THE PELVIS

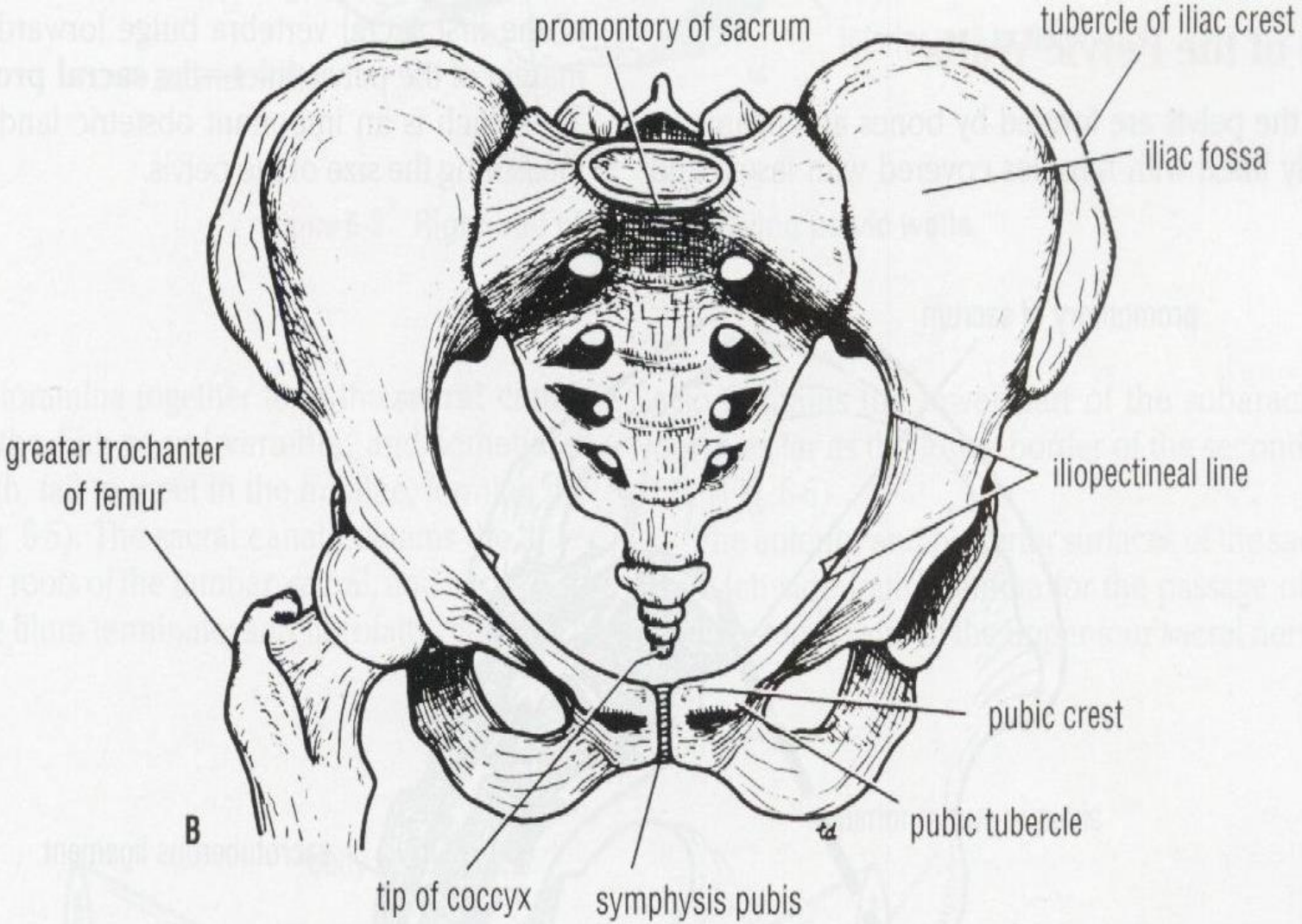
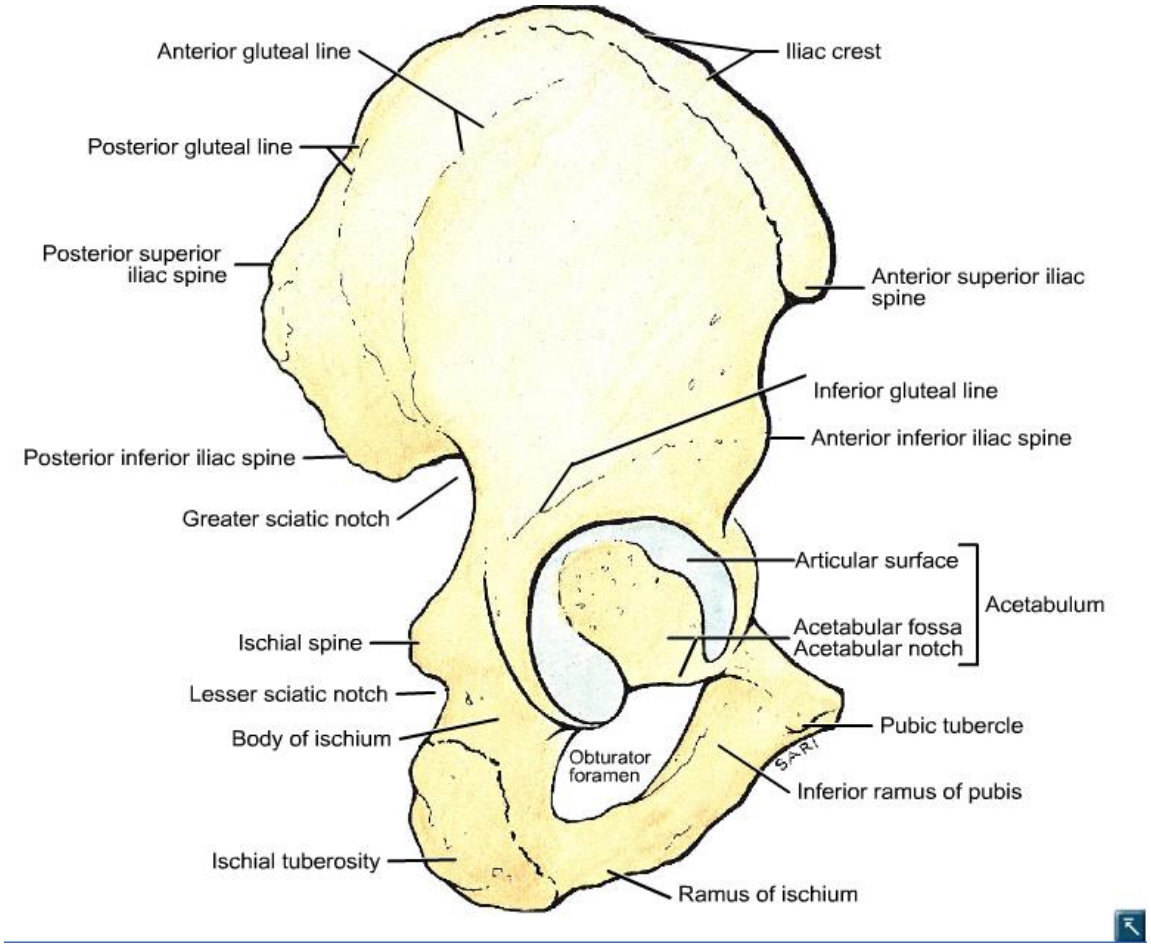


Figure 6-1 Anterior view of the male pelvis **(A)** and female pelvis **(B)**.

HIP BONE

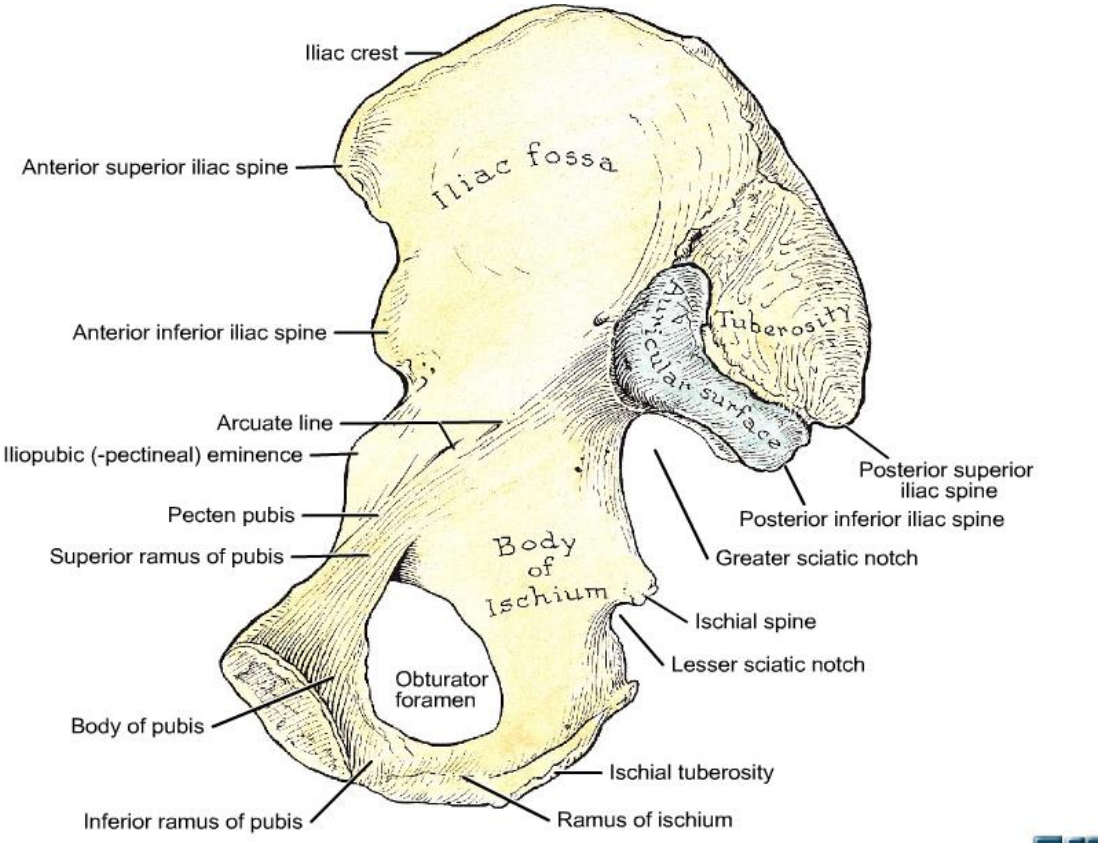
Lateral view

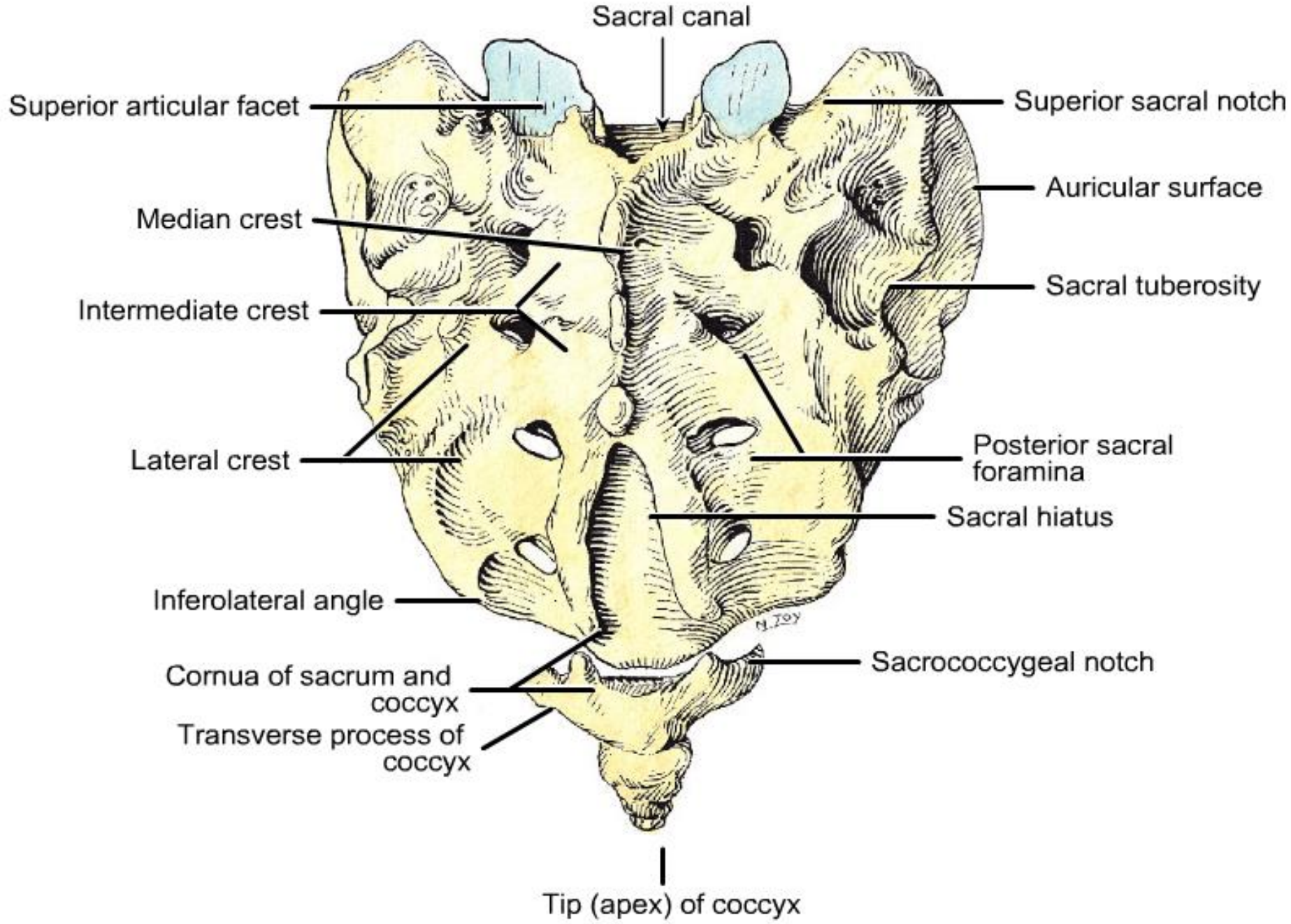
- 1. Each hip bone consists of three bones: ilium, ischium, and pubis;
- 2. The ilium is the superior, larger part of the hip bone, forming the superior part of the acetabulum; the deep socket on the lateral aspect of the hip bone articulates with the head of the femur;
- 3. The ischium forms the posteroinferior part of the acetabulum and hip bone.
- 4. The pubis forms the anterior part of the acetabulum and anteromedial part of the hip bone



