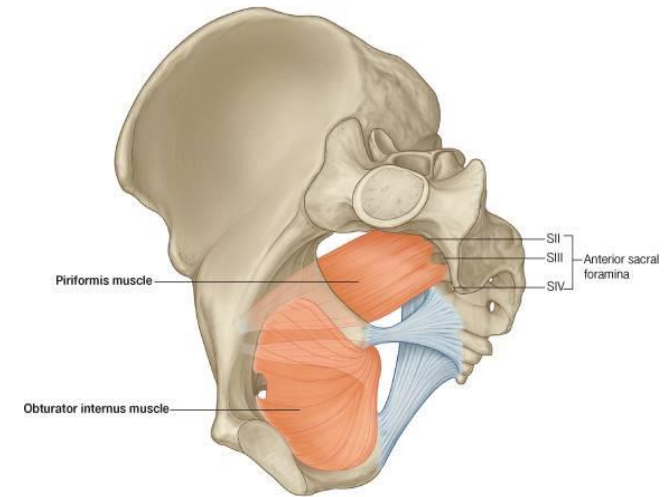
Pelvic Wall

- The pelvis has four walls:
 - Anterior
 - Posterior
 - Lateral
 - Inferior or floor
- The walls are formed by bones and ligaments that are lined with muscles covered with fascia and parietal peritoneum.
- **Anterior wall** is the shallowest wall and is formed by the posterior surfaces of the bodies of the pubic bones, the pubic rami, and the symphysis pubis.
- **Posterior wall** is large and formed by sacrum, coccyx, piriformis muscles and their covering of parietal pelvic fascia.



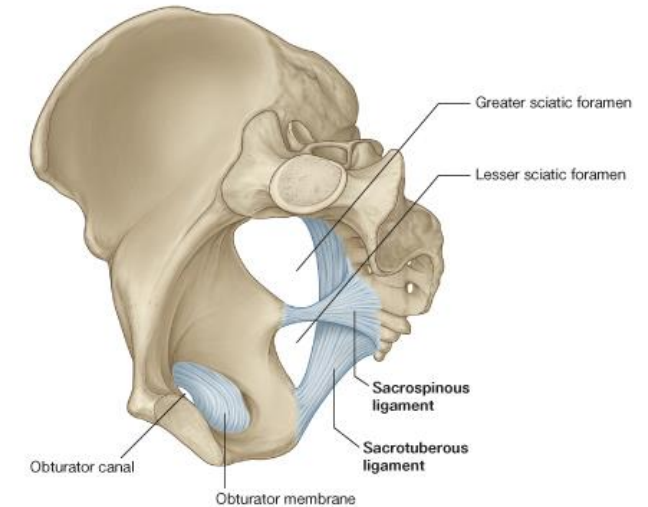
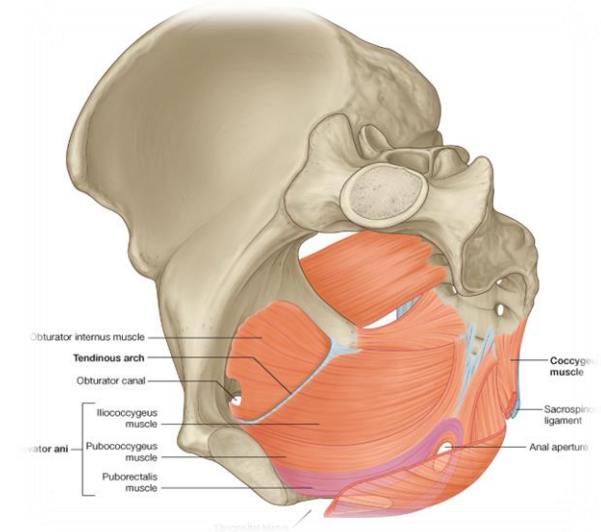
Piriformis Muscle

- **Origin:** Pelvic surface of the middle 3 sacral vertebrae.
- **Exit** the pelvis through the greater sciatic foramen.
- **Insertion:** Greater trochanter of the femur.
- **Action:** Lateral rotator of the femur at the hip joint.
- **Nerve supply:** Sacral plexus.



