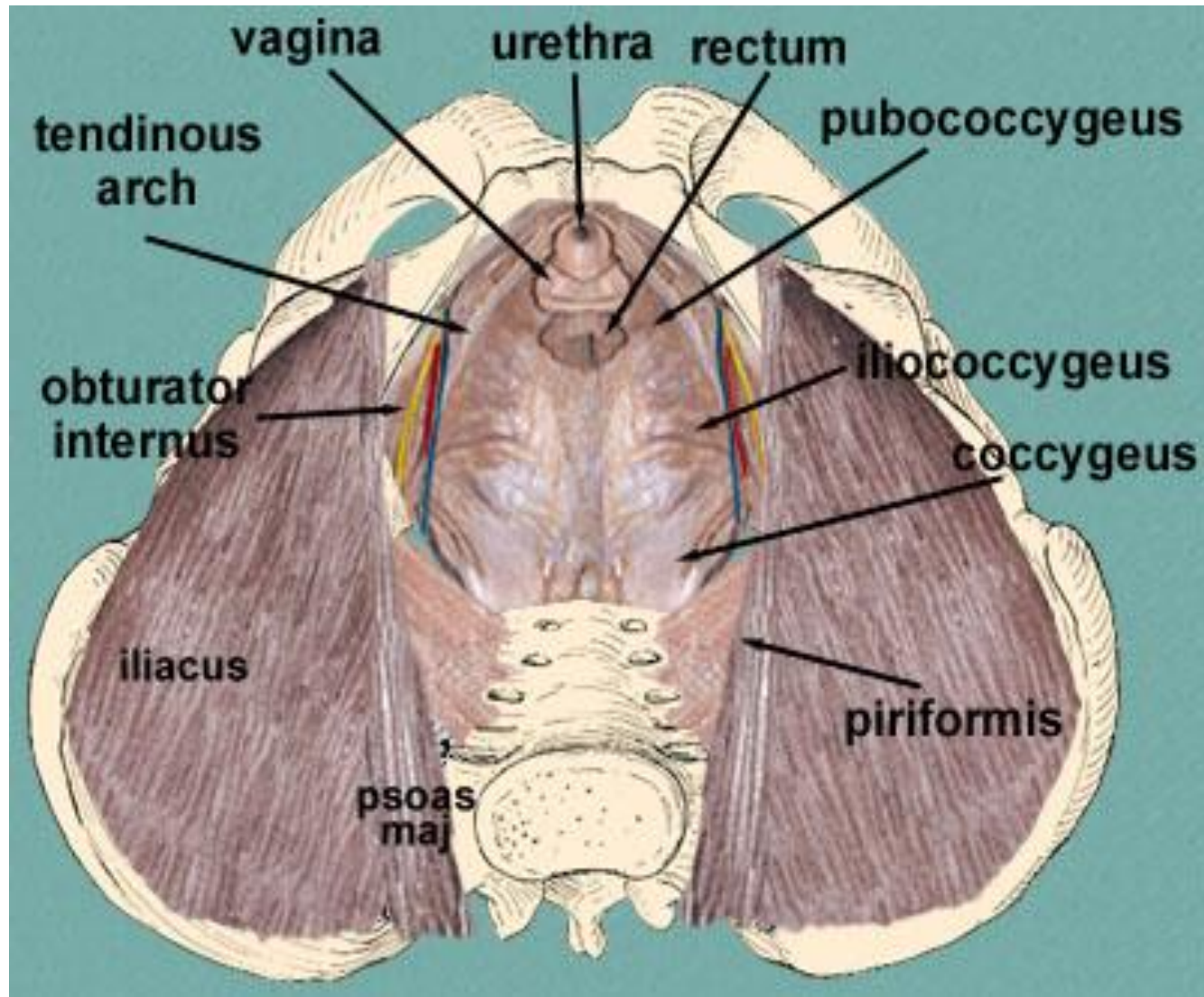


Pelvic muscles and pelvic fascia

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Pelvic fascia:

Pelvic fascia is distributed in the extra peritoneal space of the pelvis, it covers the lateral pelvic wall and the pelvic floor (parietal pelvic fascia) & also surrounds the pelvic viscera (visceral pelvic fascia).

Principles of this distribution:

The fascia is dense and membranous over the lateral pelvic wall and is loosely arranged over viscera and over the pelvic floor.