Medial view

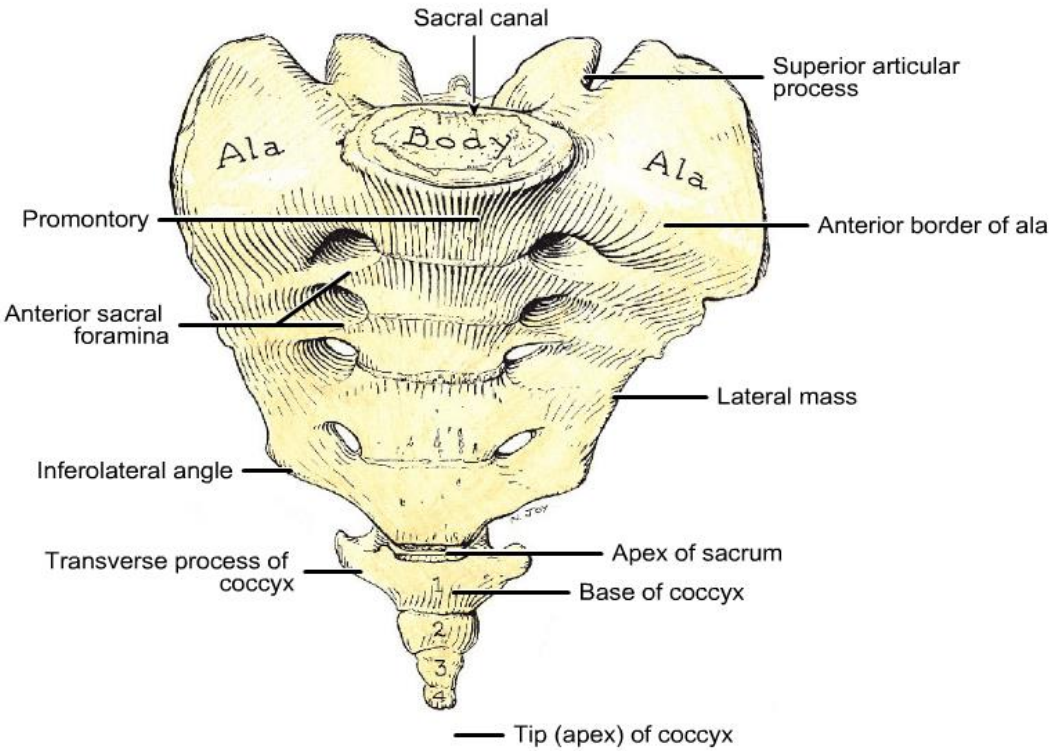
- 5. In anatomic position, the anterior superior iliac spine and pubic tubercle are in the same coronal plane, and the ischial spine and superior end of the pubic symphysis are in the same horizontal plane;
- 6. The internal aspect of the body of the pubis faces superiorly, and the acetabulum faces inferolaterally;
- 7. The obturator foramen lies inferomedial to the acetabulum.



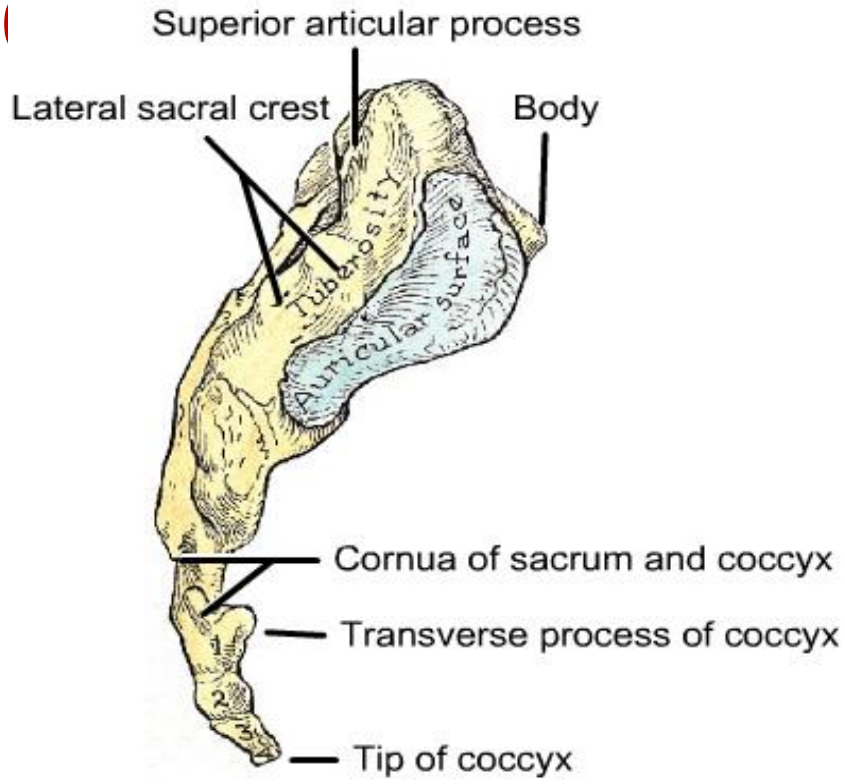

Sacral canal
Superior articular facet
Superior sacral notch
Auricular surface
Median crest
Sacral tuberosity
Intermediate crest
Lateral crest
Posterior sacral foramina
Sacral hiatus
Inferolateral angle
Sacrococcygeal notch
Cornua of sacrum and coccyx
Transverse process of coccyx
Tip (apex) of coccyx

- **1.** The five sacral bodies are demarcated by four transverse lines that end laterally in four pairs of anterior sacral foramina;
- **2. The foramina of the two sides are approximately equidistant throughout; their margins are rounded laterally, but sharp elsewhere, indicating the courses of the emerging nerves**; r.

Sacrum & Coccyx Ant.

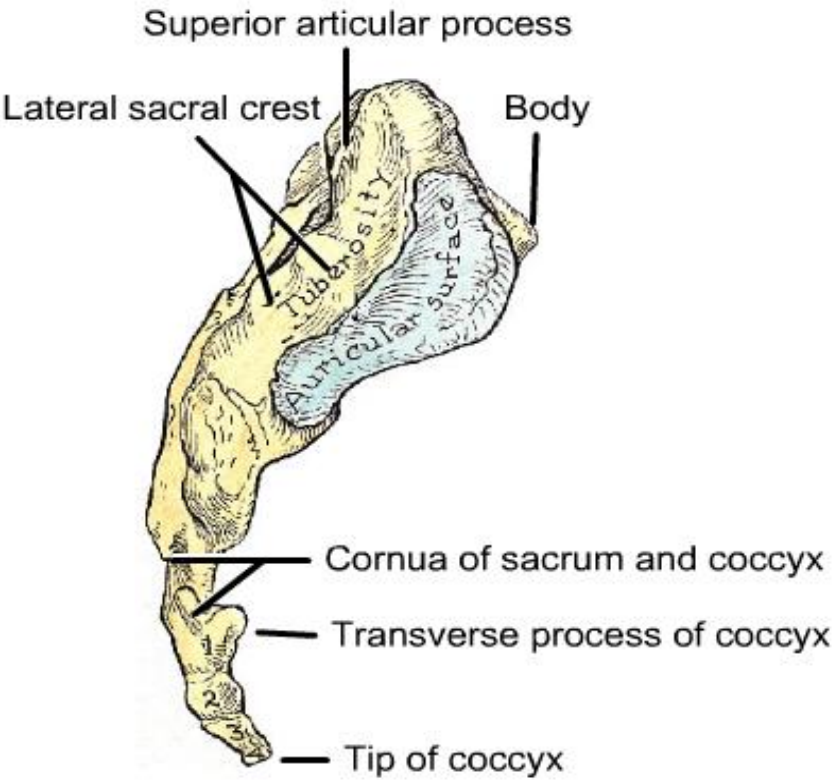


- **3.** The coccyx has four pieces; the first has a pair of transverse processes an a pair of cornua; the other three pieces are nodula



- **4.anterosuperiorly, the auricular, ear-shaped surface articulates with the ilium of the hip bone (os coxae);**
- **5.Posterosuperiorly, note the sacral tuberosity for the attachment of the dorsal sacroiliac and**

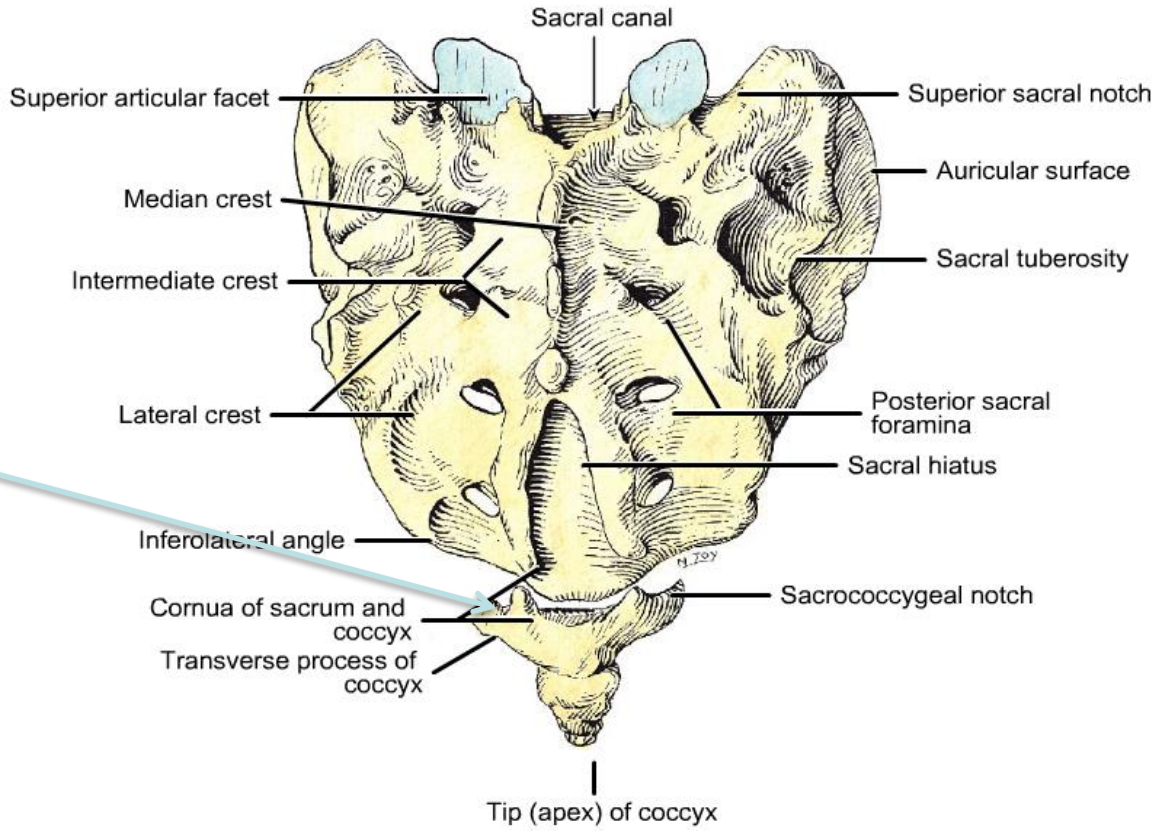
Lat.



- **6.** Inferiorly, the apex of the sacrum articulates with the coccyx, which is concave anteriorly.

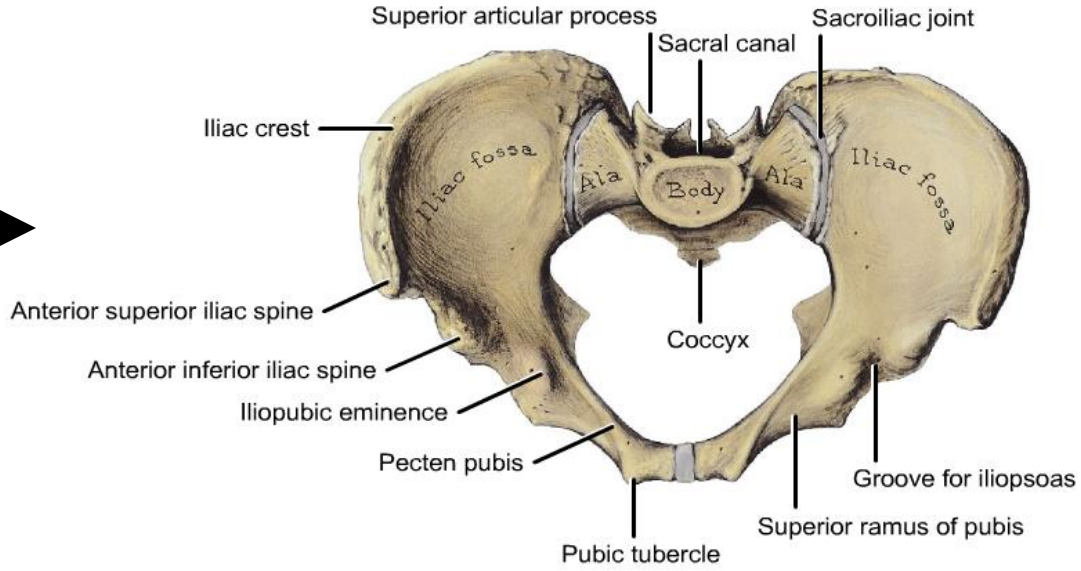
- **7.** The absence of the 4th and 5th sacral spines and laminae;
- **8.** The superior articular processes, **intermediate crest**, and sacral and coccygeal cornua are serially homologous; likewise are the superior sacral notch, four dorsal sacral foramina, and sacrococcygeal notch;
- **9.** A straight probe could be passed through a lower posterior sacral foramen, across the sacral canal, and through an anterior sacral foramen.