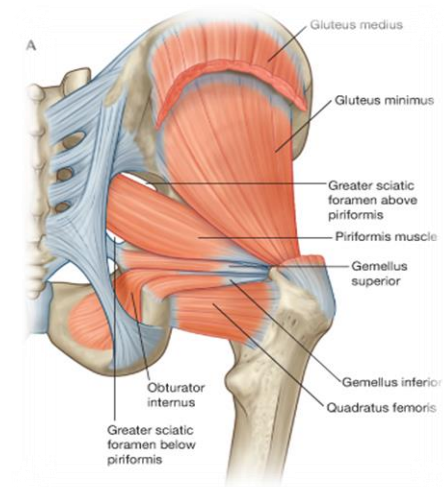
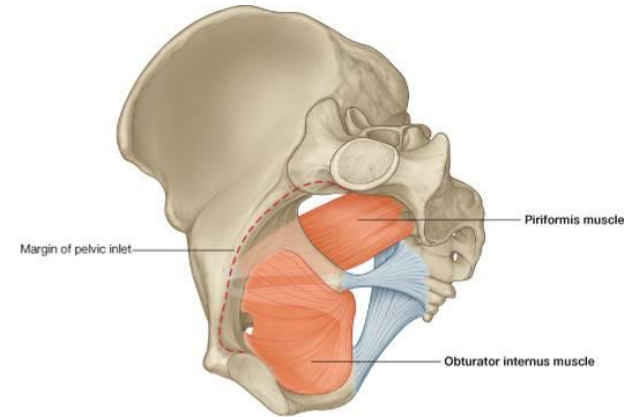
Lateral Wall

- It is formed by:
 - Part of the hip bone below the pelvic inlet,
 - Obturator internus with its covering fascia and the obturator fascia.
 - Sacrotuberous ligament.
 - Sacrospinous ligament.



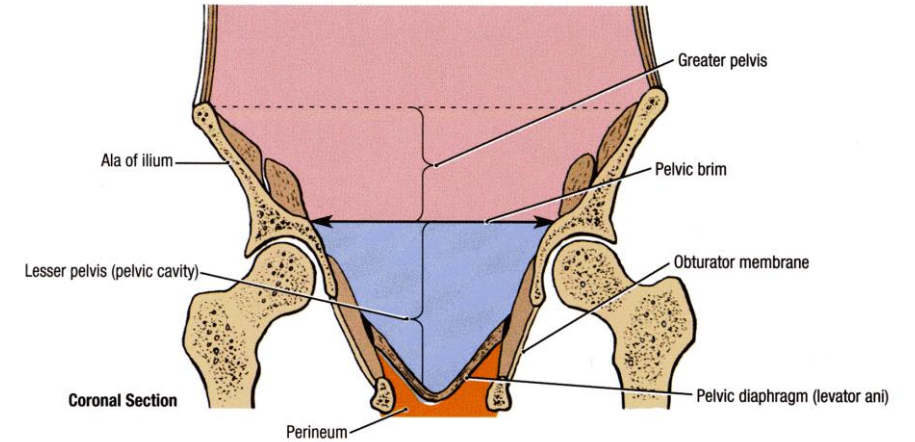
Obturator Internus

- **Origin:** Inner surface of the obturator membrane and the hip bone.
- **Exit** the pelvis through the lesser sciatic foramen
- **Insertion:** into the greater trochanter of the femur.
- **Action:** Lateral rotator of the femur at the hip joint.
- **Nerve supply:** Nerve to obturator internus.