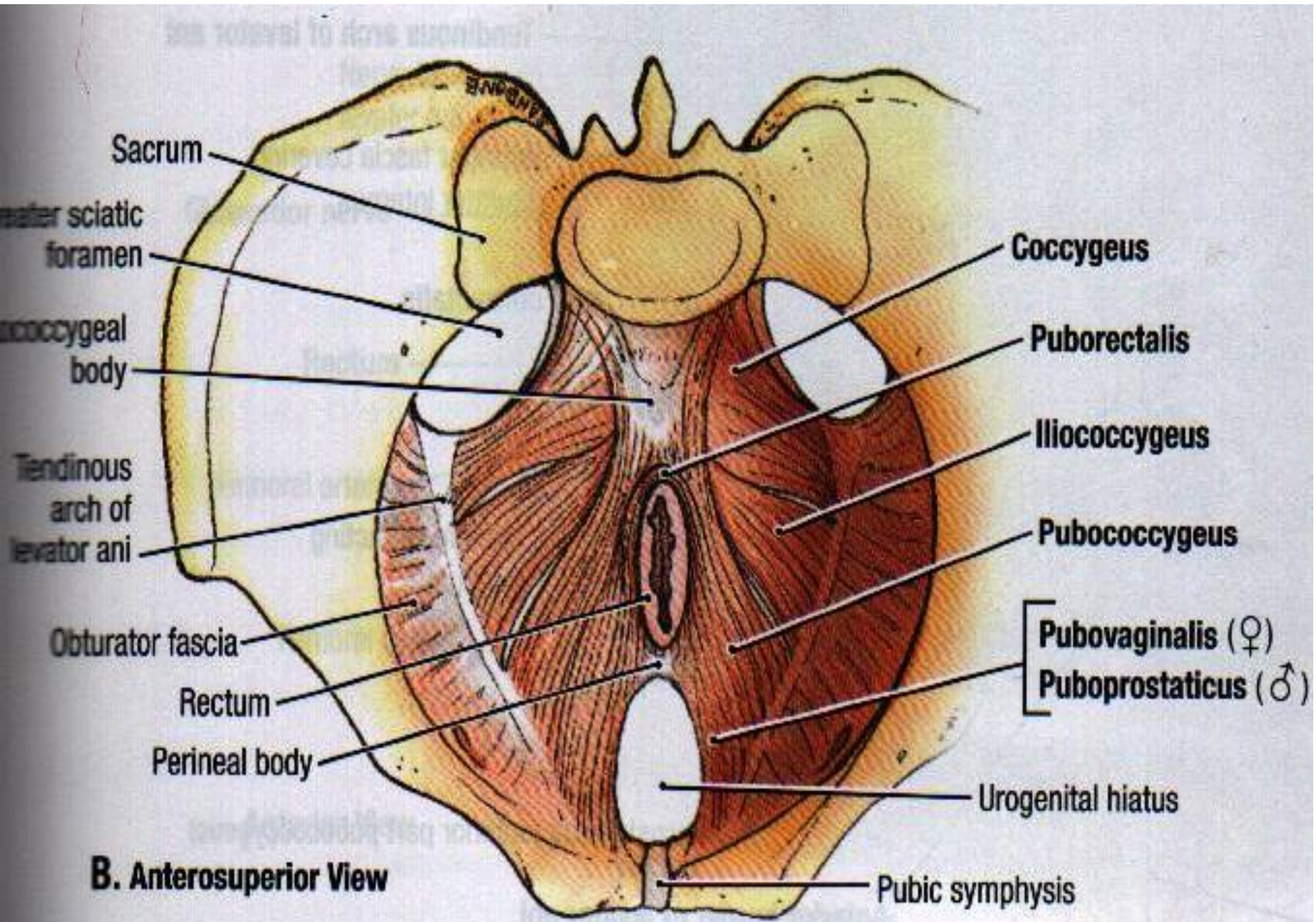
As a rule the fascia does not extend over bones & at the margins of the muscles it fuses with the periosteum.