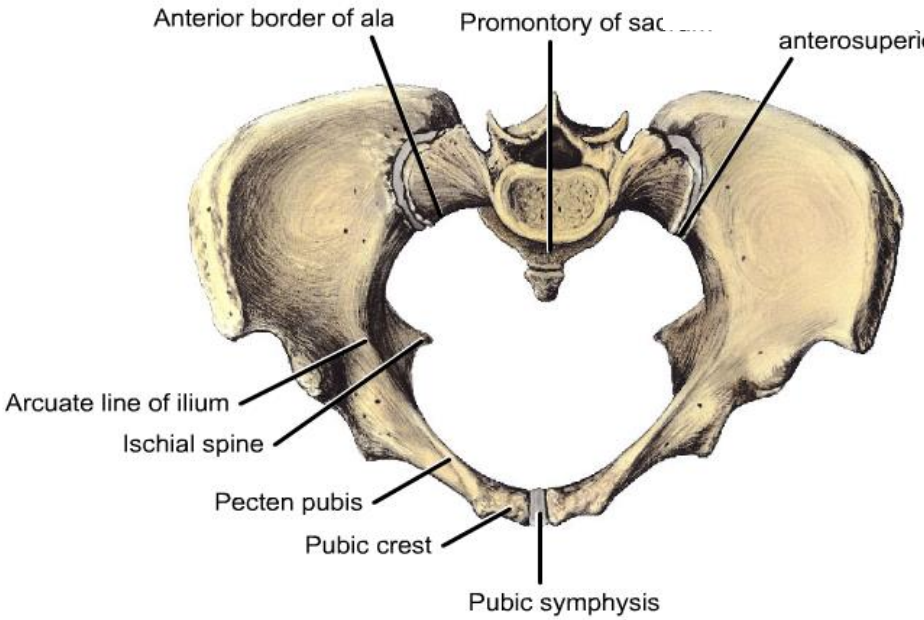
Post.