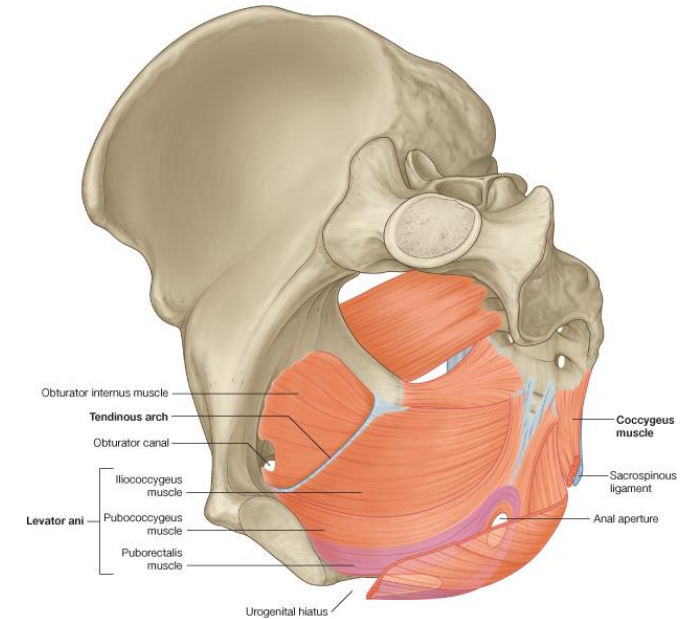
Inferior Wall (Pelvic Floor)

- Basin-like structure which supports the pelvic viscera and is formed by the **pelvic diaphragm**.
- It stretches across the true pelvis and divides it into:
 - **Main (true) pelvic cavity** above, which contains the pelvic viscera.
 - **Perineum** below which carries the external genital organs.



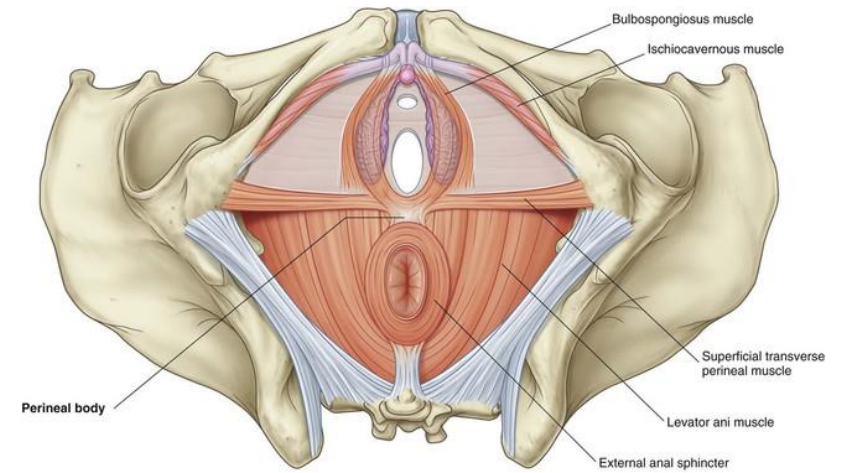
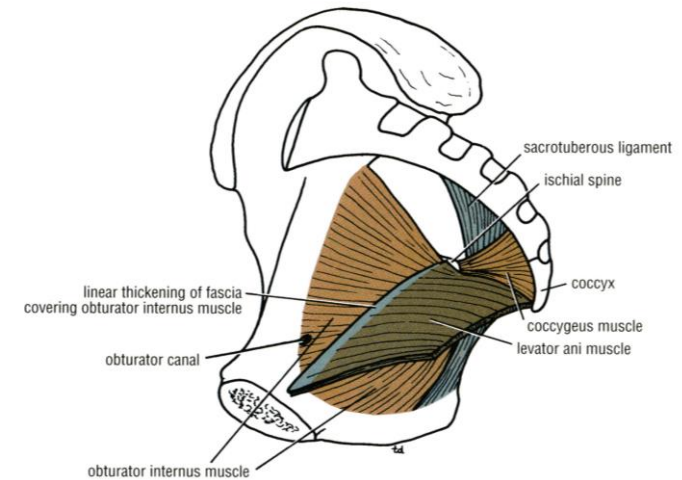
Pelvic Diaphragm

- It is formed by the **levator ani** and the **coccygeus muscles** with their covering fasciae.
- It is incomplete anteriorly to allow passage of the urethra in males and urethra with vagina in females.