Parietal fascia of the lateral pelvic wall

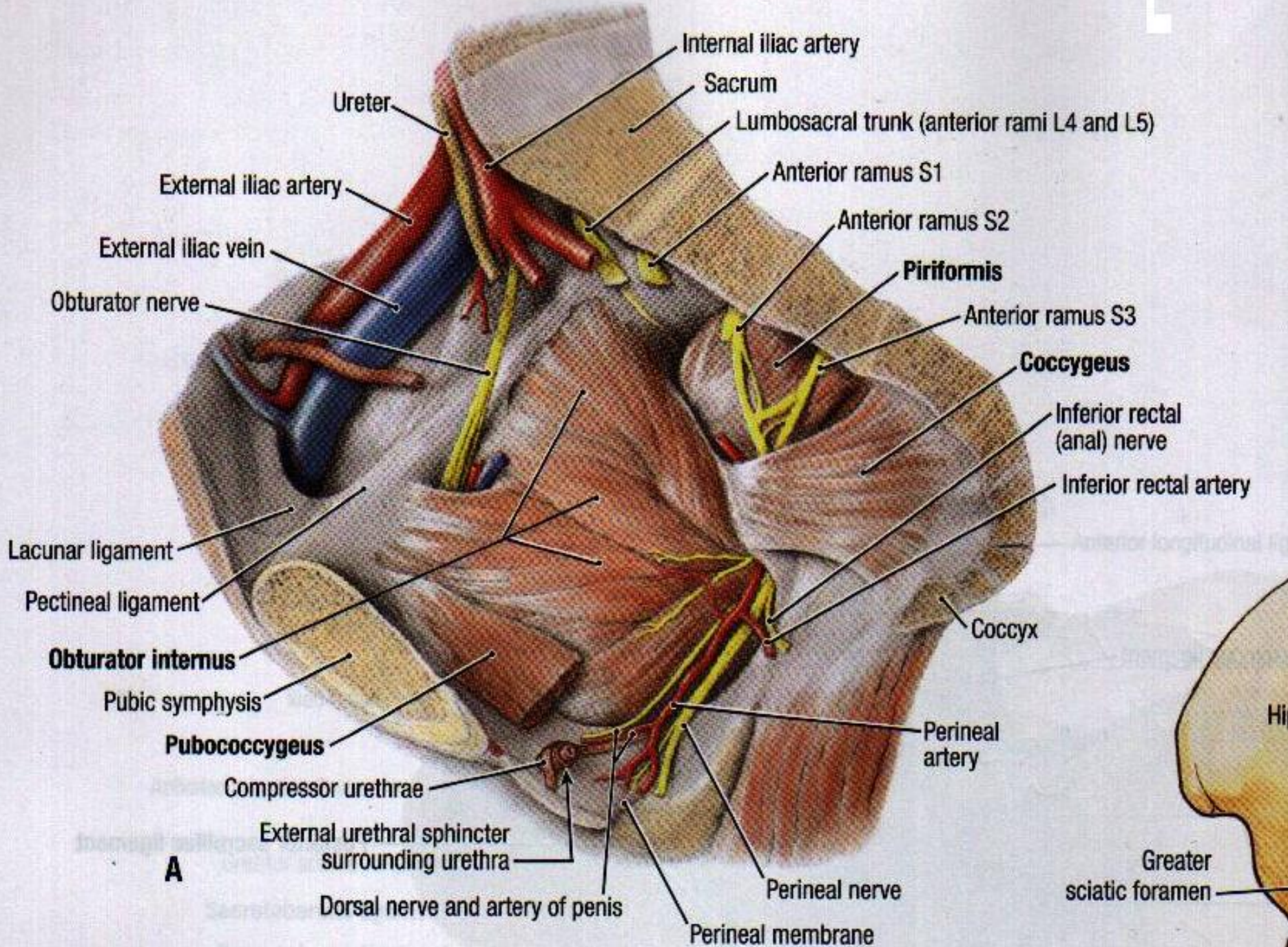
The fascia covering the muscles of the lateral pelvic wall is condensed to form thick & strong membranes .

The fascia covering the obturator internus is called obturator fascia , it shows a linear thickening for the origin of the levator ani.

The fascia covering the piriformis is thin. the nvs over the piriformis (i,e the sacral plexus) lie external to the pelvic fascia.



B. Anterosuperior View



Parietal fascia of the pelvic floor:

This fascia covers both surfaces of the pelvic diaphragm, forming the superior and inferior layers, the inferior fascia also known as the anal fascia.

in general the fascia of the pelvic floor is loosely arranged between the peritoneum & the pelvic floor.

However the fascia is condensed at places to form fibromuscular ligaments which support the pelvic fascia.

