

# *Anatomy*

## *The perineum*

The perineum is the part of the pelvic cavity that lies below the pelvic diaphragm. When seen from below with the thighs are abducted, the perineum is diamond shaped and is bounded by:

- Anterior: symphysis pubis.
- Posterior: the tip of the coccyx.
- Lateral: ischial tuberosities.
- Posterolateral: sacrotuberous ligaments.
- Anterolateral: ischiopubic rami.

### **Divisions of the perineum**

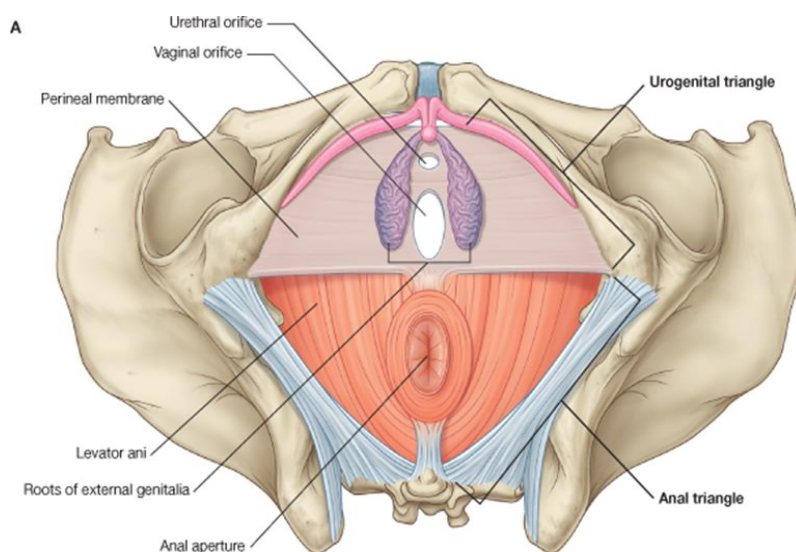
A line joining the anterior parts of ischial tuberosities is divided the diamond shaped perineum into anterior small urogenital triangle or region and posterior large anal triangle or region.

#### **Contents of the anal triangle**

The anal canal lies in the midline, and on each side is the ischiorectal fossa.

#### Cutaneous nerves of anal region:

- Inferior rectal nerve.
- Perineal branch of fourth sacral nerve.
- Small twigs from coccygeal plexus[S5].

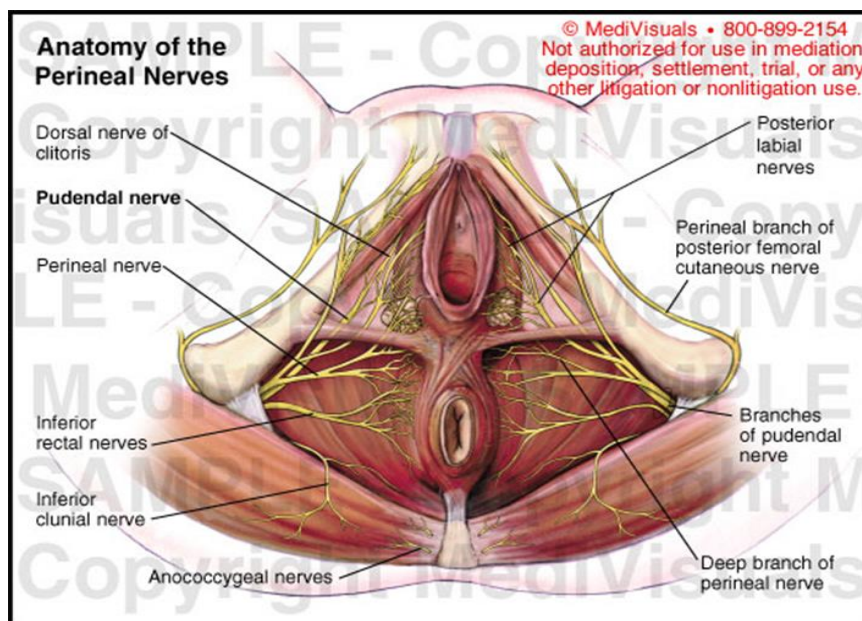


### Contents of the urogenital triangle:

The external genitalia externally [in male the penis and the scrotum; and in the female the mons pubis, the labia minora, labia majora, the vestibule, and the clitoris]; and superficial and deep perineal pouches internally.