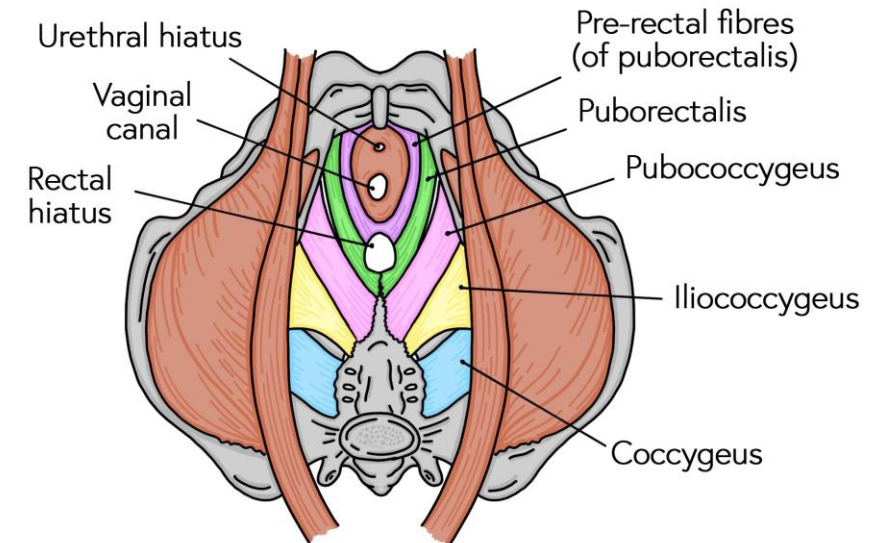


Levatores Ani Muscles

- It is a wide thin sheet-like muscle .
- **Origin:**
 - Back of the body of the pubis
 - Tendinous arch of the obturator fascia
 - Spine of the ischium.
- Its fibers are divided into three parts:
 - Pubococcygeus.
 - Puborectalis.
 - Ilioioococcygeus.

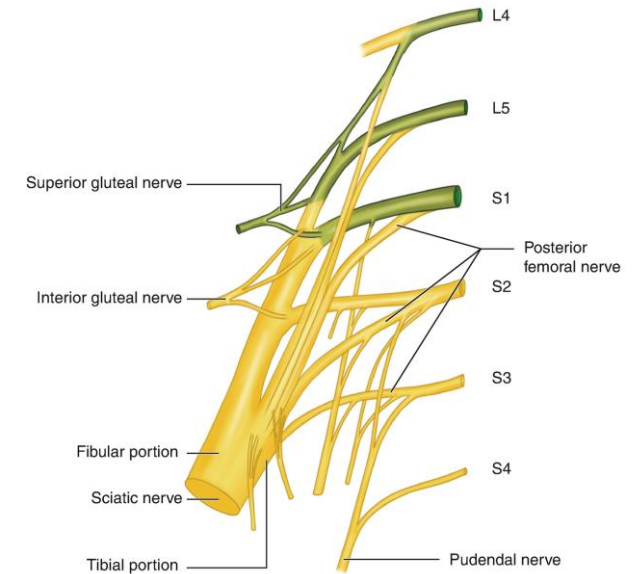


- **Anterior Fibers (Pubococcygeus)**
 - originates from the posterior surface of the body of the pubis
 - inserted into the perineal body and coccyx.
 - supports the prostate (or constricts the vagina)
 - stabilizes the perineal body
 - forms a sling around the prostate or the vagina
- **Intermediate Part (Puborectalis)**
 - Forms a sling around the recto-anal Junction.
 - It has a very important role in maintaining fecal continence.
- **Posterior Part (Iliococcygeus)**
 - Inserted into the anococcygeal body and the coccyx