Visceral pelvic fascia

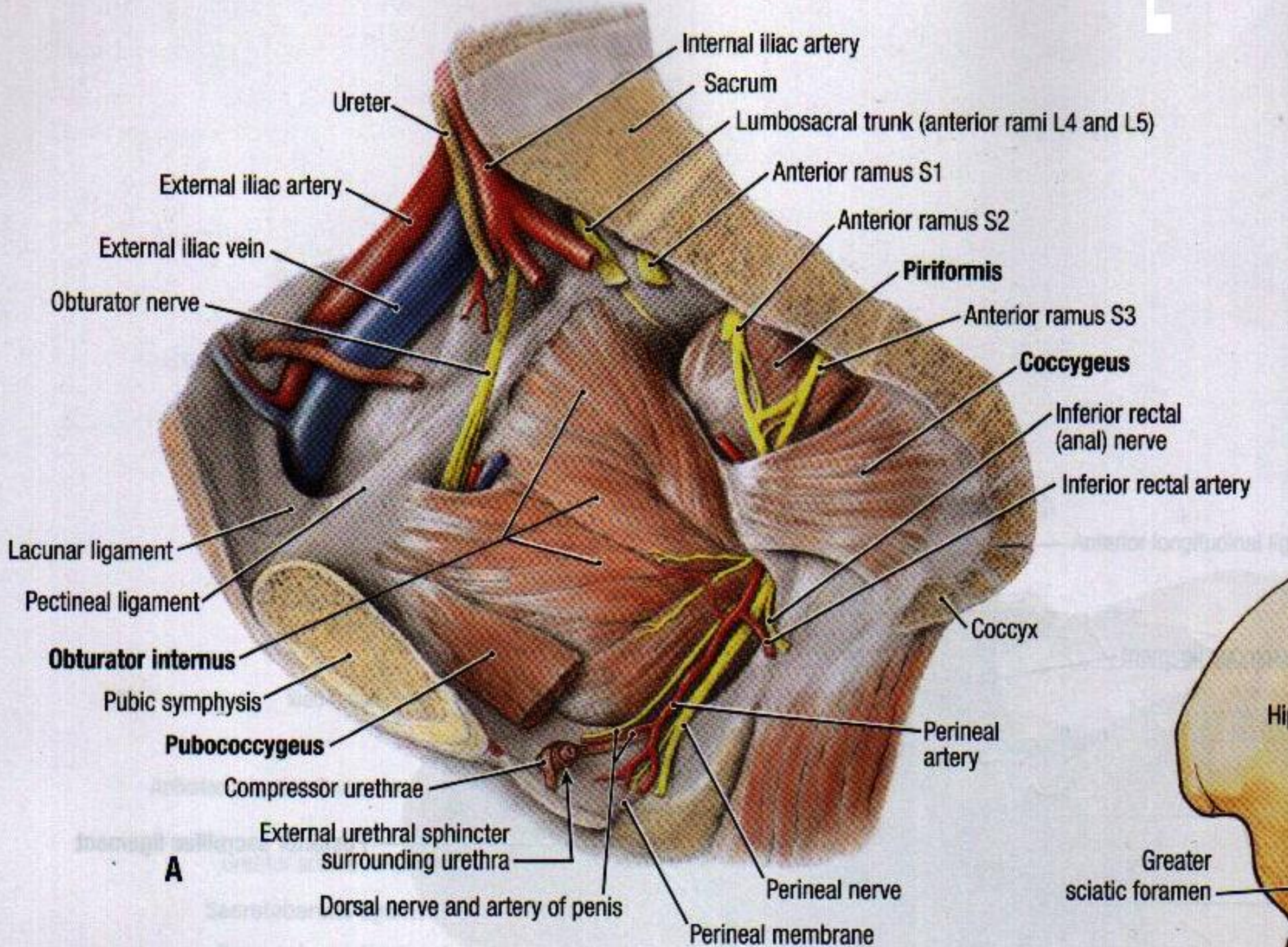
- This fascia surrounds the extra peritoneal parts of the pelvic viscera ,its loose and cellular around distensible pelvic organs like (bladder, rectum and vagina), while its dense around non distensible organs ,like prostate.