Ant.Sup *view*

Male ⟶

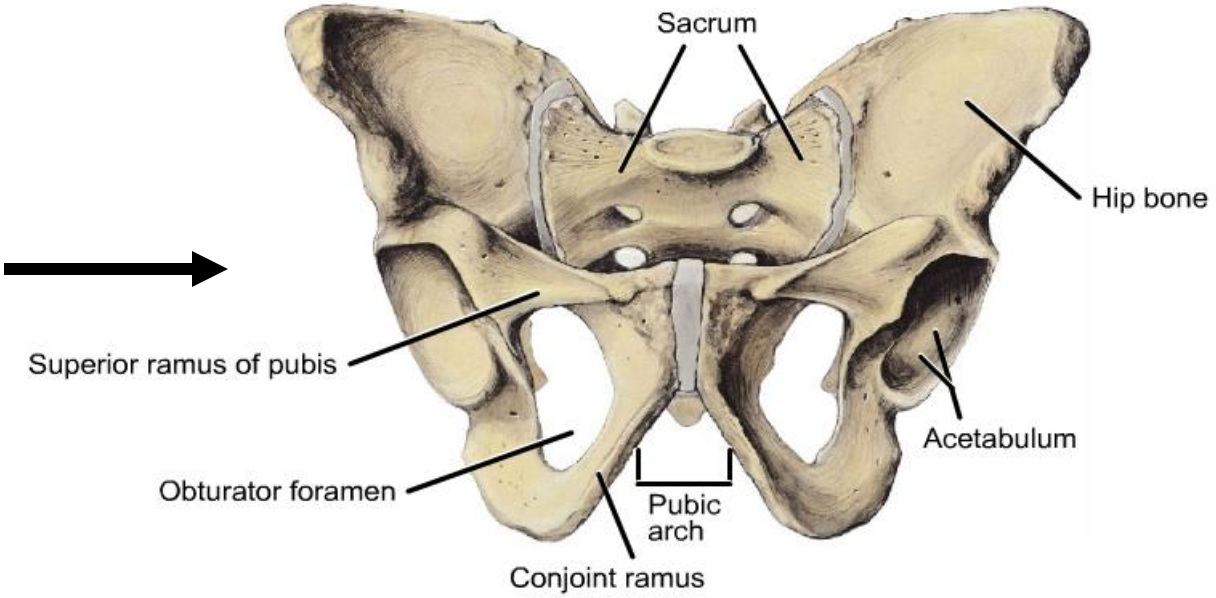


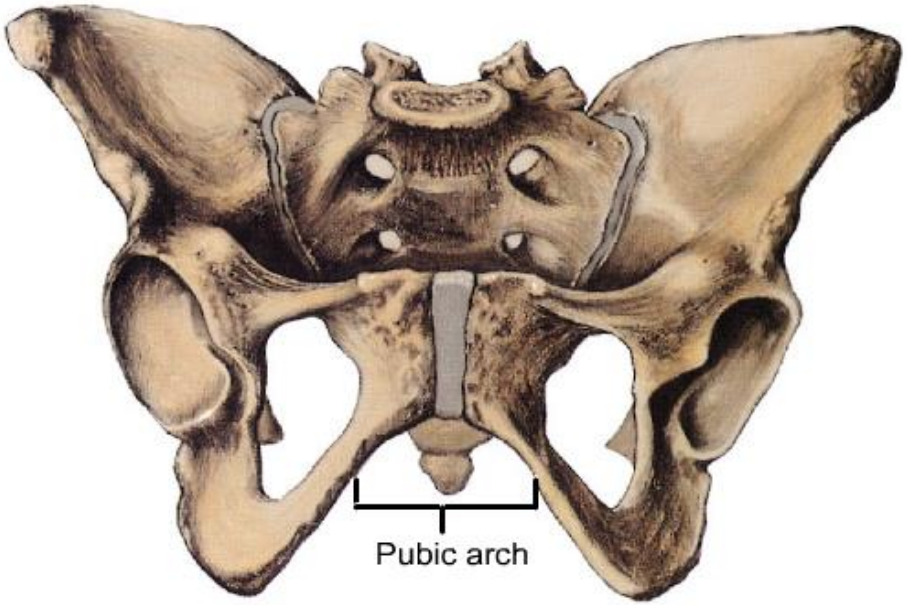


⟵ **Female**

IDENTIFY DIFFERENCES

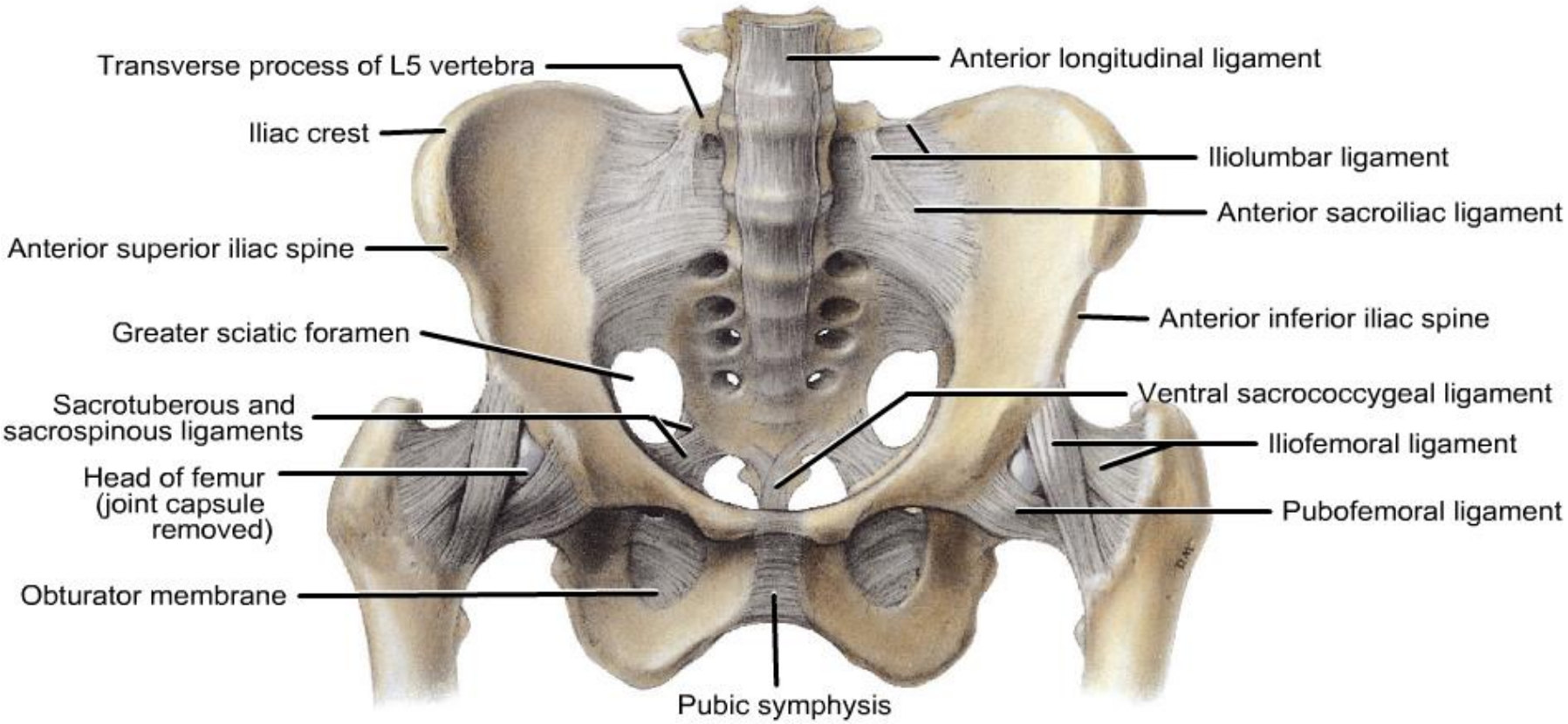
Male →



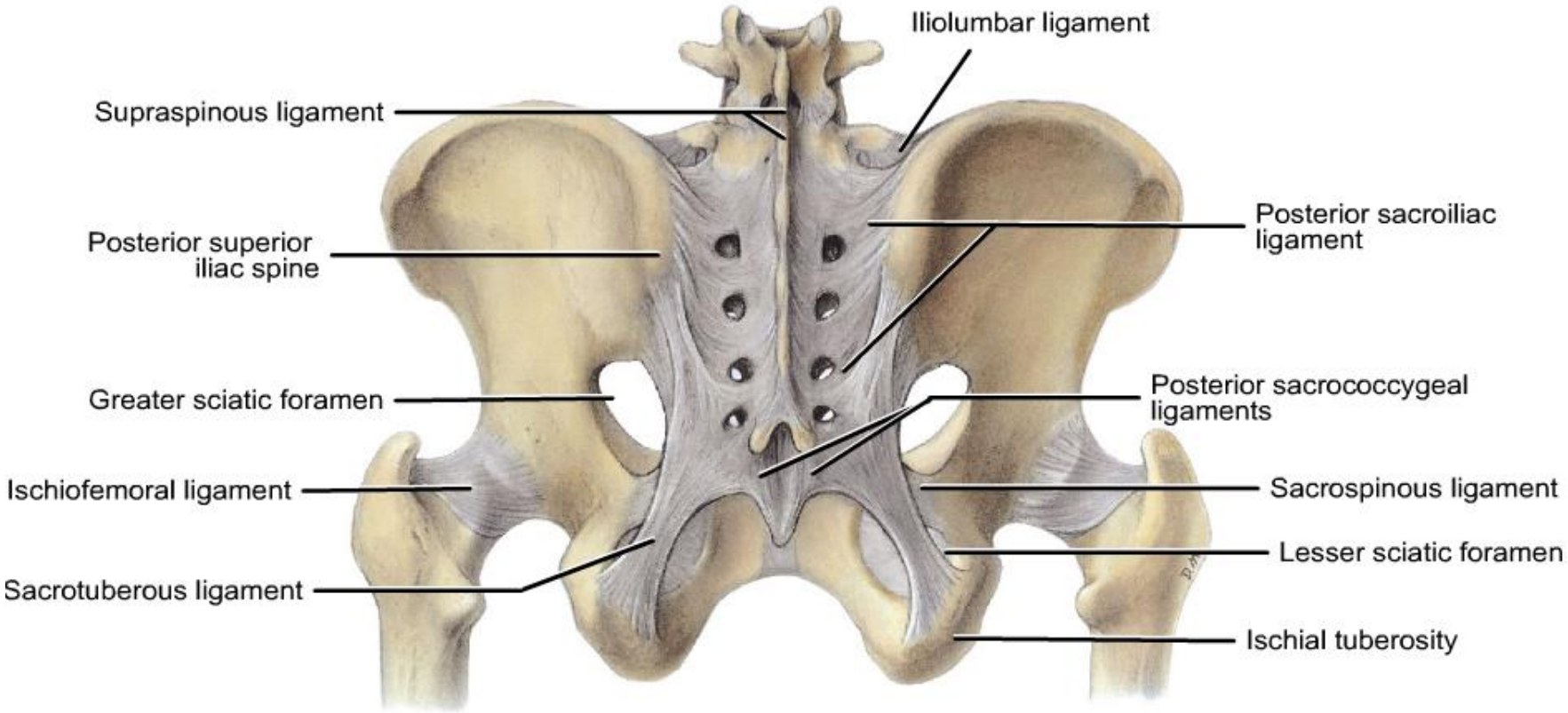


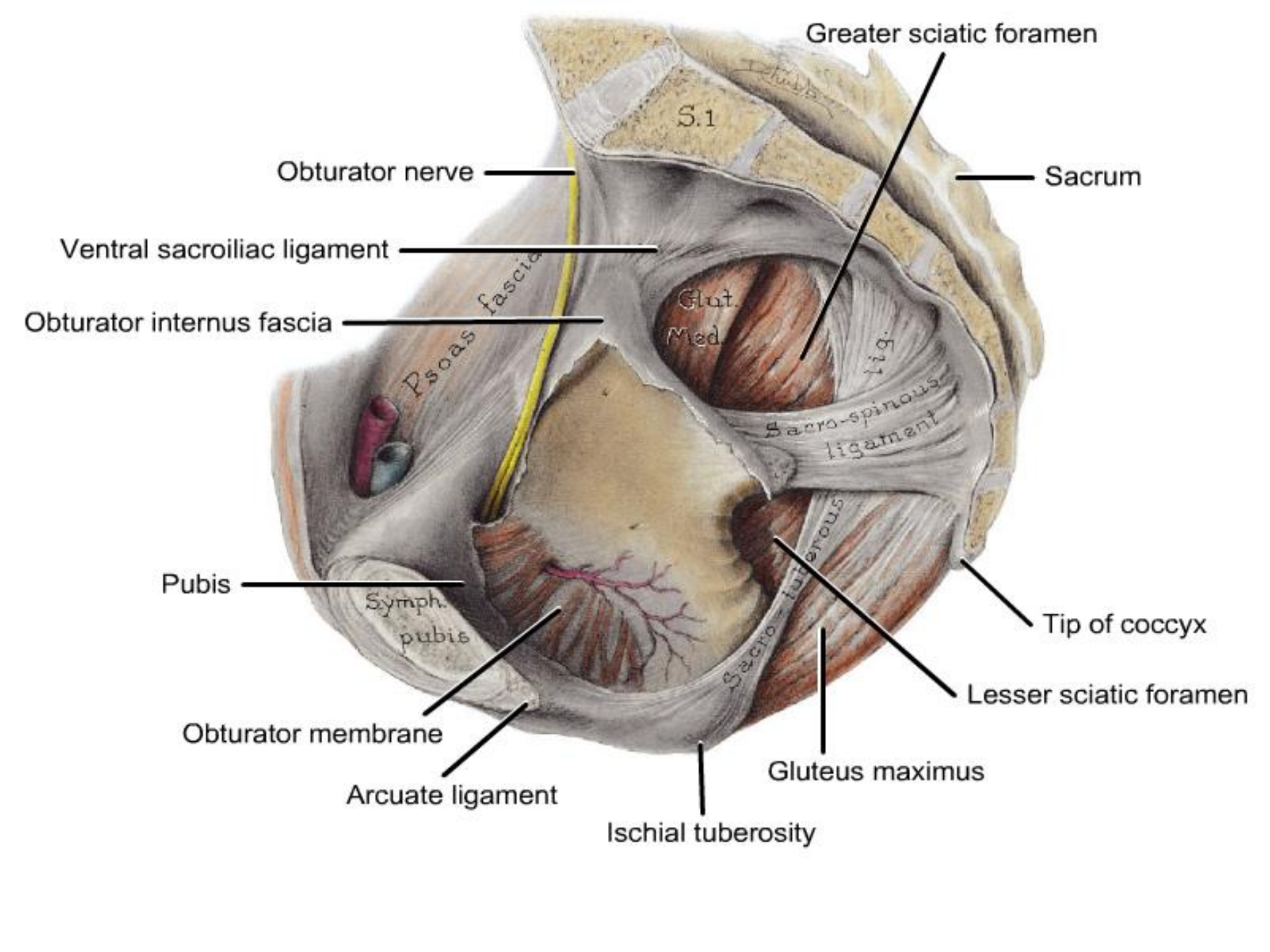
← Female

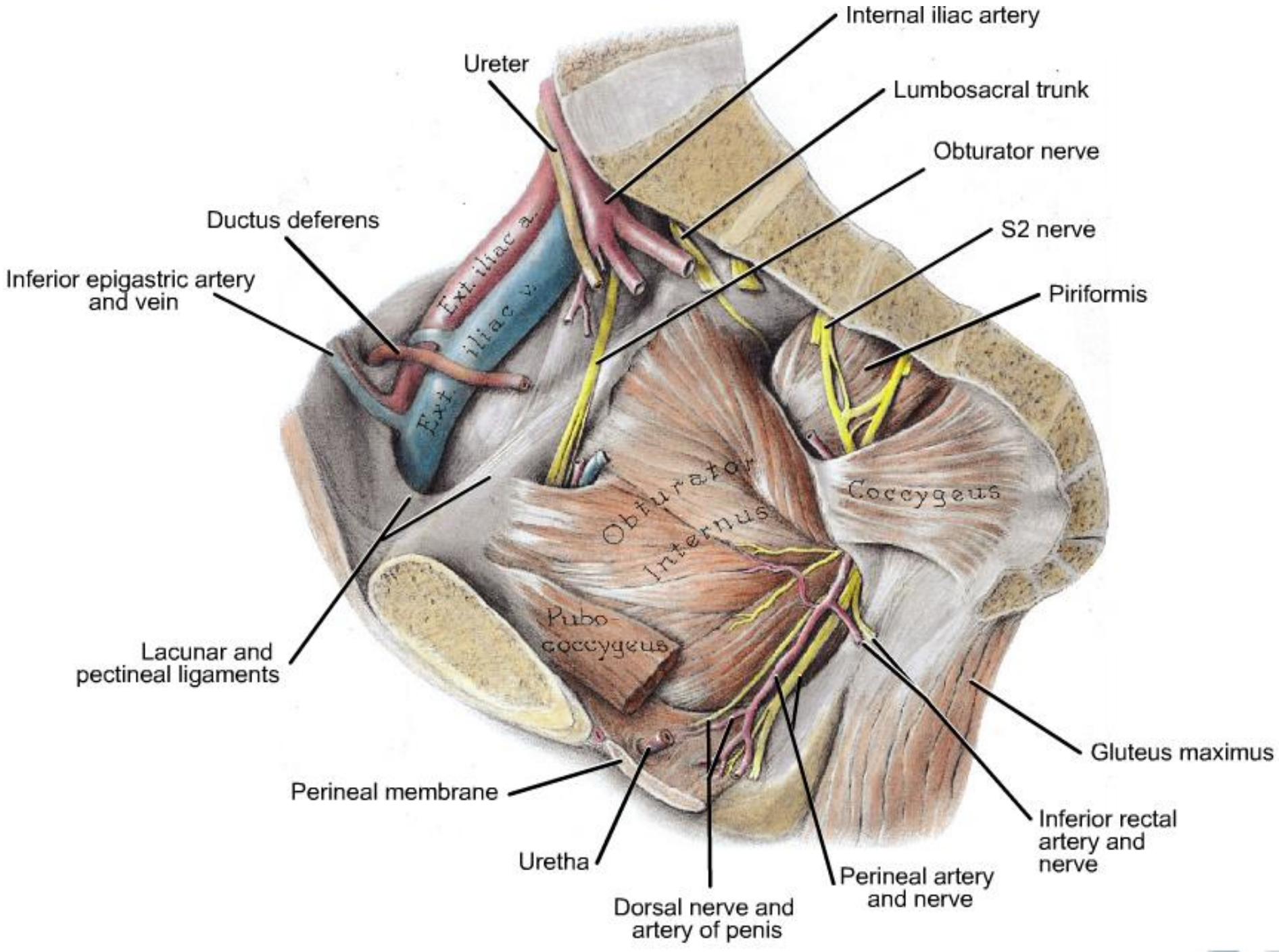
Ligaments of pelvis *anterior view*



Ligaments of pelvis *Posterior view*

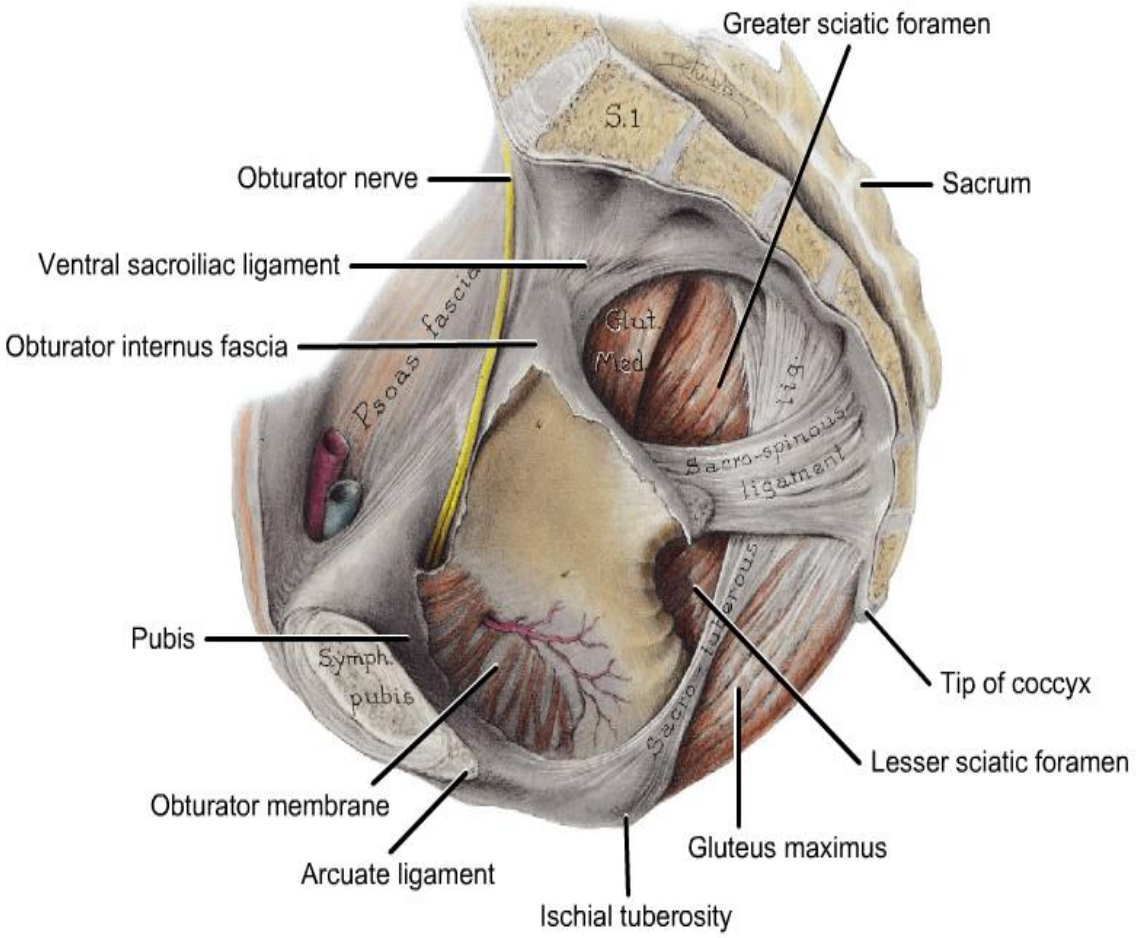



Greater sciatic foramen
S.1
Obturator nerve
Sacrum
Ventral sacroiliac ligament
Obturator internus fascia
Psoas fascia
Glut. Med.
Sacro-spinous lig.
Sacro-spinous ligament
Pubis
Symph. pubis
Sacro-tuberous
Tip of coccyx
Lesser sciatic foramen
Obturator membrane
Gluteus maximus
Arcuate ligament
Ischial tuberosity


Internal iliac artery
Ureter
Lumbosacral trunk
Obturator nerve
Ductus deferens
S2 nerve
Inferior epigastric artery and vein
Piriformis
Ext. iliac a.
Ext. iliac v.
Obturator internus
Coccygeus
Pubo-coccygeus
Lacunar and pectineal ligaments
Gluteus maximus
Perineal membrane
Inferior rectal artery and nerve
Uretha
Perineal artery and nerve
Dorsal nerve and artery of penis

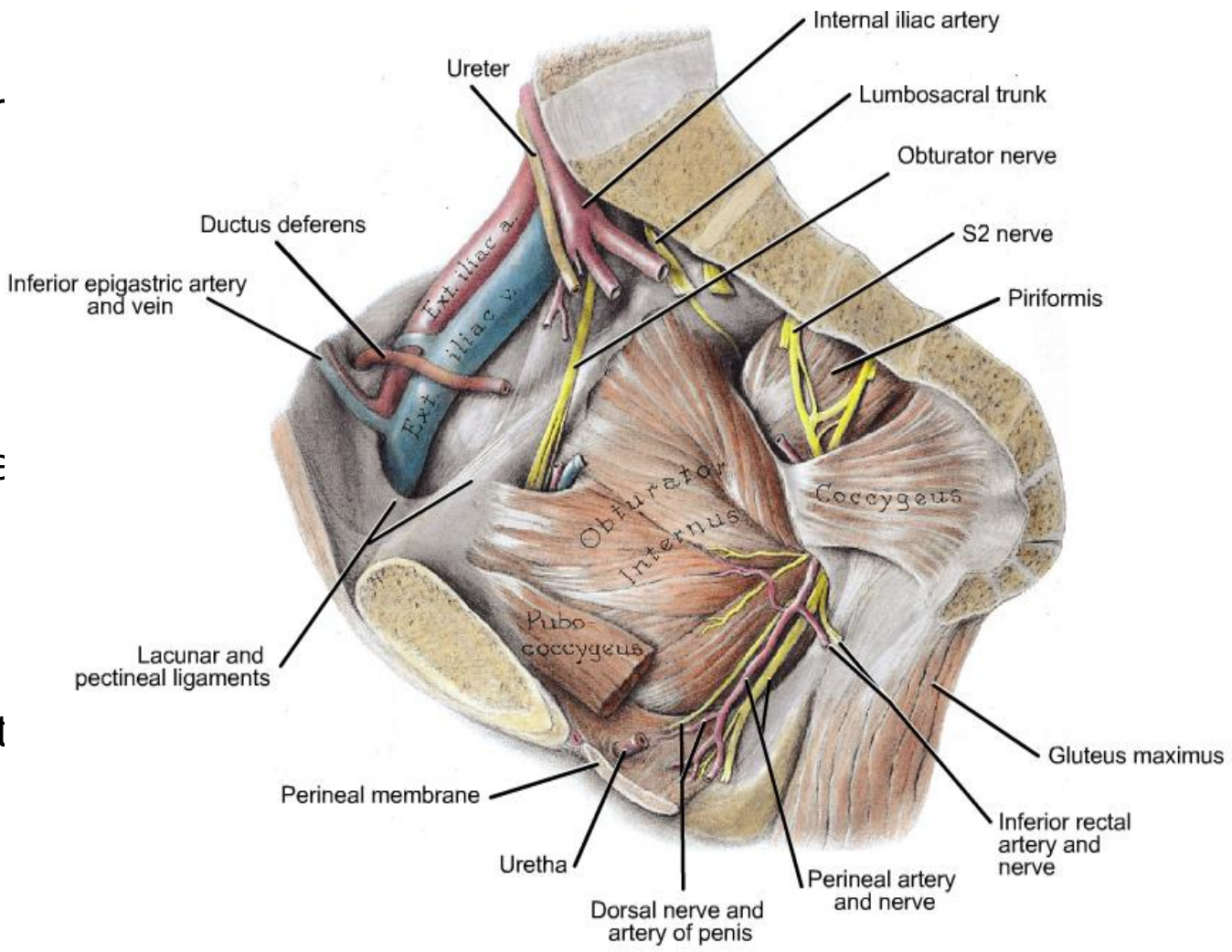
Ligaments & Muscles

1. Posterolaterally, the coccyx and inferior part of the sacrum are fastened to the ischial tuberosity by the sacrotuberous ligament and to the ischial spine by the sacrospinous ligament; the superior part of the sacrum is joined to the ilium by the ventral sacroiliac ligament;
2. The greater and lesser sciatic foramina are anterosuperior to the sacrotuberous ligament; the greater sciatic foramen is superior, and the lesser sciatic foramen is inferior to the sacrospinous ligament

