

# **UGS Lecture – 5 )2021(**

## **C. Muscles of the pelvis**

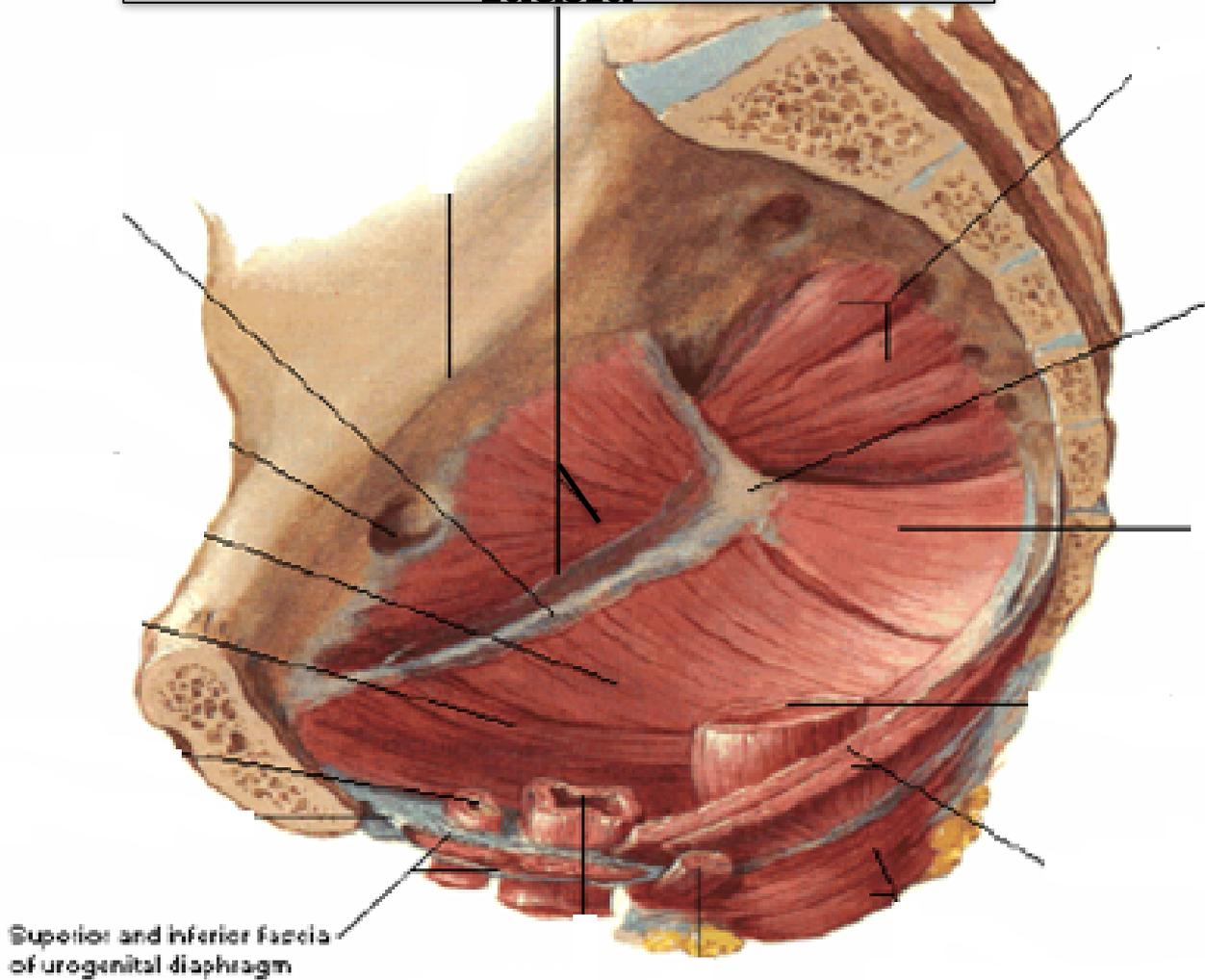
**a. Muscles of the lateral walls – The obturator internus (fig. 27):**

- **Arises from the internal surface of obturator membrane and adjoining part of hip bone.**
- **Muscle fibers converge to a tendon, which leaves the pelvis through lesser sciatic foramen and is inserted into an impression on medial surface of greater trochanter of femur.**