Pelvic muscles:

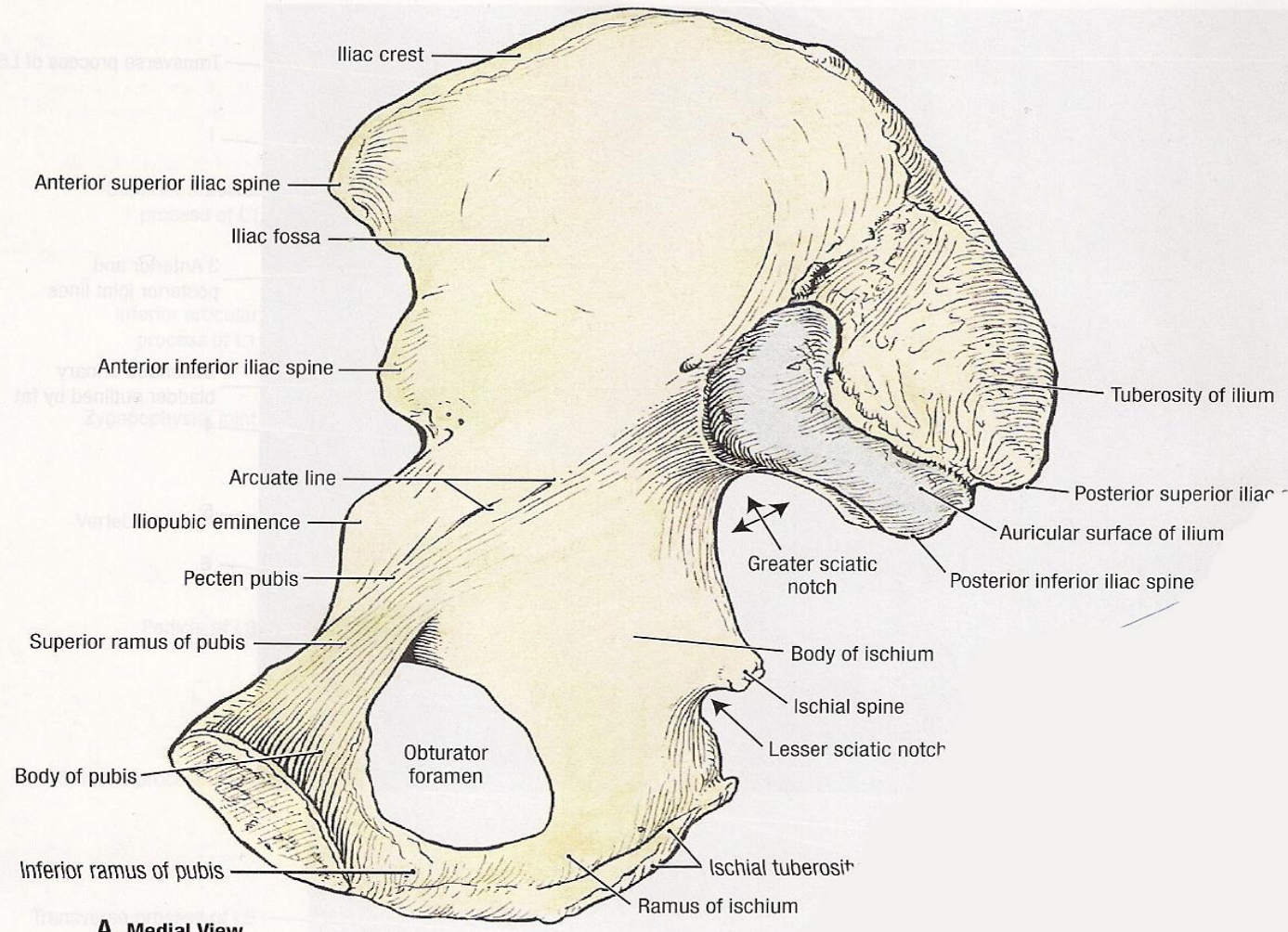
The pelvic muscles include two groups:

1. The piriformis and obturator internus,
2. The levator ani and coccygeus ,which with the corresponding muscles of the opposite side ,form the pelvic diaphragm.(The diaphragm separates the pelvis from the perineum).

the Piriformis lies on the posterolateral pelvic wall and leaves the lesser pelvis through the greater sciatic foramen.



4. On the lateral pelvic wall the obturator foramen is closed by the obturator membrane and the obturator internus m. which attaches mainly to the obturator memb. And exits the lesser pelvis through the lesser sciatic foramen; & the obturator fascia lies on the medial surface of the muscle.