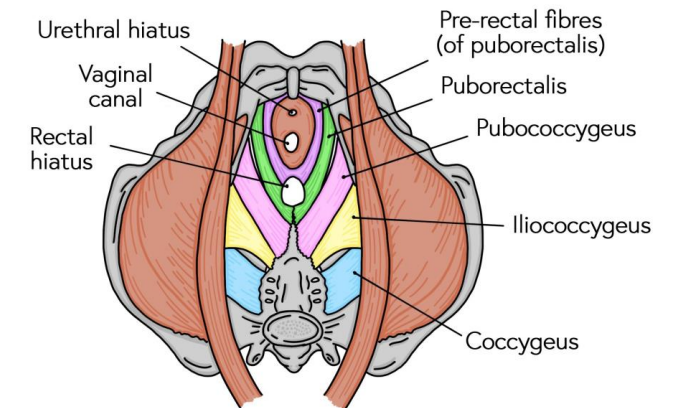
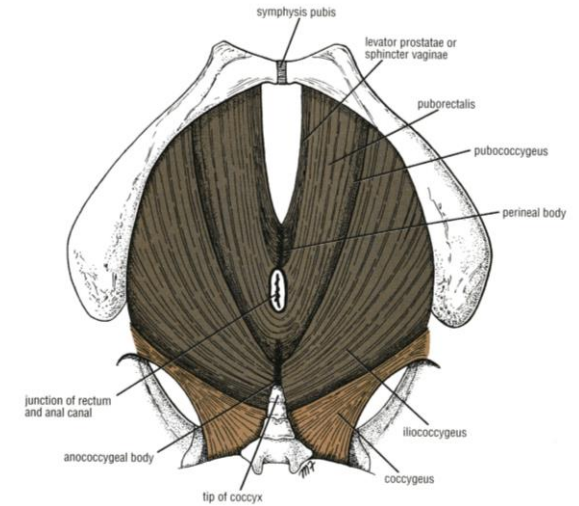
Levatores Ani Muscles

- **Nerve Supply**
 - Perineal branch of the 4th sacral nerve
 - Perineal branch of the pudendal nerve.
- **Actions of levator ani:**
 - The muscles of the two sides form an efficient muscular sling that supports and maintains the pelvic viscera in position.
 - They resist the rise in intra pelvic pressure during the straining and expulsive efforts of the abdominal muscles (as in coughing).
 - They have a very important role in maintaining fecal continence.
 - They serve as a vaginal sphincter in the female.



Coccygeus Muscle

- **Shape:** Small triangular muscle.
- **Origin:** Ischial spine.
- **Insertion:** Lower end of sacrum and coccyx
- **Action:** Assist the levator ani in supporting the pelvic viscera
- **Nerve supply:** branches of the 4th and 5th sacral nerves