**Nerve supply: Nerve to obturator internus, L5 and S1.**

**Action: It is a lateral rotator of the thigh at hip joint.**

# Obturator internus muscle and fascia



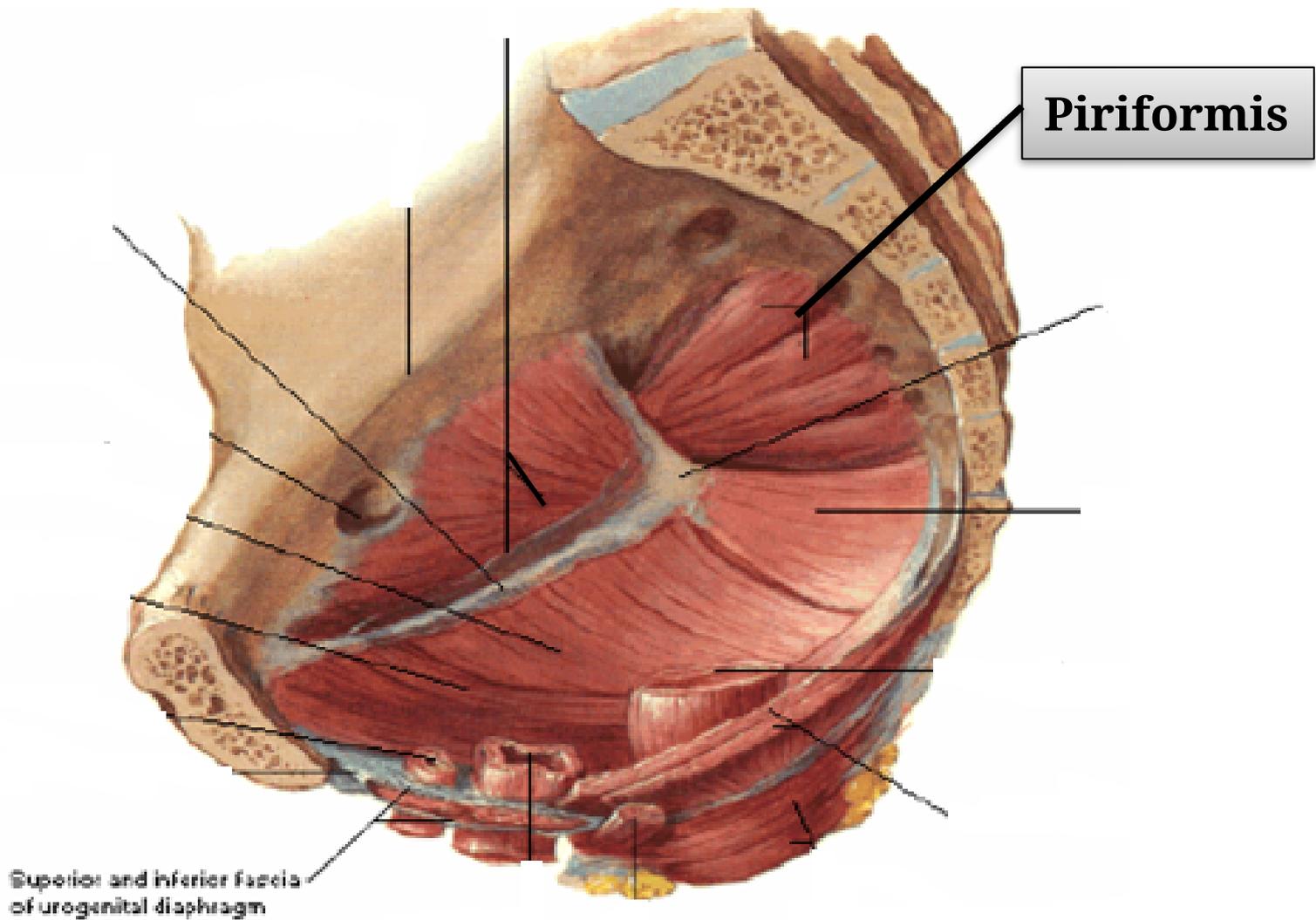
## Muscles of Lateral Wall of Pelvic Cavity The Obturator Internus Muscle

**b. Muscles of the posterior wall – The piriformis (fig. 27):**

- **Arises from the lateral mass of the middle three pieces of sacrum.**
- **It extends medially between the anterior sacral foramina; thus the emerging sacral nerves and sacral plexus lie on the muscle.**
- **It runs transversely to the greater sciatic foramen to be inserted into the upper border of greater trochanter of femur.**