A. Medial View

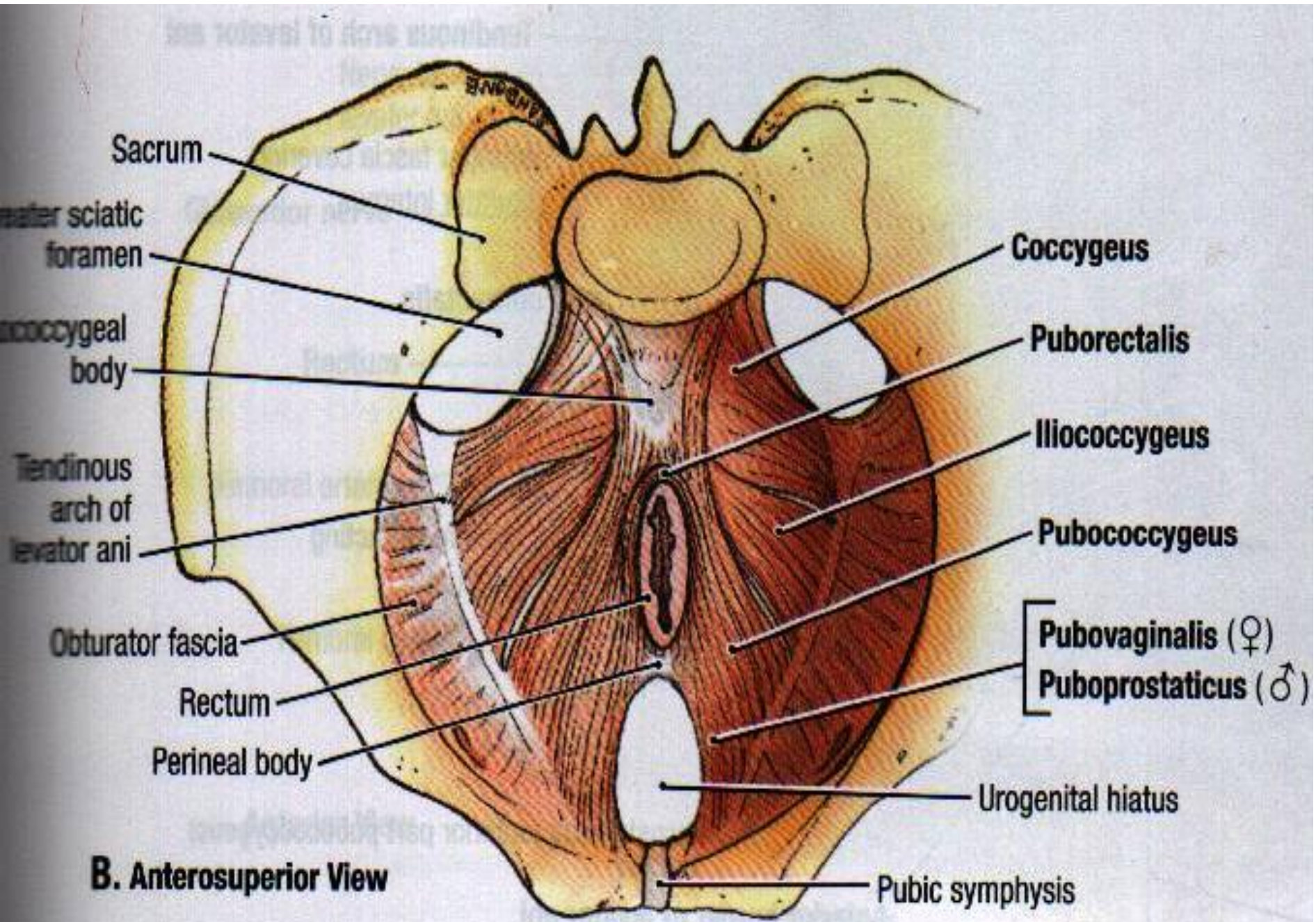
Muscles of floor of pelvis*:

Pelvic diaphragm (PD) = Levator ani (LA) + Coccygeus (C)
(PD = LA + C)

Levator ani (LA) = Pubococcygeus (PC) + Iliococcygeus (IC)
(LA = PC + IC)