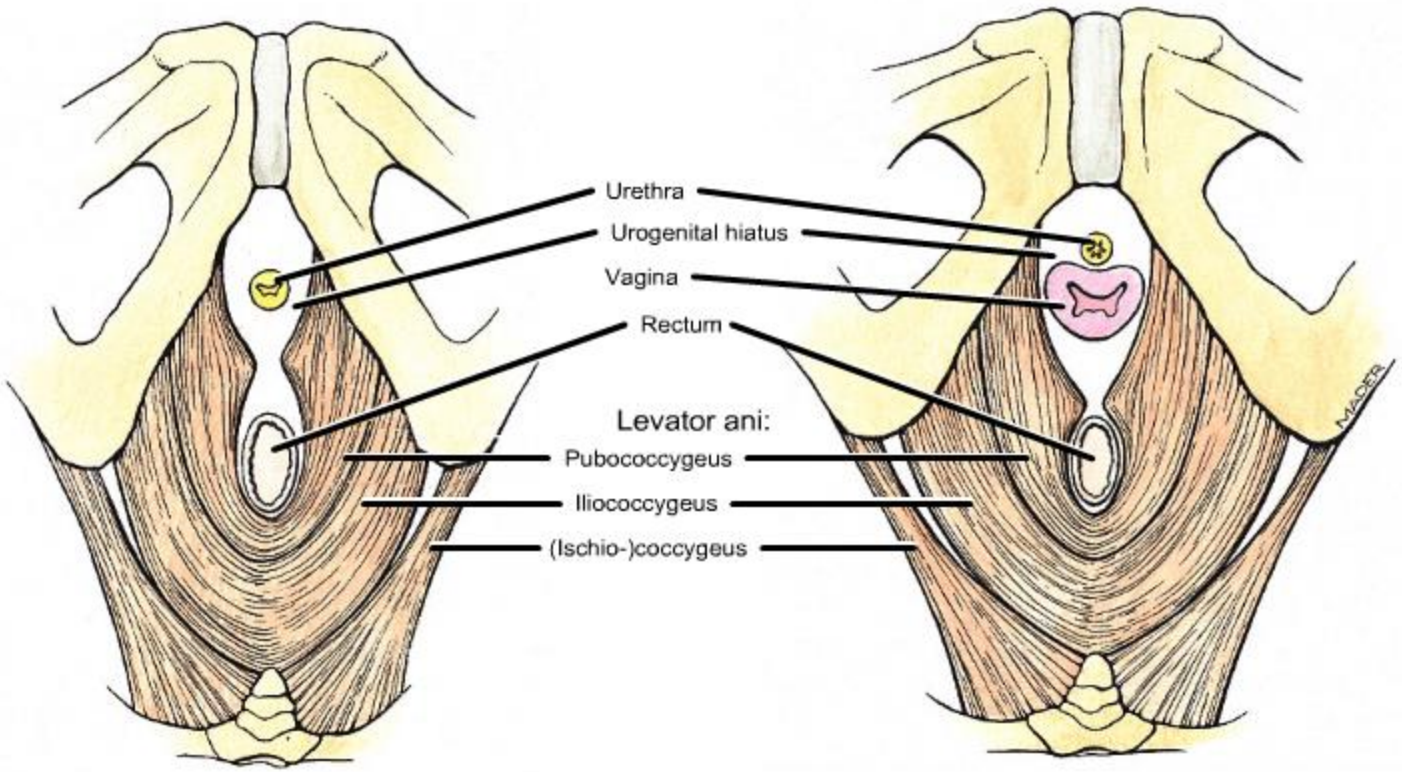


Muscles

- The obturator internus muscle pads the lateral wall of the pelvis and leaves the pelvis minor through the lesser sciatic foramen, and the piriformis muscle pads the posterior wall and leaves through the greater sciatic foramen. The coccygeus muscle conceals the sacrospinous ligament. The pubococcygeus muscle, the chief and strongest part of the levator ani muscle, springs from the body of the pubis



FLOOR OF PEVIC CAVITY



Male **Female**

Inferior views (A-E)

PELVIS

The Pelvis

The bony pelvis provides a strong, stable connection between the trunk and the lower extremities. Its main functions are to

1- transmit the weight of the body from the vertebral column to the femurs; to

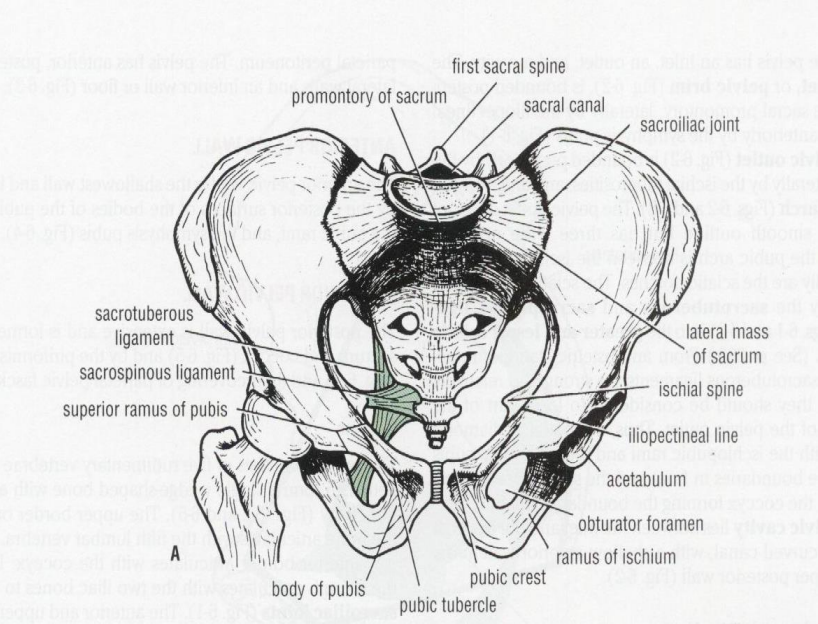
2- contain, support, and protect the pelvic viscera; and to

3- provide attachment for trunk and lower limb muscles.

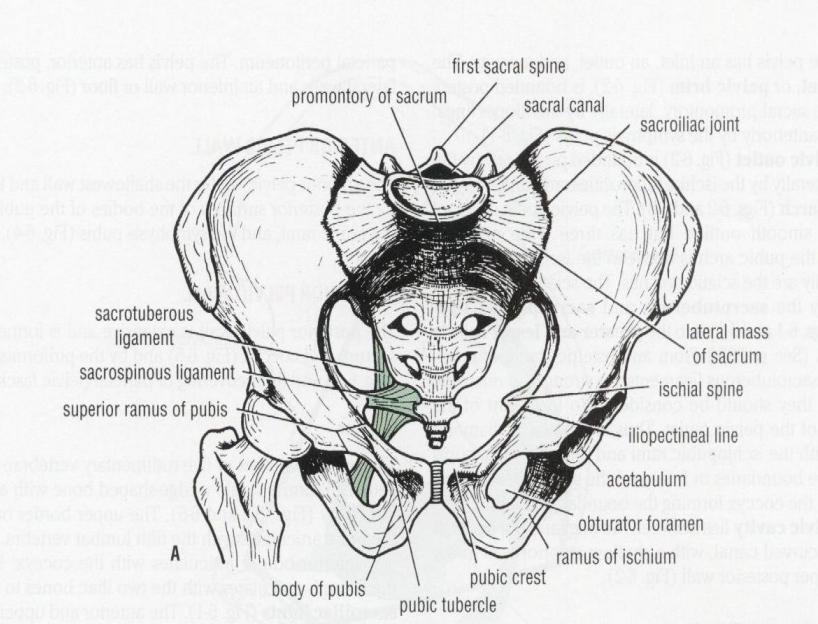
The bony pelvis is composed of four bones: the two hip bones, which form the lateral and anterior walls, and the sacrum and the coccyx, which are part of the vertebral column and form the back wall.

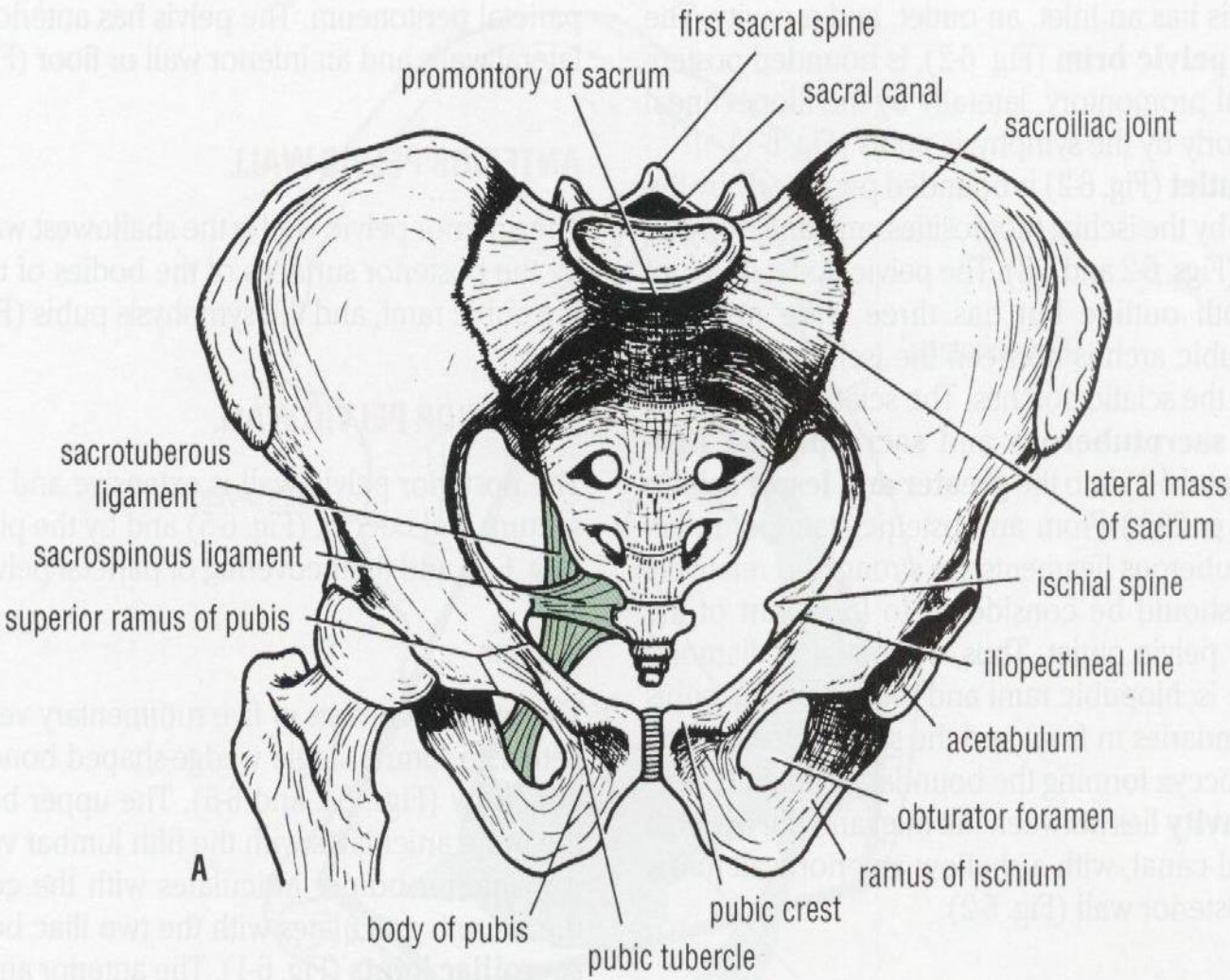
- **The pelvis is divided into two parts by the pelvic brim, which is formed by the sacral promontory (anterior and upper margin of the first sacral vertebra) behind, the ileopectineal lines (a line that runs downward and forward around the inner surface of the ileum) laterally, and the symphysis pubis (joint between bodies of pubic bones) anteriorly. Above the brim is the false pelvis, which forms part of the abdominal cavity. Below the brim is the true pelvis.**

The two hip bones articulate with each other anteriorly at the symphysis pubis and posteriorly with the sacrum at the sacroiliac joints.



The bony pelvis with its joints form a strong basin-shaped structure that contains and protects the lower parts of the intestinal and urinary tracts and the internal organs of reproduction.




first sacral spine
promontory of sacrum
sacral canal
sacroiliac joint
sacrotuberous ligament
sacrospinous ligament
superior ramus of pubis
lateral mass of sacrum
ischial spine
iliopectineal line
acetabulum
obturator foramen
ramus of ischium
pubic crest
pubic tubercle
body of pubis
A

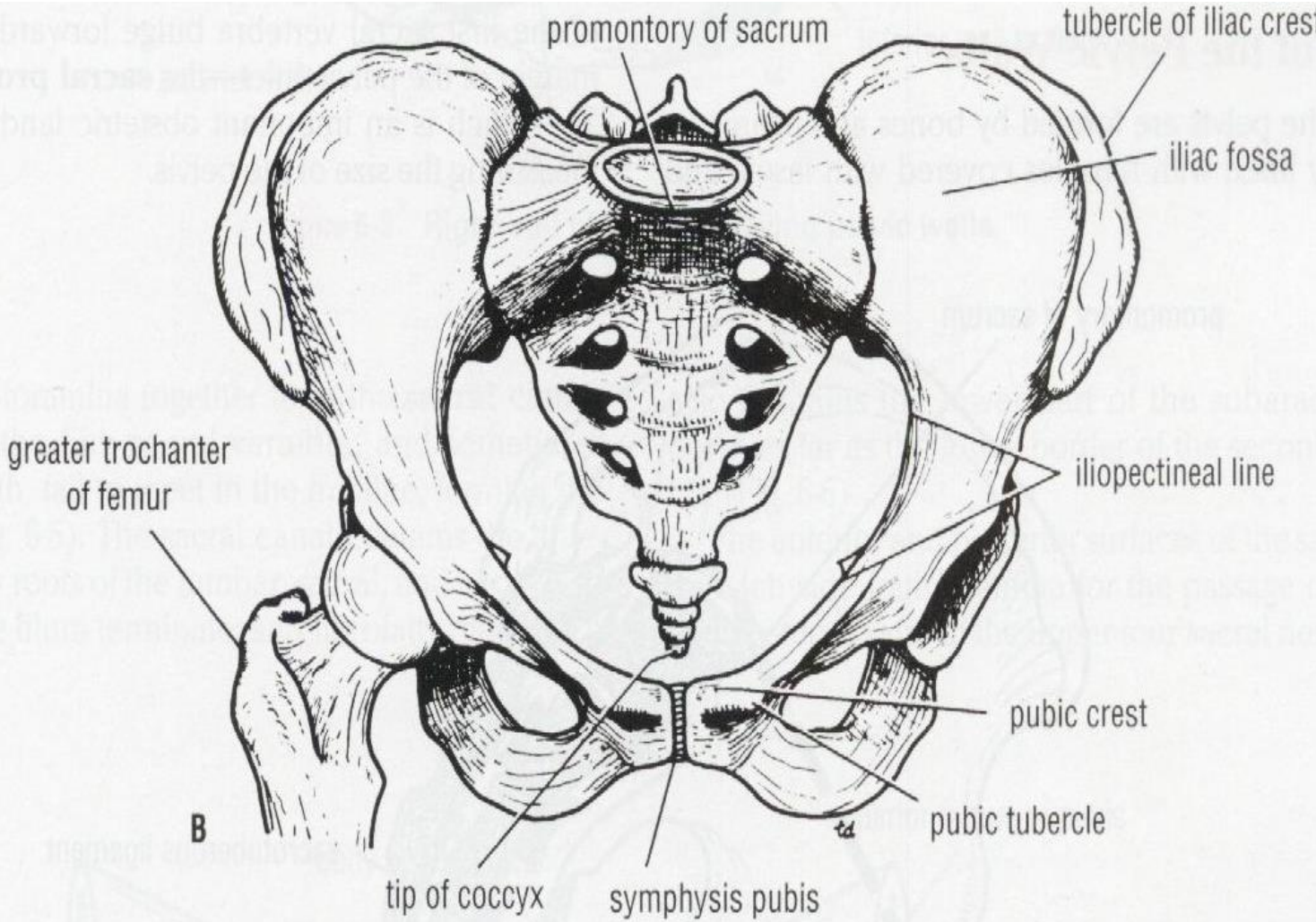


Figure 6-1 Anterior view of the male pelvis **(A)** and female pelvis **(B)**.