### Cutaneous nerves of the urogenital region:

- Anterior 1/3 of the scrotum [labium majus] supplies by the ilioinguinal nerve and the genital branch of the genitofemoral nerve.
- Lateral part of the posterior 2/3 of the scrotum [labium majus] supplies by the perineal branch of the posterior cutaneous nerve of thigh.
- Medial part of the posterior 2/3 of scrotum [labium minus] supplies by the scrotal [labial] branch of perineal branch of the pudendal nerve.
- Skin of the penis [clitoris] supplies by the dorsal nerve of the pudendal nerve.

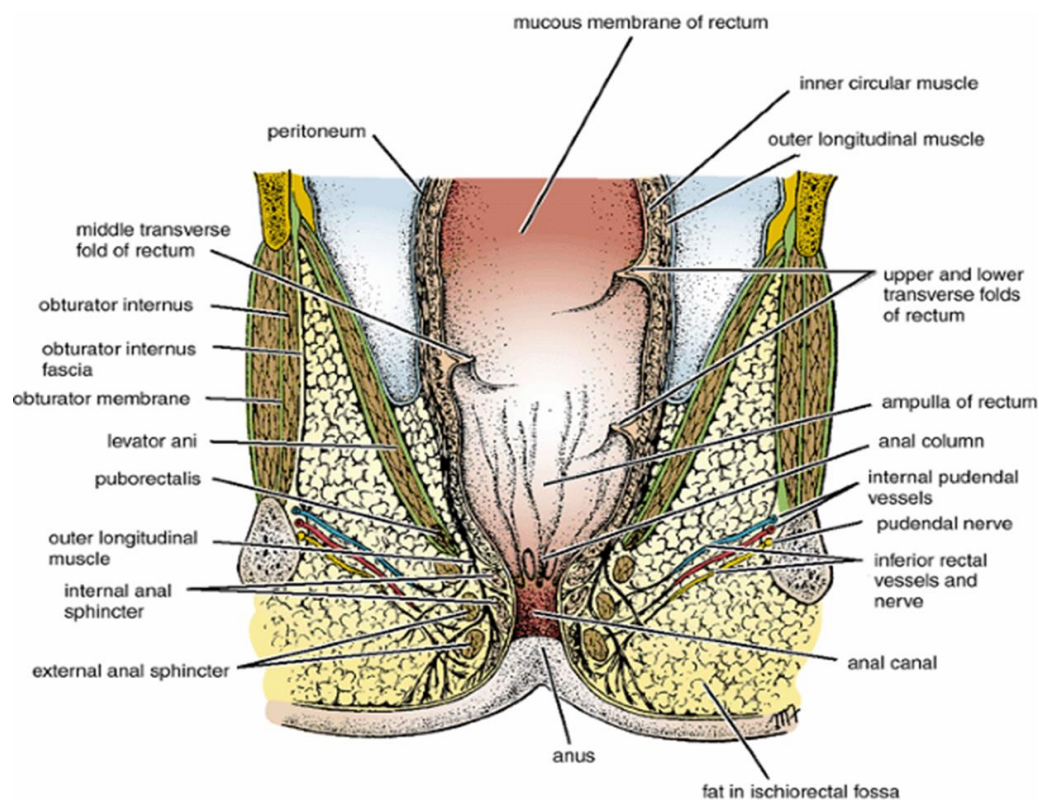


### Ischiorectal fossa

1. Is a wedge shaped space on each side of the anal canal.
2. The base is inferior and is formed by the perineal skin of the anal region.
3. The apex of the wedge is where the medial and lateral walls meet.
4. The medial wall is formed by levator ani muscle and the external sphincter of the anal canal.
5. Lateral wall is formed by the obturator internus muscle and its covering fascia.