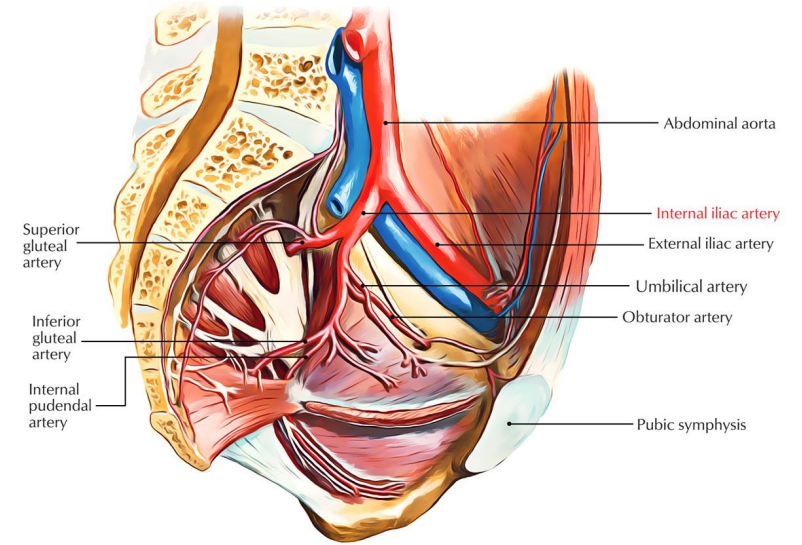




BLOOD SUPPLY & INNERVATION

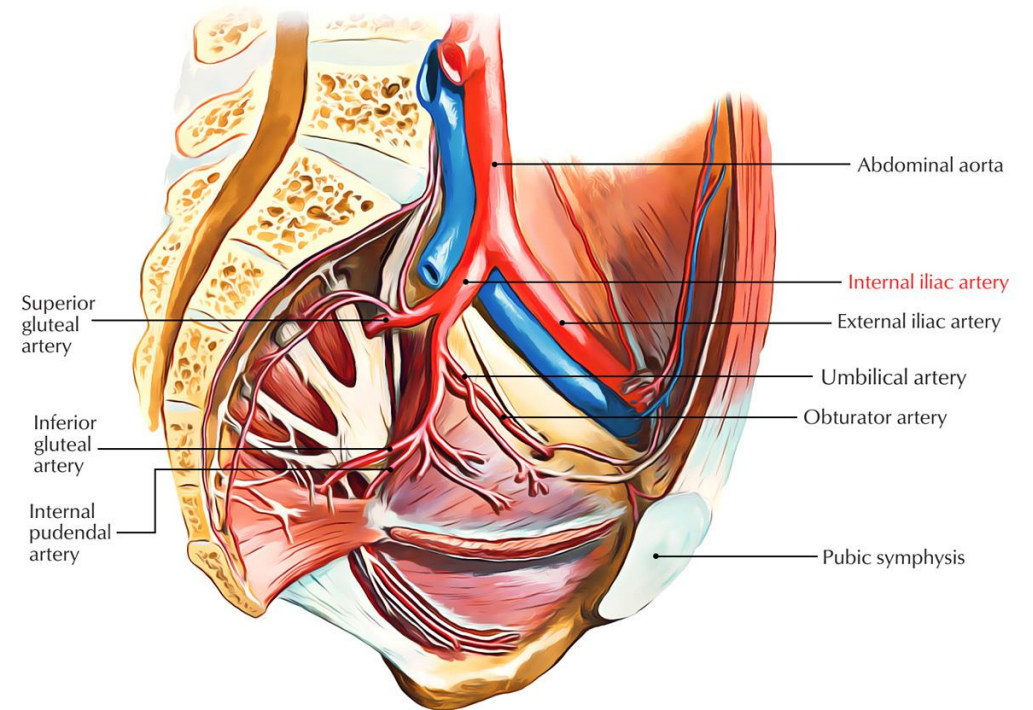
Internal Iliac Artery

- One of the two terminal branches of the common iliac artery.
- Arises in front of the sacroiliac joint
- It descends downward & backwards over the pelvic inlet.
- It divides at the upper border of the greater sciatic foramen into anterior and posterior divisions.
 - **Posterior division supplies:**
 - Posterior abdominal wall.
 - Posterior pelvic wall.
 - Gluteal region.
 - **Anterior division supplies:**
 - Gluteal region.
 - Perineum.
 - Pelvic viscera.
 - Medial (adductor) region of thigh.
 - The fetus (through the umbilical arteries).

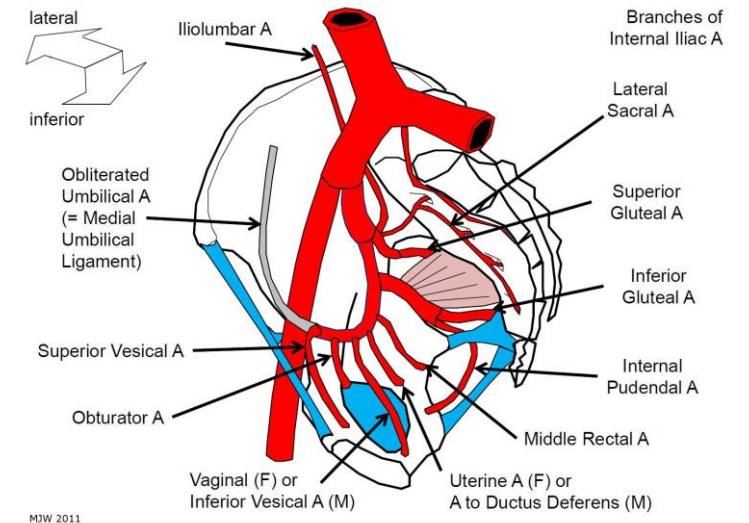


Parietal Branches

- **From posterior division**
 - Iliolumbar artery.
 - Lateral sacral arteries (2 branches.)
 - Superior gluteal artery.
- **From anterior division**
 - Obturator artery.
 - Inferior gluteal artery.