The front of the symphysis pubis and the anterior superior iliac spines should lie in the same vertical plane. This means that the pelvic surface of the symphysis pubis faces upward and backward and the anterior surface of the sacrum is directed forward and downward.

FALSE PELVIS

The false pelvis is of little clinical importance. It is bounded behind by the lumbar vertebrae, laterally by the iliac fossae and the iliacus muscles, and in front by the lower part of the anterior abdominal wall.

The false pelvis flares out at its upper end and should be considered as part of the abdominal cavity. It supports the abdominal contents and after the third month of pregnancy helps support the gravid uterus. During the early stages of labor it helps guide the fetus into the true pelvis.

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TRUE PELVIS

Knowledge 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

Joints of the Pelvis

SACROILIAC JOINTS

The sacroiliac joints are strong synovial joints and are formed between the auricular surfaces of the sacrum and the iliac bones . The sacrum carries the weight of the trunk, and. apart from the interlocking of the irregular articular surfaces, the shape of the bones contributes little to the stability of the joints.

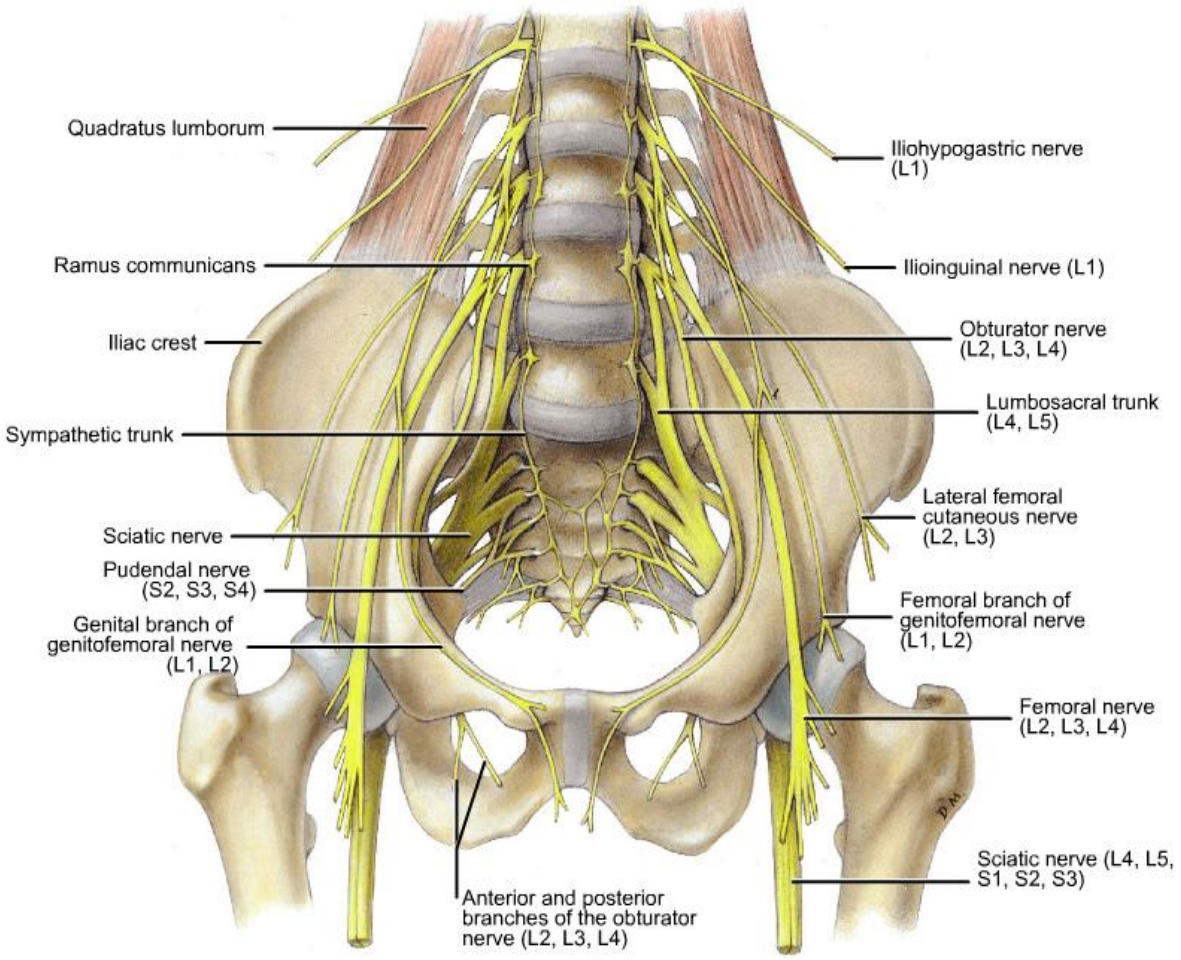
- **The strong posterior and Interosseous sacroiliac ligaments suspend the sacrum between the two iliac bones. The anterior sacroiliac ligament is thin and situated on the anterior aspect of the joint.**

The weight of the trunk tends to thrust the upper end of the sacrum downward and rotate the lower end of the bone upward. This rotatory movement is prevented by the strong sacrotuberous and sacrospinous ligaments described previously.

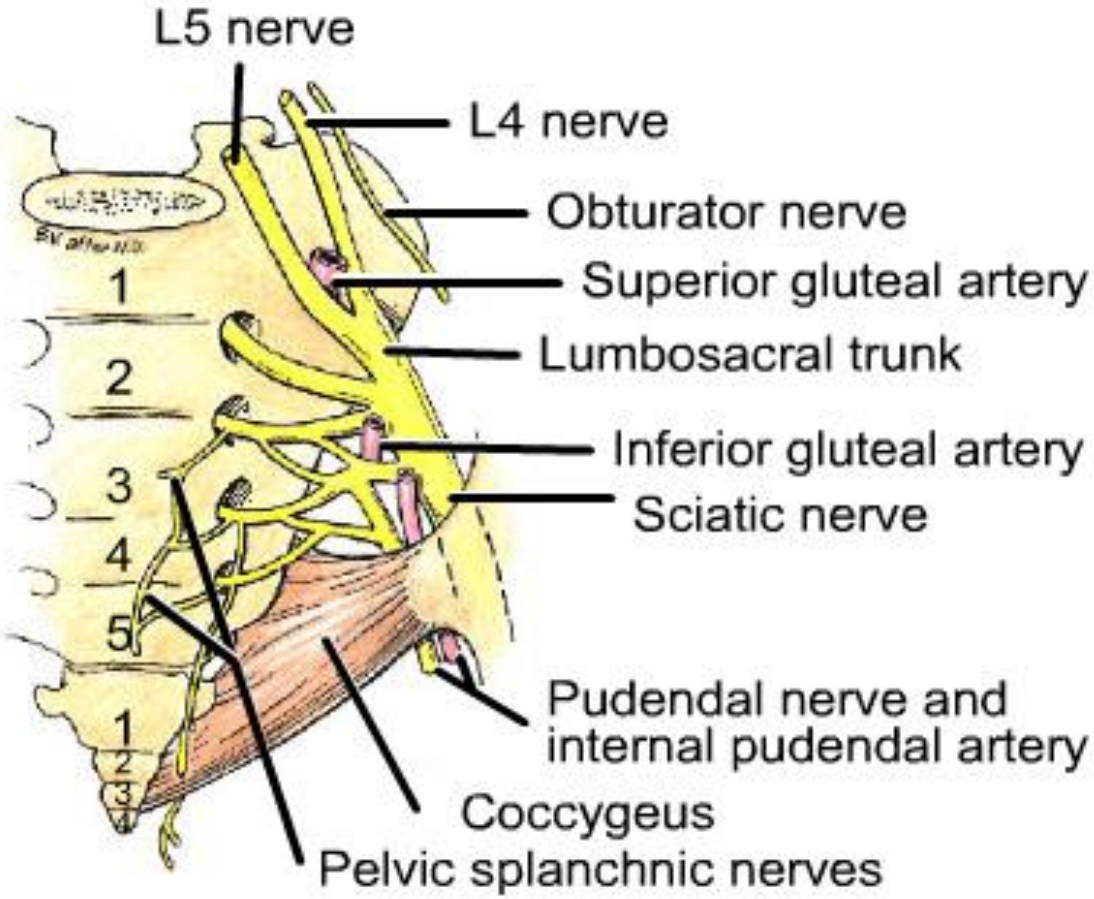
The iliolumbar ligament • connects the tip of the fifth lumbar transverse process to the iliac crest. A small but limited amount of movement is possible at these joints. Their primary function is to transmit the weight of the body from the vertebral column to the bony pelvis.

Lumbosacral plexus

1. The lumbosacral trunk provides continuity for the lumbar and sacral plexuses;
2. The ventral primary rami of (T12), L1, L2, L3, and L4 form the lumbar plexus, and the ventral primary rami of L4, L5, S1, S2, and S3 form the sacral plexus;
3. The sciatic nerve passes posteriorly through the greater sciatic foramen to the gluteal region;
4. The obturator nerve passes through the obturator foramen with the obturator artery and vein to supply the medial aspect of the thigh



Sacral plexus



Branches of Sacral Plexus

- Sciatic nerve
- Sup. Gluteal
- Inf. Gluteal
- N. to Quadrator Femoris muscle
- N. to Obturator Internus muscle
- Post. Cutaneous nerve of the Thigh