6. contents of the fossa :

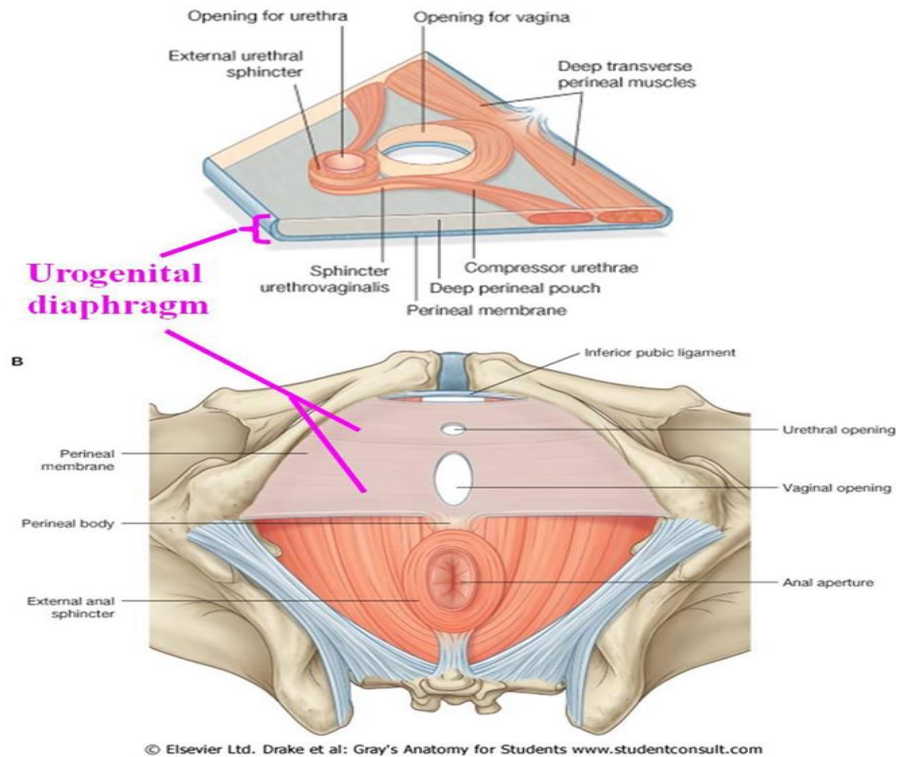
- Loose fatty tissue.
- Internal pudendal vessels and pudendal nerve. They lie in the facial canal called the pudendal canal. The canal lie on the lower lateral wall of the ischiorectal fossa and is formed by splitting in the fascia covering the obturator internus.
- Inferior rectal nerve and vessels.
- Perineal branch of the fourth sacral nerve, which supplies the perianal skin external sphincter, and the levator ani muscles.



## Urogenital diaphragm

1. Triangular musculofascial diaphragm lies in the anterior part of the perineum, filling in the gap of the pubic arch.
2. It stretches across the pubic arch between its attachments to the ischiopubic rami.
3. It has superior and inferior facial layers.
4. The sphincter urethrae muscle and deep transverse perineal muscles lie between its two layers.
5. Together these fascia layers and muscles are referred to as the urogenital diaphragm.
6. Anteriorly, the two layers fuse, leaving small gap beneath the symphysis pubis.
7. Posteriorly, the two layers fuse with each other and with the membranous layer of the superficial fascia and perineal body.
8. Laterally, the two layers are attached to the ischiopubic rami.