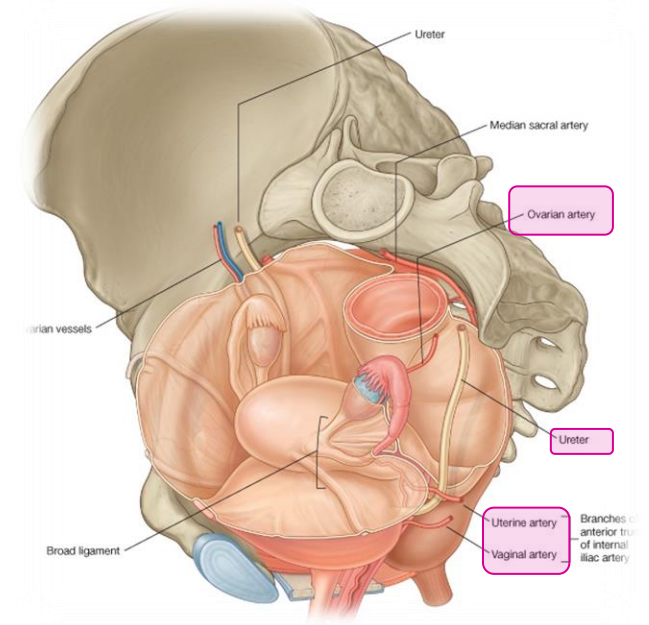


- **Umbilical artery**
 - Superior vesical artery:
 - The distal part of this artery fibrosed and forms the Medial Umbilical Ligament.
- **Inferior Vesical artery** in male or vaginal in female
 - In the male it supplies, the prostate and the seminal vesicles.
 - It also gives the artery of the vas deferens.
- **Middle rectal artery**
- **Internal pudendal artery**
 - It is the main arterial supply to the perineum.



Visceral Branches in Female

- **Vaginal artery**
 - Replaces the inferior vesical artery.
- **Uterine artery**
 - Crosses the Ureter superiorly and supplies the uterus & uterine tubes.
- **Ovarian artery**
 - Arises from the abdominal aorta.

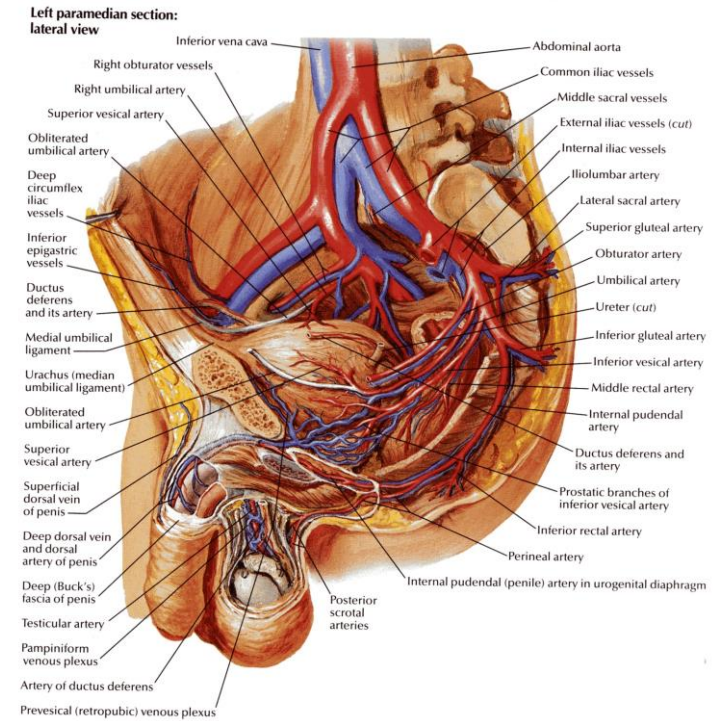


Internal Iliac Veins

- It collect tributaries corresponding to the branches of the internal iliac artery.
- joins the external iliac vein in front of the sacroiliac joint to form the common iliac vein