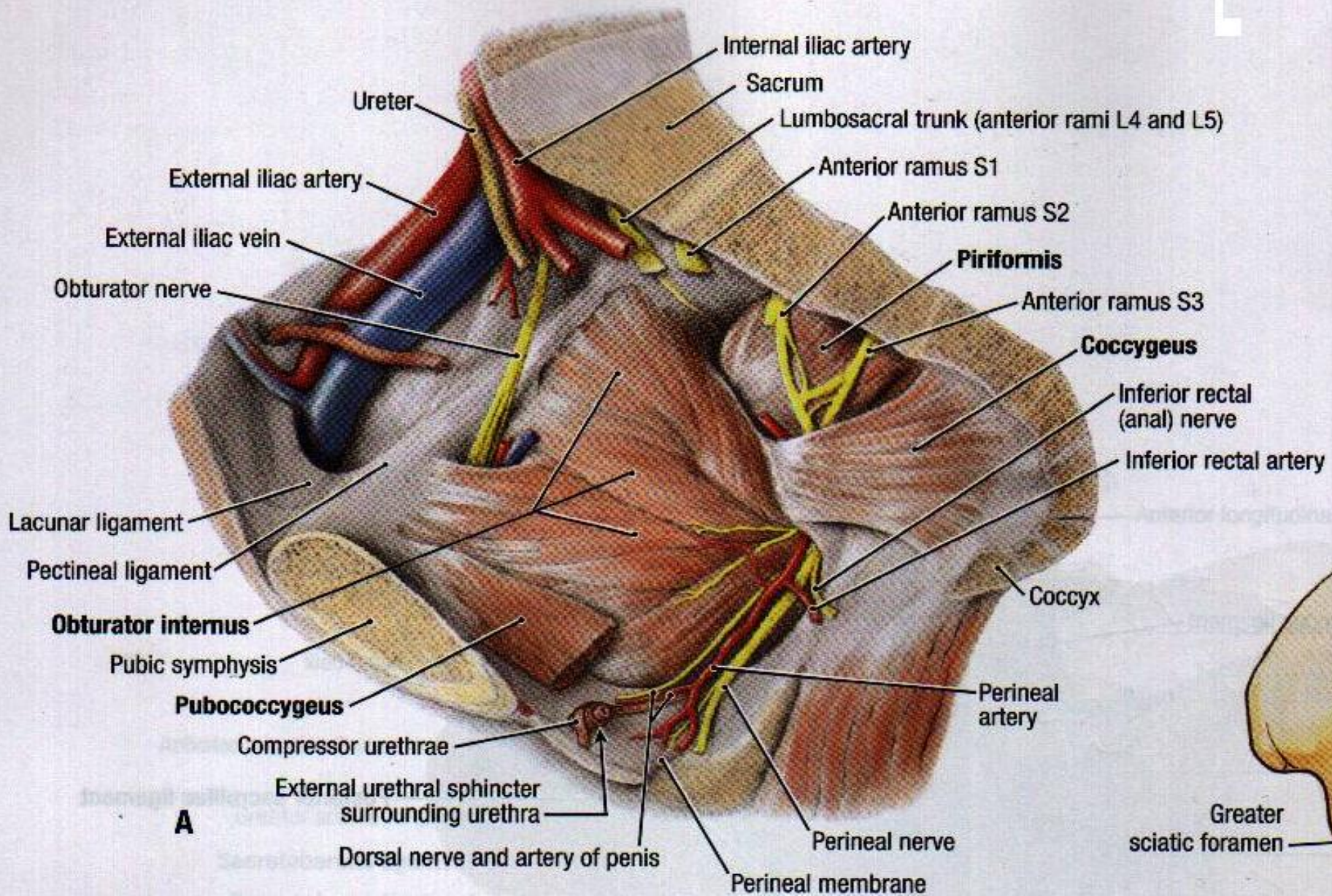
Pubococcygeus (PC ♀) = Puborectalis (PR) + Pubovaginalis (PV)
(PC = PR + PV ♀)

Pubococcygeus (PC ♂) = Puborectalis (PR) + Puboprostaticus
(PC = PR + LP ♂) (Levator prostatae [LP])