9. The closed space between the superior and inferior layers is known as deep perineal pouch.
10. The superior facial layer is continuous with pelvic fascia.
11. The inferior facial layer is often referred to as the perineal membrane. This layer gives attachment to the root of the penis or clitoris [the bulb and crura].



### **Contents of the deep perineal pouch in the male**

- Membranous part of the urethra.
- Sphincter urethrae muscle.
- Bulbourethral glands
- Deep transverse perineal muscles.
- Internal pudendal artery and its terminal three branches.
- Dorsal nerve of the penis. It passes forward through the deep pouch and the skin of the penis.

### **Contents of the deep perineal pouch in the female:**

- Part of the urethra.
- Part of the vagina.
- Sphincter urethrae.
- Deep transverse perineal muscles.
- Internal pudendal artery and its terminal branches.
- Dorsal nerve of the clitoris.



## Superficial perineal pouch

Is space between the membranous layer of the superficial fascia and inferior layer [perineal membrane] of the urogenital diaphragm. This pouch is closed posteriorly by fusion of its upper and lower walls, and is closed laterally by attachment of its walls to the ischiopubic rami.

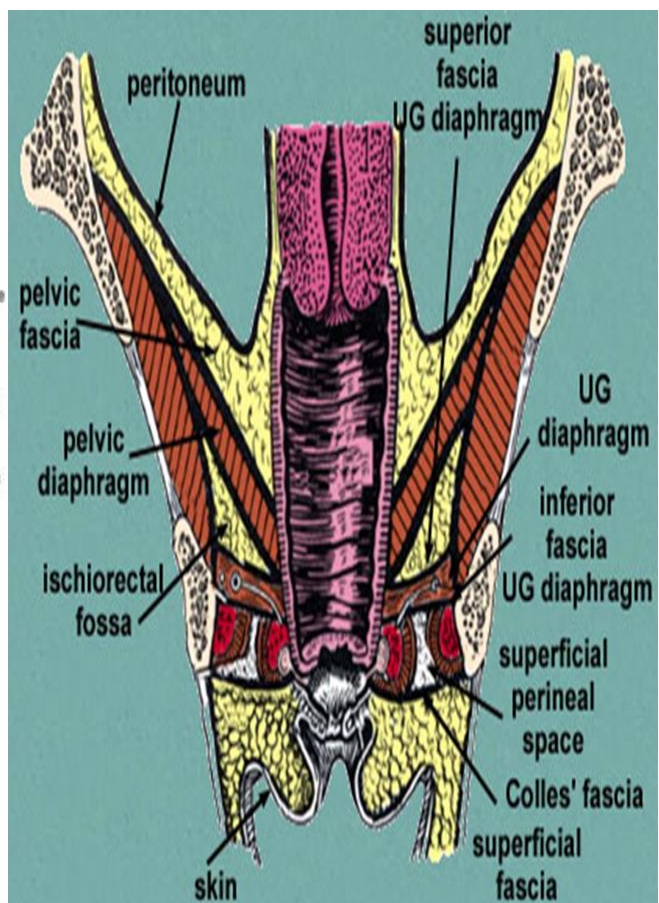
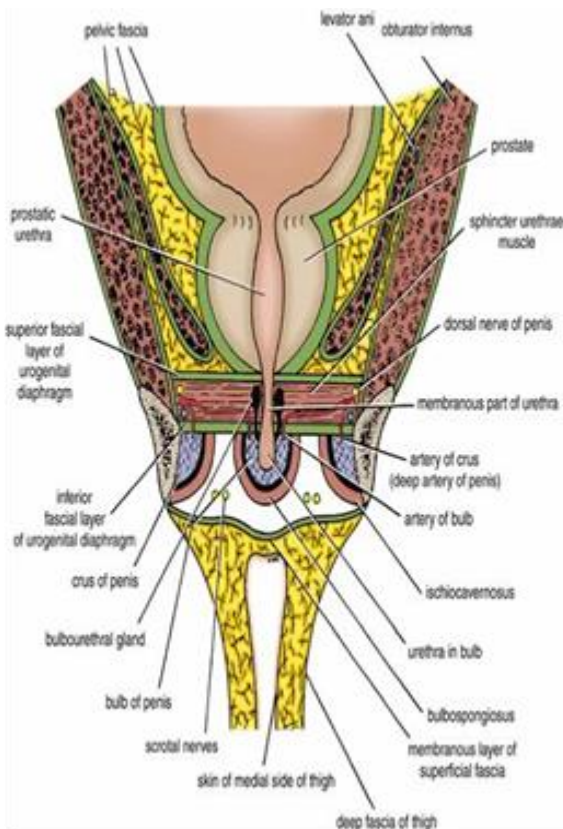
Anteriorly, it communicates freely with potential space lying between the superficial fascia and muscles of the anterior abdominal wall.