**Nerve supply: L5, S1 and 2.**

**Action: It is a lateral rotator of the thigh at hip joint.**

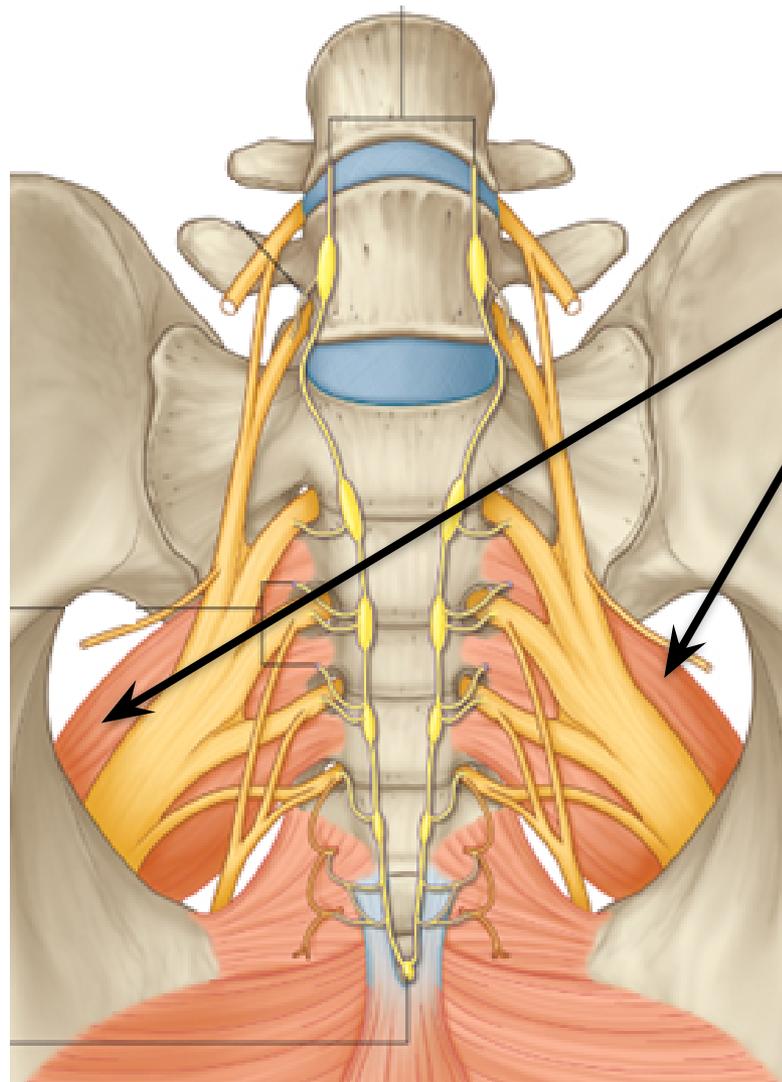


A

4

# Muscles of Lateral Wall of Pelvic Cavity

## The Obturator Internus Muscle



Right and  
left  
piriformis

**B**

**5**

# Muscles of Lateral Wall of Pelvic Cavity The Obturator Internus Muscle

## **c. Muscles of the floor – Pelvic diaphragm:**

### **(1) Levator Ani:**

**Arise in continuity from inner surface of body of pubis to inner surface of ischial spine across the obturator fascia, along a condensation of the fascia, the tendinous arch.**

**The muscle consists of two main parts, pubococcygeus and iliococcygeus.**

#### **i. The pubococcygeus part:**

**Is that part of levator ani that arises from body of pubis and anterior half of the tendinous arch.**

- **The most anterior fibers that arise from the body of pubis pass backwards alongside the prostate and sphincter urethrae in the male and decussate across the midline behind the urethra to be inserted into perineal body and the sheath of the prostate.**
- **These fibers form a sling around the prostate and are referred to as levator prostate (pubourethralis).**
- **In the female, these fibers sling around the posterior wall of the vagina and are referred to as pubovaginalis.**

- **The rest of the posterior fibers which arise from the body of pubis, swing inferomedially around the anorectal junction and join with fibers of opposite side and external anal sphincter.**
- **This part of the muscle is called puborectalis, and forms a U-shaped sling that holds the anorectal junction angled forwards.**
- **The bulk of the posterior fibers arising from the anterior half of the tendinous arch are inserted into anococcygeal raphe (a small fibrous mass between the anal canal and the tip of the coccyx).**
- **These fibers constitute the pubococcygeus muscle proper.**