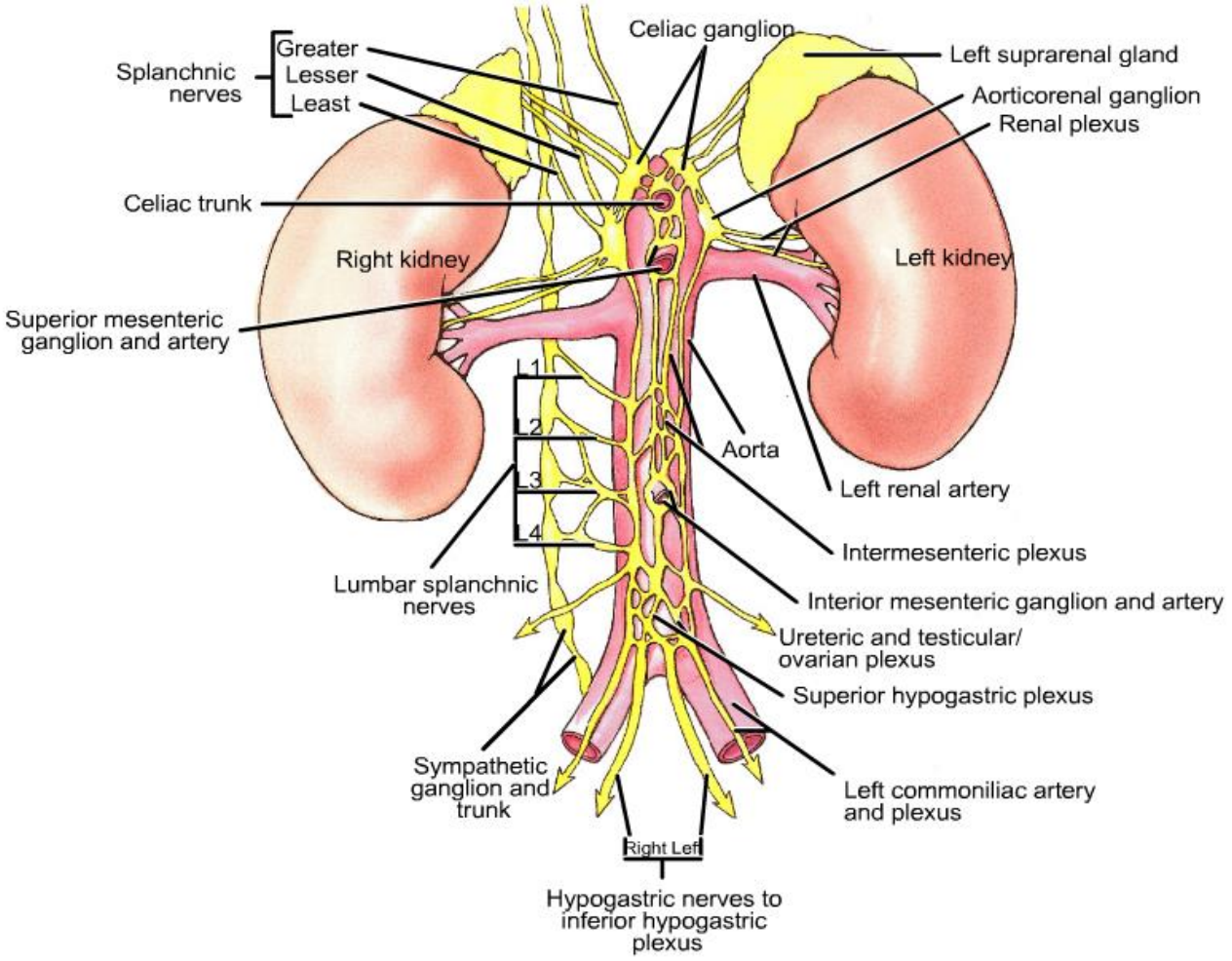
} to the Gluteal region & Lower limb

- Pudendal nerve
- N. to Piriformis muscle
- Pelvic Splanchnic nerve

} to Pelvis & Perineum

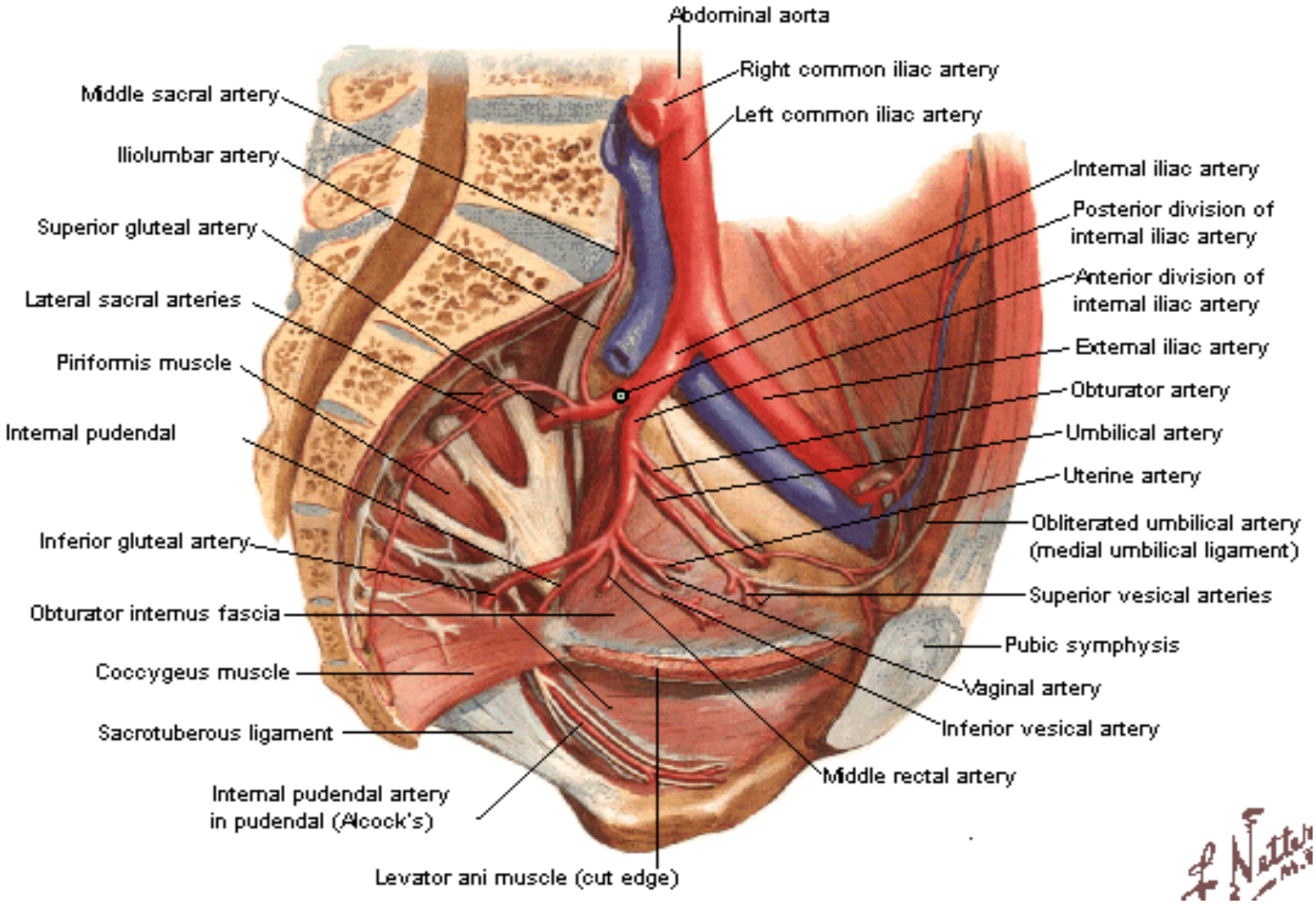
❖ Perforating Cutaneous nerves

Hypogastric plexus



Arteries and Veins of Pelvis

Female - Sagittal Section



Arteries of True Pelvis

1. Intern. Iliac artery

a) Ant. Division

- Umbalical a. → Superior vesical a.
- Obturator
- Inf. Vesical
- Middle rectal
- Internal Pudendal
- Inf. Gluteal
- Uterine
- Vaginal

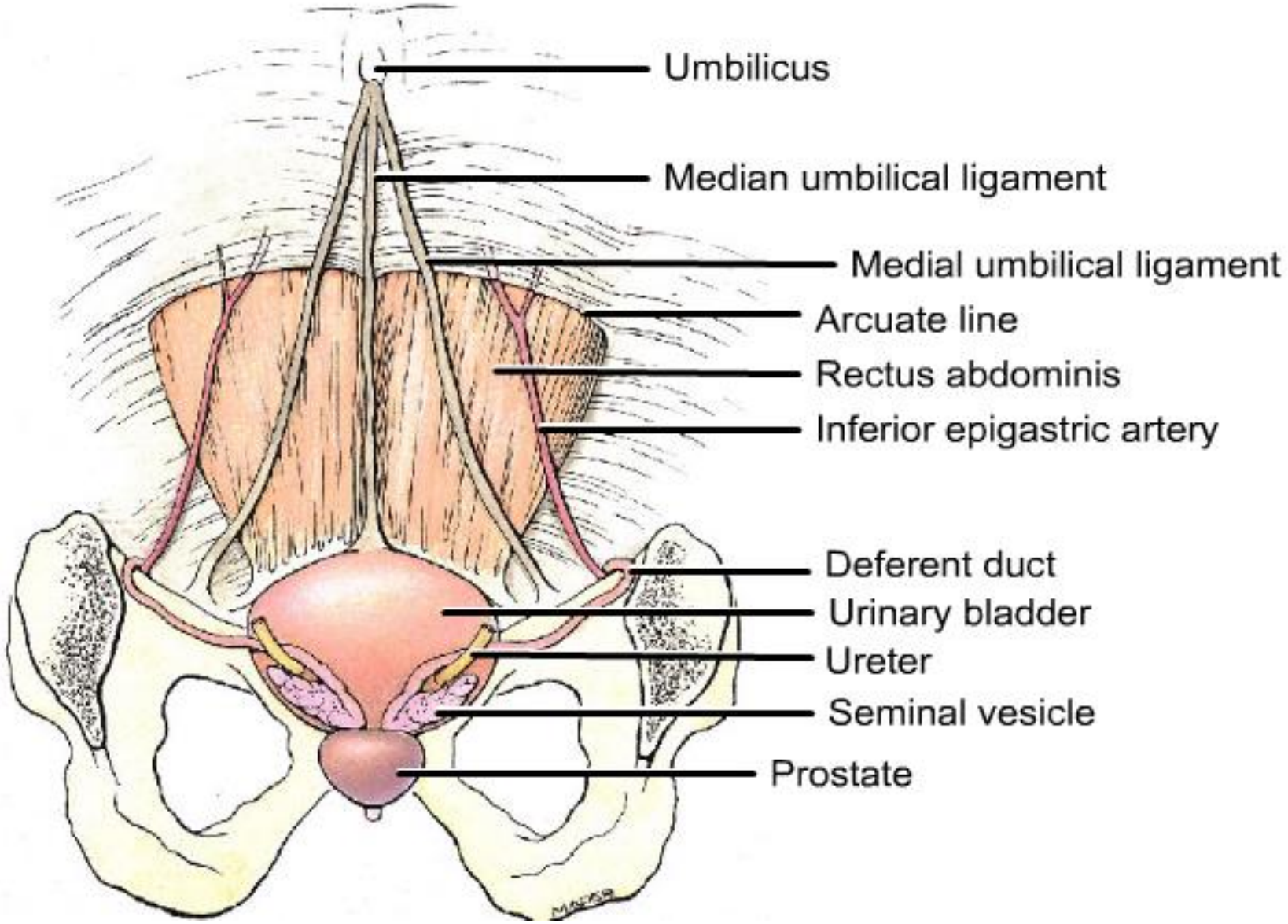
b) Post. Division

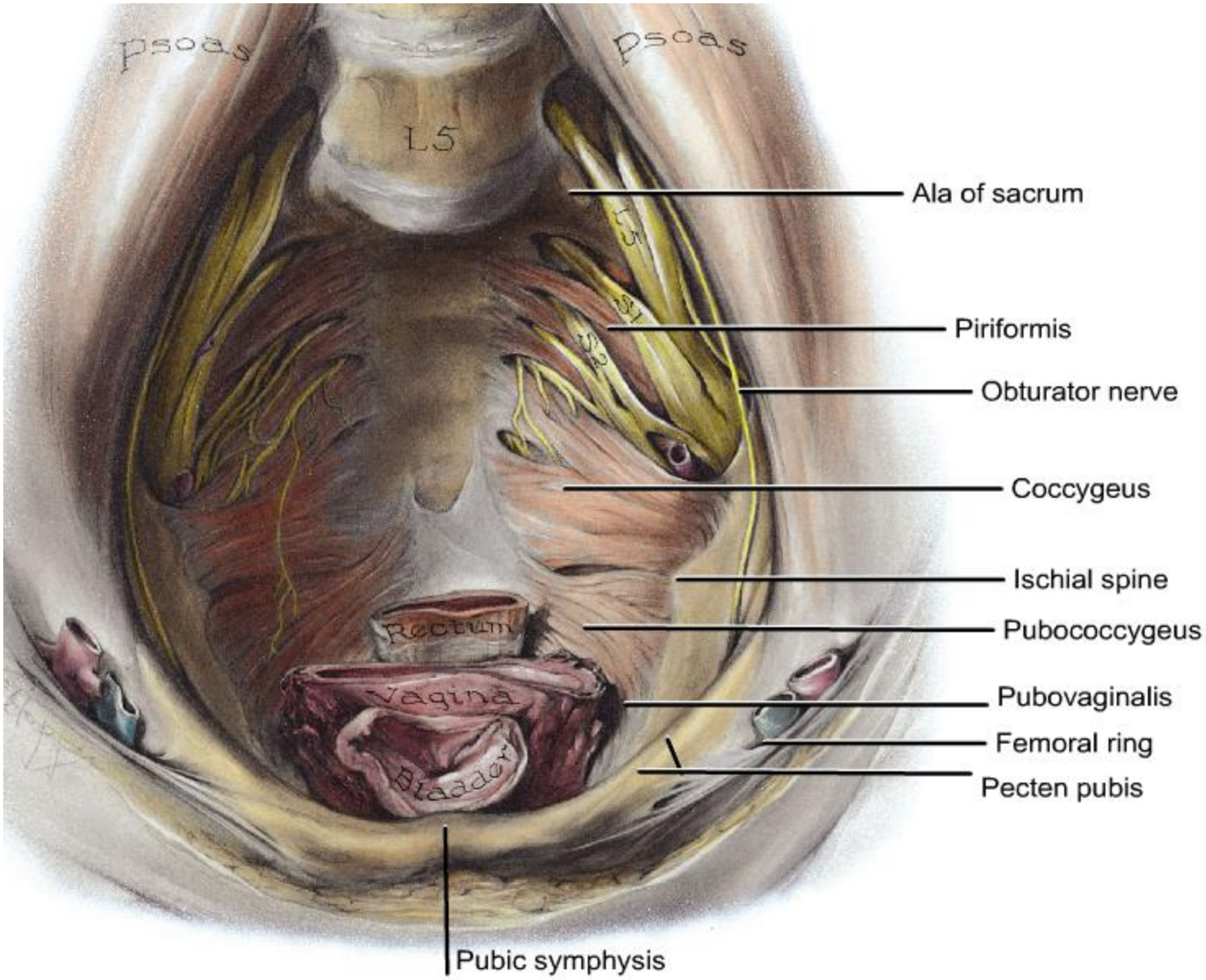
- Iliolumbar
- Lateral sacral
- Sup. Gluteal