### Contents of the superficial perineal pouch in the male:

- Structures forming the root of the penis and muscles that cover them.
- Superficial transverse perineal muscles.
- Perineal body.
- Perineal branch of the pudenda nerve.
- Scrotal nerve and vessels.

### Contents of the superficial perineal pouch in the female

- Structures forming the root of the clitoris and muscles cover them.
- Greater vestibular glands.
- Superficial transverse perineal muscles.
- Perineal body.
- Perineal branch of the pudendal nerve.
- Labial nerve and vessels.



# *Vessels and nerves of the pelvis and perineum*

## **The arteries of the pelvis**

The pelvis is supplied by

1. Internal iliac artery.
2. Superior rectal artery.
3. Gonadal artery.
4. Median sacral artery.

## **The internal iliac artery**

Branch of the common iliac artery, passes down into the pelvis to end at the upper margin of the greater sciatic foramen, where it divides into anterior and posterior division.

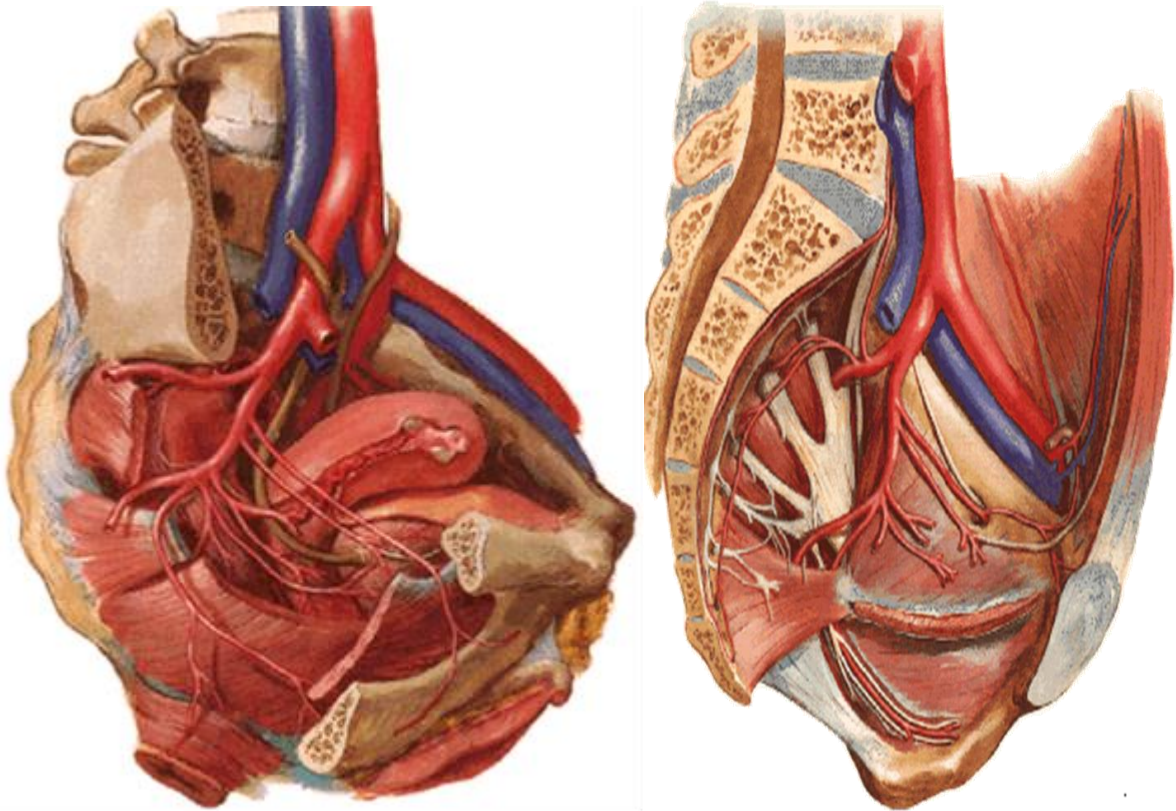
The branches of these divisions supply the pelvic viscera, perineum, pelvic walls, and the buttocks.