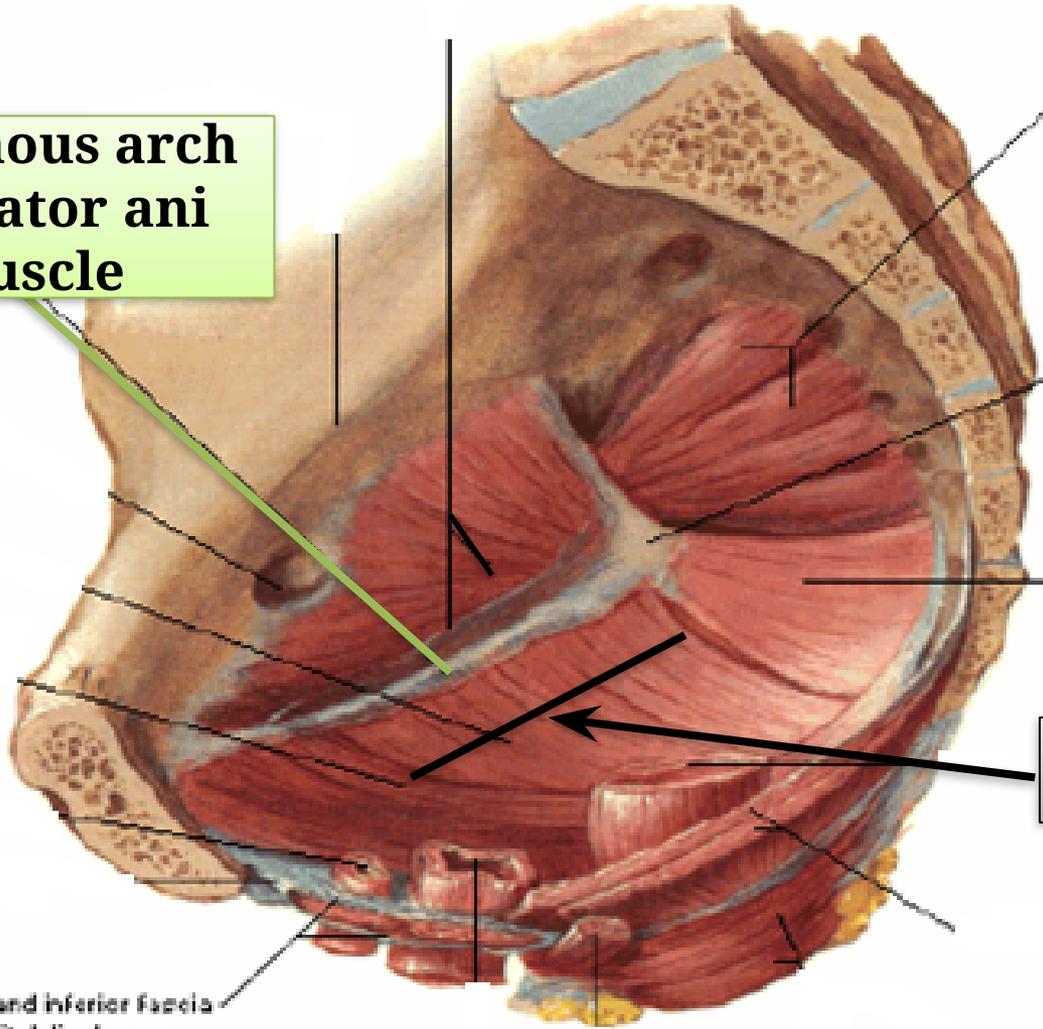
## **ii. The iliococcygeus part:**

- Arises from posterior half of tendinous arch and the ischial spine.**
- Its fibers are inserted into side of coccyx and anococcygeal raphe, which extends from tip of coccyx to anorectal junction.**

## **Nerve supply:**

- It is mainly supplied by a branch from S<sub>4</sub> spinal nerve.**
- The levator prostate or pubovaginalis, and puborectalis are supplied by the perineal branch of S<sub>4</sub> and the inferior rectal branch of the pudendal nerve.**