B. Anterosuperior View

<i>Boundary</i>	<i>Muscles</i>	<i>Origin</i>	<i>Insertion</i>	<i>Nv.supply</i>	<i>Action</i>
<i>Lateral wall</i>	<i>Obturator internus</i>	<i>Pelvic surfaces of ilium and ischium ,obturator memb.</i>	<i>Greater trochanter of femur</i>	<i>Nv to obturator internus (L5,S1,S2)</i>	<i>Rotates thigh lat.ly assists in holding head of femur in acetabulum</i>
<i>Postero lat.wall</i>	<i>piriforms</i>	<i>Pelvic surface of S2-S4 segments, superior margin of greater sciatic notch ,sacro tuberos ligament</i>	<i>Greater trochanter of femur</i>	<i>Anterior rami of S1 and S2</i>	<i>Rotates thigh lat.ly ,abducts thigh, assists in holding head of femur in acetabulum</i>



A



<p><i>floor</i></p>	<p>Levator ani (pubococcygeus, puborectalis & iliococcygeus)</p>	<p>Body of pubis, tendinous arch of obturator fascia, ischial spine</p>	<p>Perineal body, coccyx, ano coccygeal lig., walls of prostate or vagina, rectum, and anal canal</p>	<p>Nv. to lev. ani (br. of S4), inferior rectal nv, & coccygeal plexus</p>	<p>Forms most of pelvic diaphragm that helps support pelvic viscera & resists increase in intra abd. pressure</p>
<p><i>floor</i></p>	<p>Coccygeus (ischiococcygeus)</p>	<p>Ischial spine</p>	<p>Inferior end of sacrum and coccyx</p>	<p>Branches of S4 and S5 spinal nerves</p>	<p>Forms small part of pelvic diaphragm that supports pelvic viscera</p>

The levator ani and coccygeus may be regarded as one morphological entity, divisible from before backwards into pubococcygeus, the iliococcygeus and the (coccygeus). They have a continuous linear origin from the pelvic surface of the body of the pubis.

The muscle fibers slope downwards and backwards to the midline making pelvic floor.

- **The Levator Ani :**
- The muscle is divisible into a pubococcygeus part, and an iliococcygeus part.

A- pubo coccygeus part:

1. The **anterior fibers** of this part arise from the medial part of the body of the pubis. in females these fibers surround the vagina and form the sphincter vaginae .the anterior fibers are inserted into the perineal body .
2. The **posterior fibers** of the pubococcygeus arise from the lateral part of the pelvic surface of the pubis. they partly form a loop (or sling) around the anorectal junction;

- And are partly continuous with the longitudinal muscle coat of the rectum .
3. The **middle fibers** constitute the puborectalis.

B-Iliococcygeus part:

The fibers of this part arise from: **(a)** the posterior half of the white line on the obturator fascia ;and **(b)** the pelvic surface of the ischial spine .they are inserted into the anococcygeal ligament and into the tip of the coccyx.

The coccygeus muscles:

Also called (ischiococcygeus), this muscle represents the posterior part of the pelvic diaphragm. It is triangular in shape. It is partly muscular and partly tendinous.

Its fibers arise from: **a**-the pelvic surface of the ischial spine, and **b**-the sacrospinous ligament. It is inserted into the side of the coccyx, and into the fifth sacral vertebra.

Action of levator ani and coccygei :

1. The levator ani & coccygei close the posterior part of pelvic outlet.
2. The levator ani fix the perineal body and support the pelvic viscera.
3. During coughing ,sneezing ,lifting and other muscular efforts, the levator ani and coccygei counteract (resist) increased intra –abdominal pressure, and help to maintain continence of the bladder and the rectum.

4. in micturition ,defeacation and parturition, particularly the pelvic outlet is open ,but contraction of fibers around other openings resists increased intra-abdominal pressure and prevents any prolapse through the pelvic floor.

5. The coccygei pull forwards and support the coccyx ,after it has been pressed backwards during defaecation or parturition.

Relations of the levator ani :

1. The superior or pelvic surface is covered with pelvic fascia which separates it from the bladder ,the prostate in male ,the rectum and peritoneum.
2. The inferior or perineal surface is covered with anal fascia and forms the medial boundary of the ischiorectal fossa.

3. The anterior borders of the two muscles are separated by a triangular space for the passage of the urethra and vagina.

4. The posterior border is free and lies against the anterior margin of the coccygeus.

Clinical notes:

- the muscles of the pelvic floor may be injured during parturition .when the perineal body is torn ,and has not been repaired satisfactorily,
- the contraction of anterior fibers of the levator ani increases the normal gap in the pelvic floor ,instead of decreasing it. this results in abnormalities like cystocele , or prolapse of uterus.

Thank you for listening