### **Branches of anterior division**

1. Umbilical artery: from the proximal patent part of the umbilical artery arises the superior vesical artery, which supplies the upper portion of the bladder and adjacent part of the ureter and vas deferens. The distal part of the umbilical artery is obliterated forming the medial umbilical ligament on the deep surface of the anterior abdominal wall.
2. Obturator artery: it runs forward along the lateral wall of the pelvis, below the obturator nerve. It leaves the pelvis through the obturator canal.
3. Inferior vesical artery [found in male only]: it supplies the base of the bladder, ureter, and the prostate and seminal vesicles. It gives off the artery of the vas to supply the vas deferens.
4. Middle rectal artery. Very little of its blood goes to the rectum and that reaches the muscle coat of the rectum only.
5. Inferior gluteal artery.
6. Uterine artery.
7. Vaginal artery: it takes the place of the inferior vesical artery present in the male. It supplies the vagina and the base of the bladder.
8. Internal pudendal artery.

### **Branches of the posterior division**

1. Iliolumbar artery: it ascends across the pelvis inlet posterior to the external iliac vessels, psoas, and iliacus muscles. It gives off the lumbar branch [supplies the psoas and quadratus lumborum] and the iliac branch [supplies the iliacus and iliac bone].
2. Lateral sacral artery: it descends in front of the sacral plexus; lateral to the anterior sacral foramina. It sends branches to the sacral nerves and the contents of the sacral canal.
3. Superior gluteal artery.