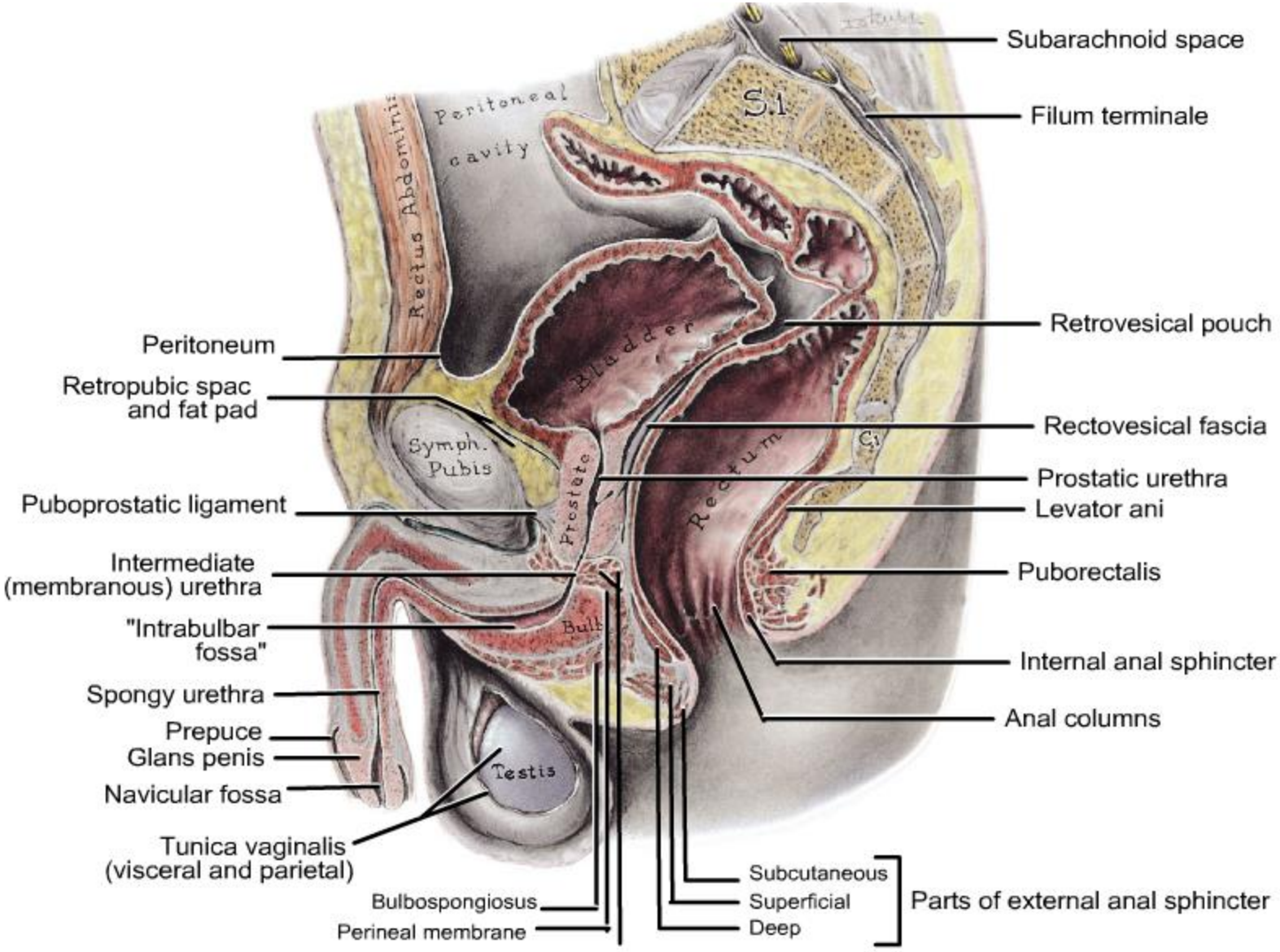
2. **Ovarian artery**

3. **Sup. Rectal artery**

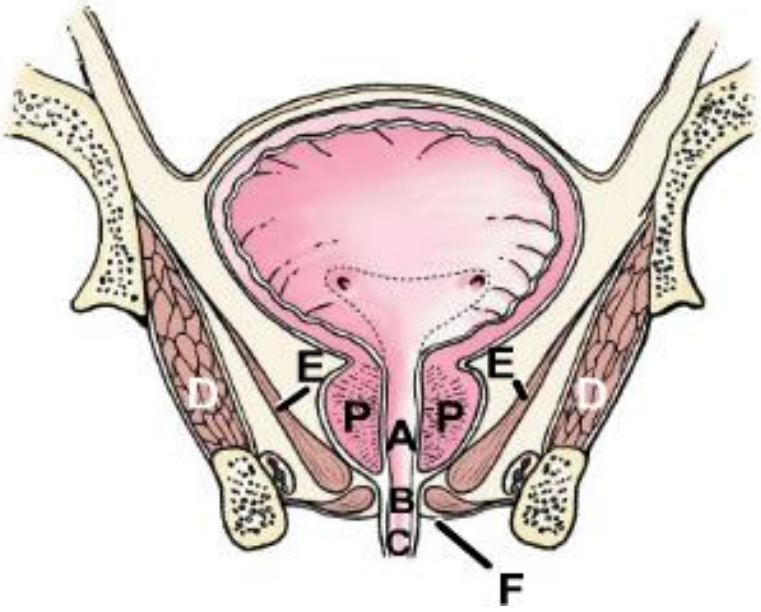
4. **Median Sacral artery**


Umbilicus
Median umbilical ligament
Medial umbilical ligament
Arcuate line
Rectus abdominis
Inferior epigastric artery
Deferent duct
Urinary bladder
Ureter
Seminal vesicle
Prostate


Psoas
Psoas
L5
L5
S1
S2
Rectum
Vagina
Bladder
Ala of sacrum
Piriformis
Obturator nerve
Coccygeus
Ischial spine
Pubococcygeus
Pubovaginalis
Femoral ring
Pecten pubis
Pubic symphysis



External urethral sphincter (sphincter urethrae) and deep transverse perineal


D
E
P
A
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D
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C
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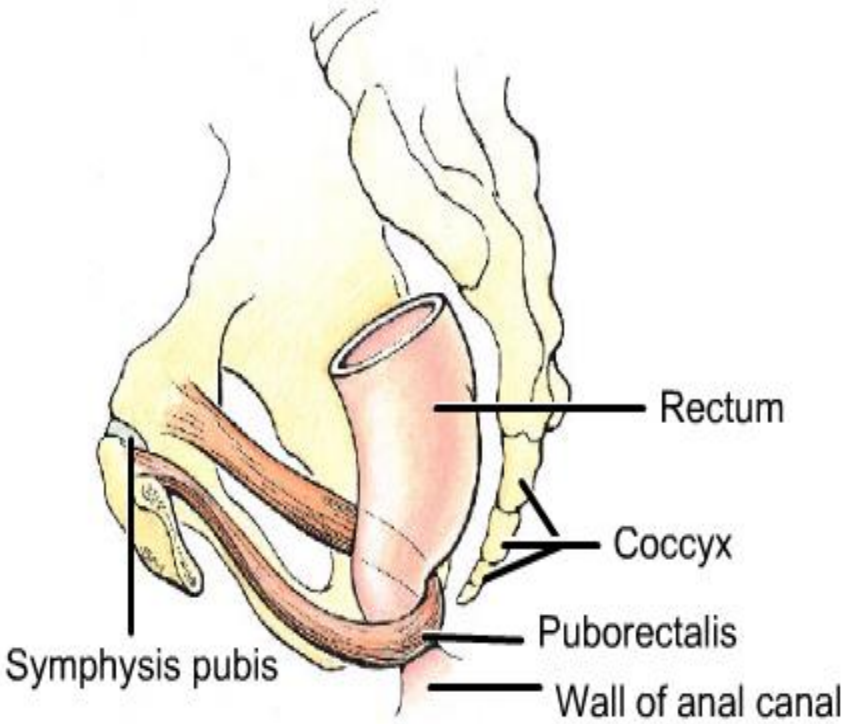
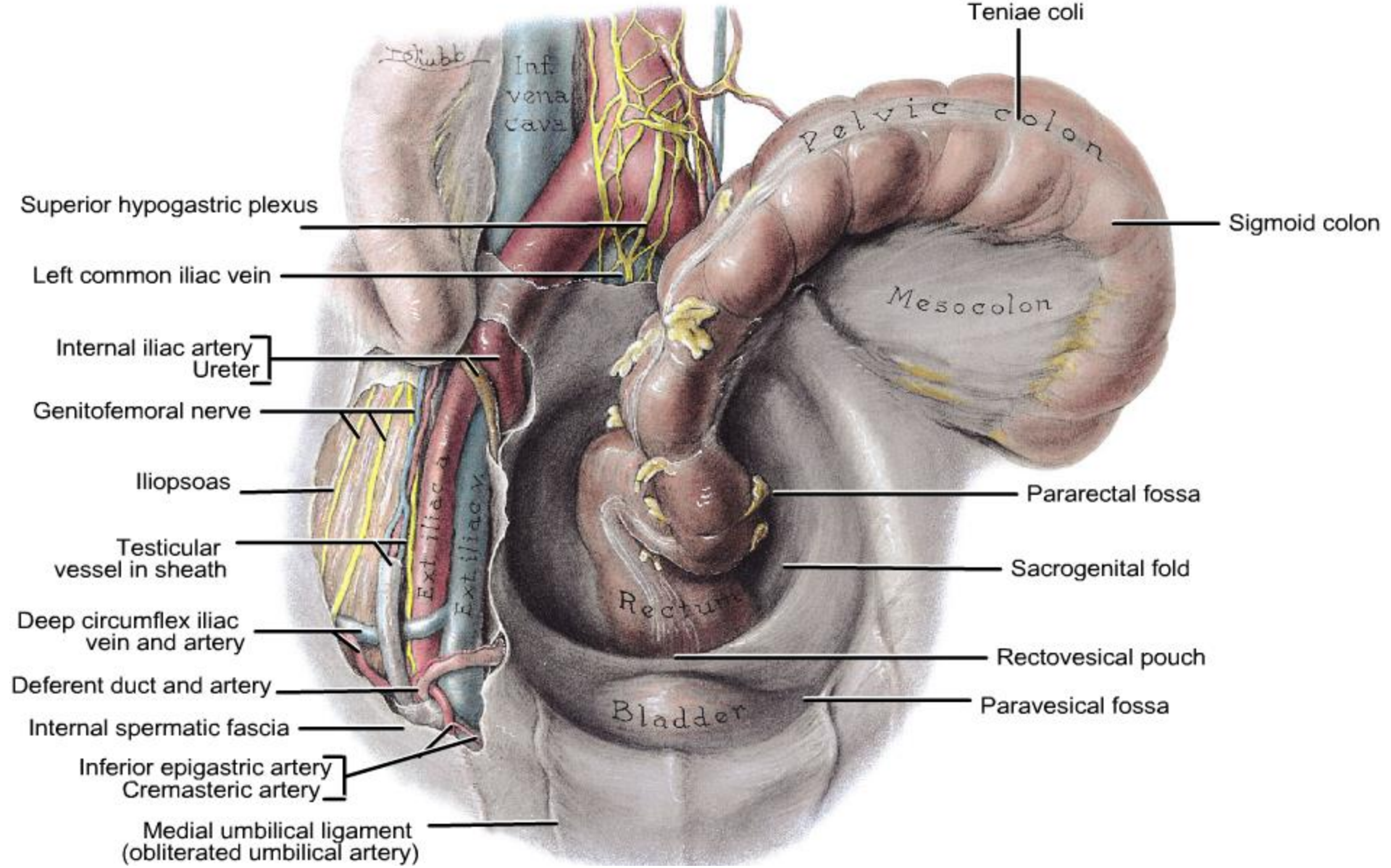
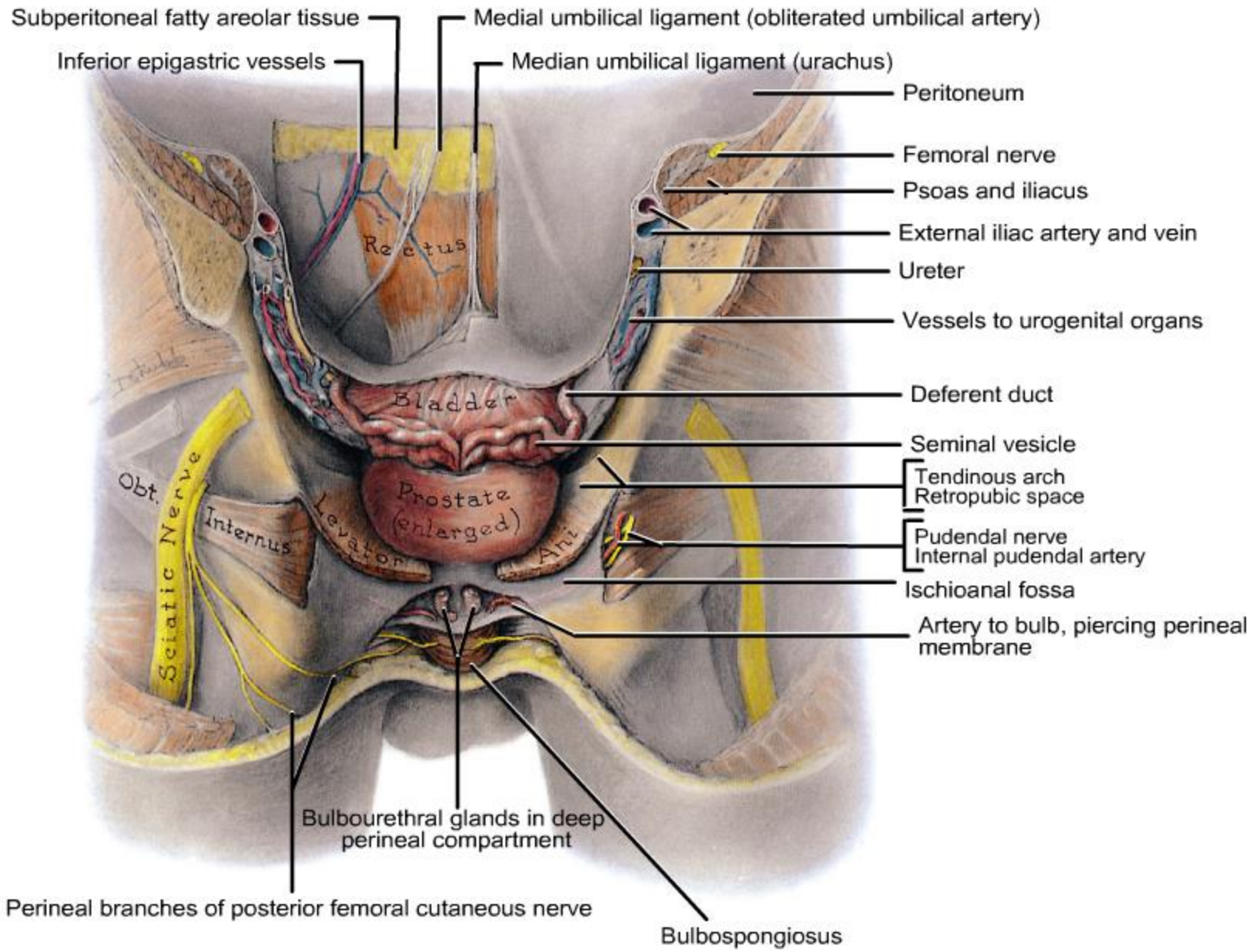

Rectum
Coccyx
Puborectalis
Symphysis pubis
Wall of anal canal


Teniae coli
Inf. vena cava
Pelvic colon
Superior hypogastric plexus
Sigmoid colon
Left common iliac vein
Mesocolon
Internal iliac artery
Ureter
Genitofemoral nerve
Ext. iliac a.
Ext. iliac v.
Iliopsoas
Pararectal fossa
Testicular vessel in sheath
Sacrogenital fold
Rectum
Deep circumflex iliac vein and artery
Rectovesical pouch
Deferent duct and artery
Bladder
Paravesical fossa
Internal spermatic fascia
Inferior epigastric artery
Cremasteric artery
Medial umbilical ligament (obliterated umbilical artery)


Subperitoneal fatty areolar tissue
Medial umbilical ligament (obliterated umbilical artery)
Inferior epigastric vessels
Median umbilical ligament (urachus)
Peritoneum
Femoral nerve
Psoas and iliacus
External iliac artery and vein
Ureter
Vessels to urogenital organs
Deferent duct
Seminal vesicle
Tendinous arch
Retropubic space
Pudendal nerve
Internal pudendal artery
Ischioanal fossa
Artery to bulb, piercing perineal membrane
Bulbourethral glands in deep perineal compartment
Perineal branches of posterior femoral cutaneous nerve
Bulbospongiosus
Rectus
Bladder
Prostate (enlarged)
Obt. Internus
Sciatic Nerve
Levator Ani