**Tendinous arch  
of levator ani  
muscle**



**Spine of  
ischium**

**Coccygeus**

**Levator  
ani**

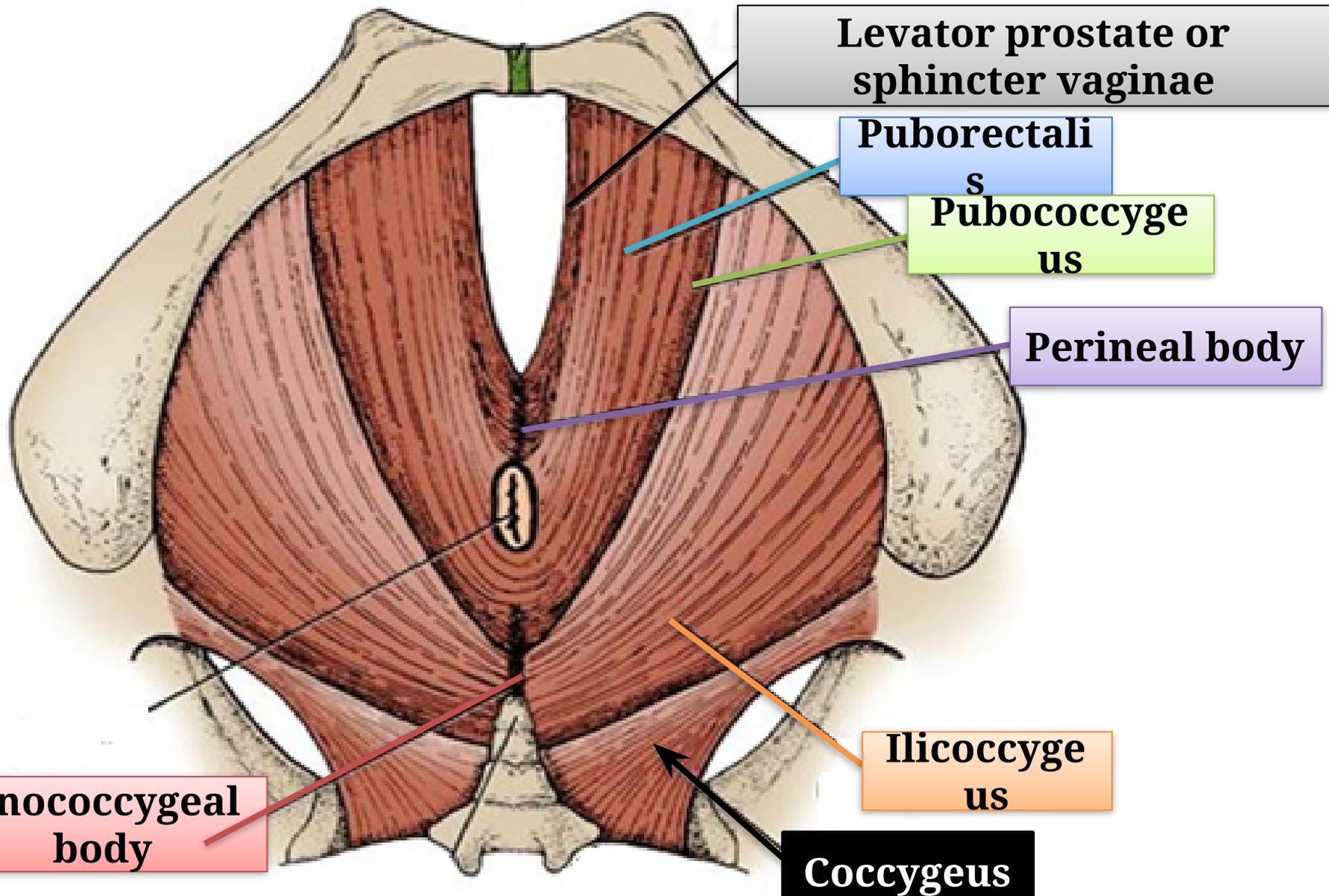
Superior and inferior fascia  
of urogenital diaphragm