### **Internal pudendal artery [artery of the perineum]**

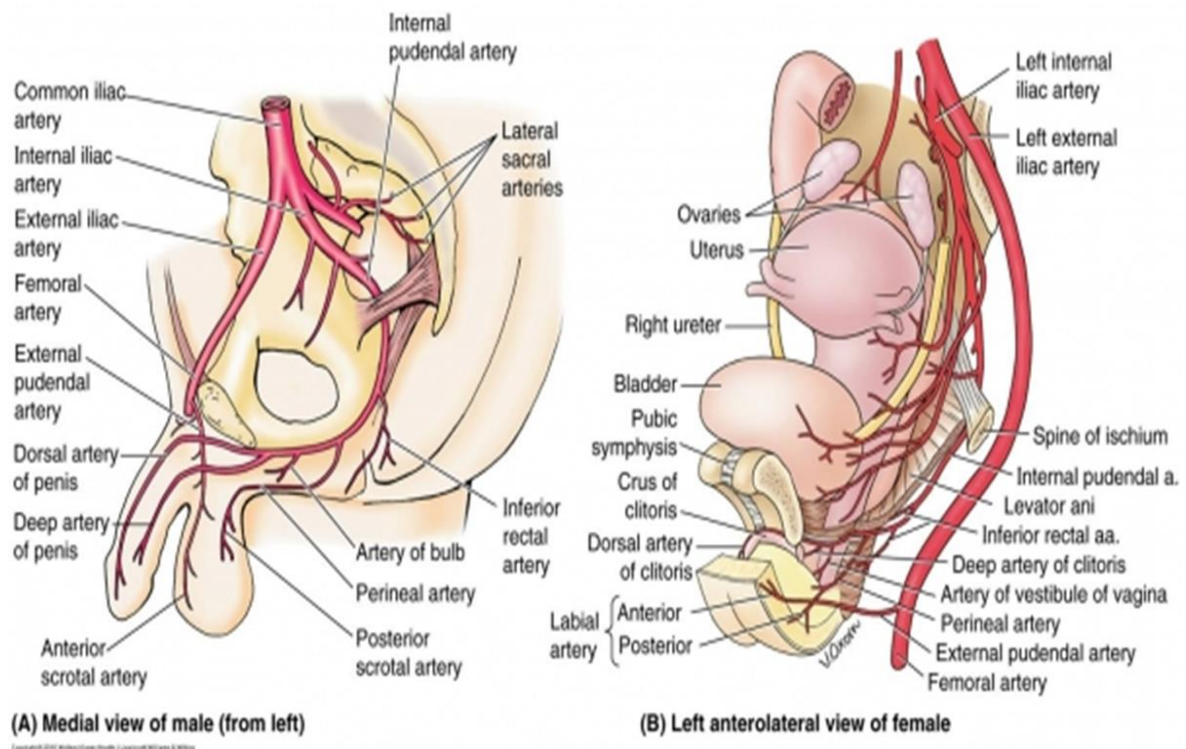
It is a branch of the internal iliac artery, passes from the pelvis to the gluteal region through the greater sciatic foramen, then from the gluteal region to the perineum through the lesser sciatic foramen.

In the perineum, it passes forward through the pudendal canal of the ischiorectal fossa. In the deep pouch, it runs forward below the dorsal nerve of the penis; and gives off its terminal branches.

#### Branches:

1. Inferior rectal artery: it arises in the pudendal canal, pierces the medial wall of the canal and passes through the fat of the ischiorectal fossa.
2. Perineal artery: arises in the anterior part of the pudndal canal .It gives off a posterior scrotal artery.
3. Terminal branches:
  - Artery of the bulb: it pierces the perineal membrane to enter and supplies the bulb and corpus spongiosum of the penis [clitoris].
  - Deep arteries of the penis: it enters and supplies the crura and the corpora cavernosa.
  - Dorsal artery of the penis: it passes to the dorsum of the penis, alongside the median deep dorsal vein and with dorsal nerves laterally, between the deep fascia of the penis and the fibrous sheath of the corpus cavernosum.





### **Pudendal nerve [nerve of the perineum]:**

It is a branch of the sacral plexus, leaves the main pelvic cavity and enters the gluteal region through the greater sciatic foramen, then it enters the perineum through the lesser sciatic foramen.

In the perineum, it passes forward in the pudendal canal of the ischiorectal fossa, where it divides into terminal branches.

#### Branches:

1. **Inferior rectal nerve:** it passes medially across the roof of the ischiorectal fossa, and supplies the levator ani. External anal sphincter, perianal skin, and mucous membrane of the lower of the anal canal.
2. **Dorsal nerve of the penis [clitoris]:** it runs in the pudendal canal and in the deep perineal pouch. It supplies the skin of the penis and has parasympathetic fibers to the corpus cavernosum.
3. **perineal branch:** it runs in the superficial perineal pouch to supplies the muscles of the superficial and deep perineal pouches .it gives off the scrotal[labial ]nerve to the skin of the scrotum [labium majus].



**Pudendal nerve and branches, colored by region/formation traversed:**

- █ Pelvis
- █ Gluteal region
- █ Pudendal canal
- █ Deep perineal pouch
- █ Dorsum of penis
- █ Superficial perineum (superficial compartment, ischio-anal fossae)