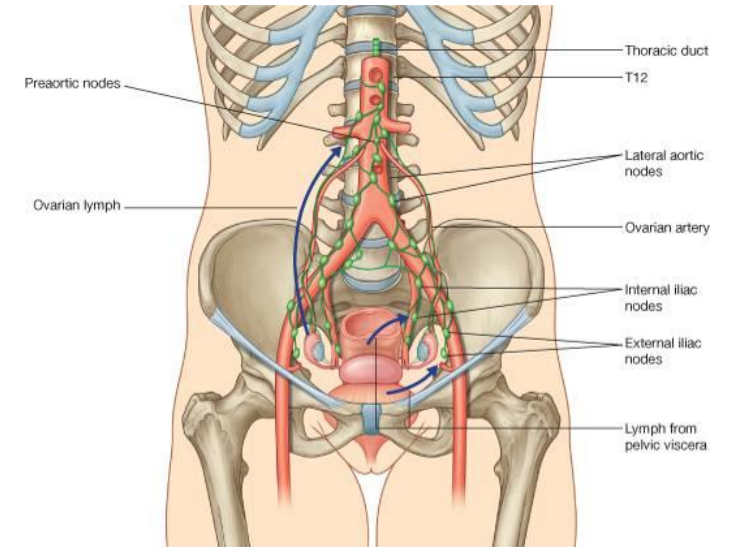
Ovarian Vein

- Right vein drains into IVC
- Left vein drains into left renal Vein.

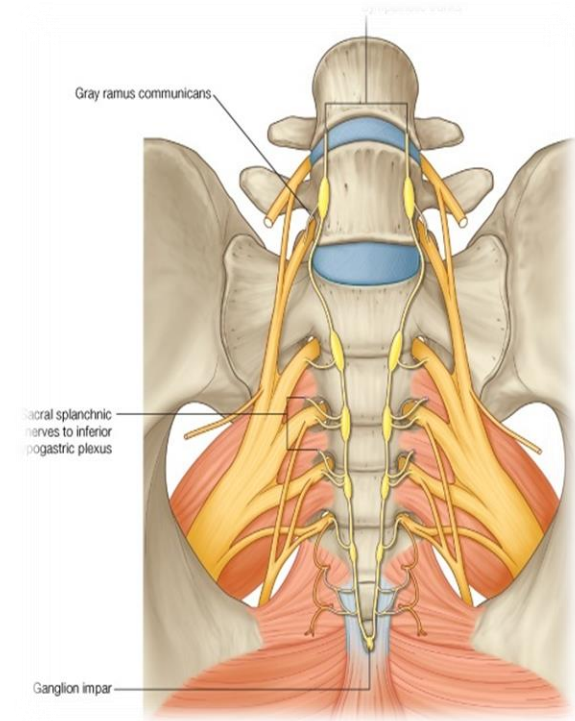


Lymphatic Drainage

- The lymph nodes and vessels are arranged in a chain along the main blood vessels.
- Thus, there are external iliac nodes, internal iliac nodes, and common iliac nodes.
- Lymph from Common iliac nodes and the (ovaries, uterine tubes and fundus of uterus) passes to lateral aortic (paraortic) nodes.



- **Somatic**
 - Sacral plexus
- **Autonomic**
 - **Sympathetic**
 - Pelvic part of sympathetic trunk:
 - The two sympathetic trunks unite inferiorly in front of the coccyx and form a single ganglion (Ganglion Impar).
 - Superior & Inferior
 - Hypogastric plexuses
 - **Parasympathetic**
 - Pelvic splanchnic nerves (From S2, S3, S4)



QUESTIONS?



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