**A**

**10**

# Muscles of Posterior Wall of Pelvic Cavity

## 1. The Levator Ani Muscle



# Muscles of the Floor of Pelvic Cavity

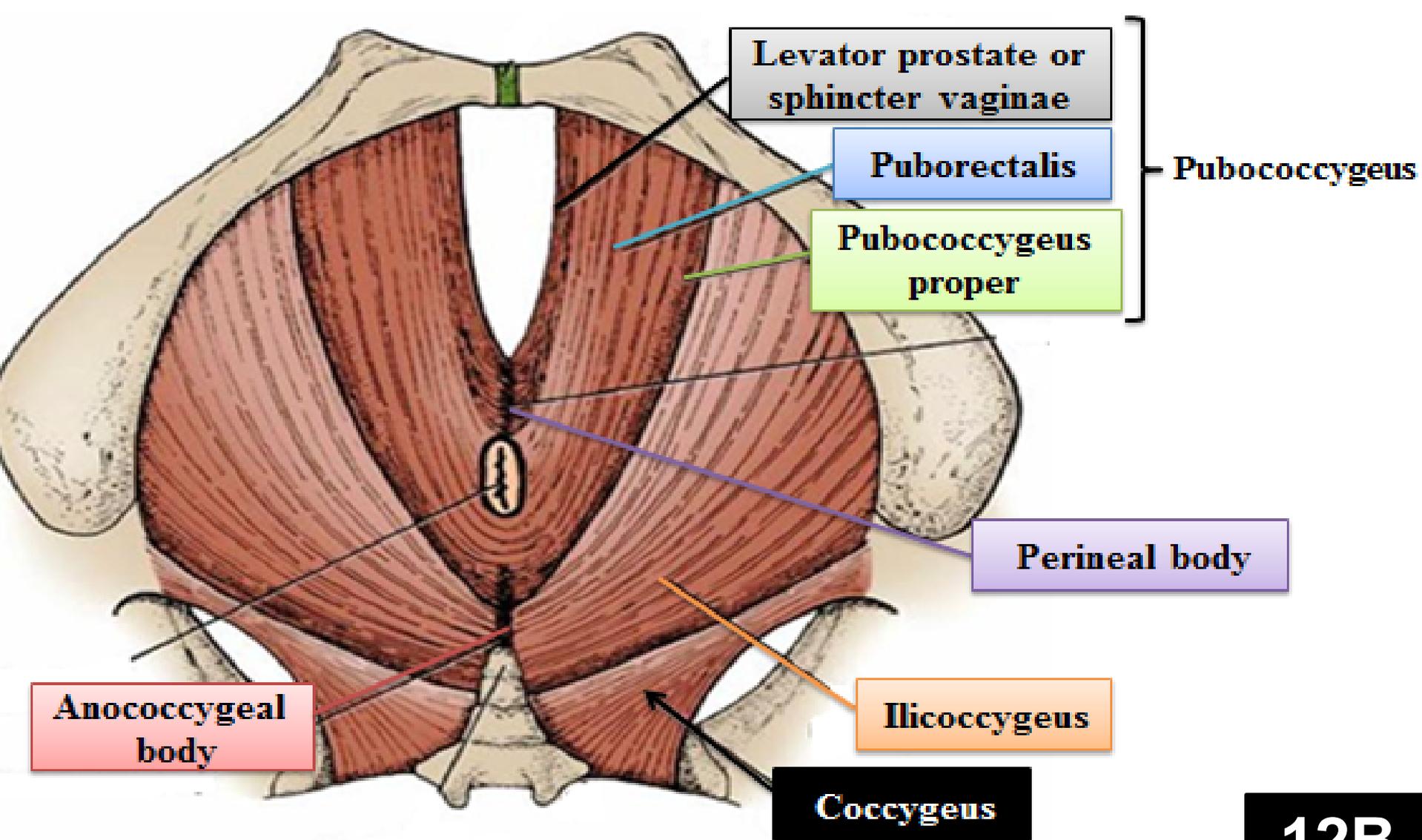
## 1. The Levator Ani Muscle

## **(2) Coccygeus:**

- **Arises from the tip of ischial spine.**
- **Fibers fan out to be inserted into the side of coccyx and the lowest piece of sacrum.**
- **It lies edge to edge with the lower border of piriformis and is overlapped anteriorly by iliococcygeus.**
- **Its gluteal surface is fibrous tissue, and is indeed the sacrospinous ligament.**

**Nerve supply: By branches from S<sub>4</sub> and S<sub>5</sub> spinal nerves.**

**12A**



12B

## Muscles of the Floor of Pelvic Cavity 2. The Coccygeus Muscle

# **Actions of the Pelvic Diaphragm**

- 1. Support and maintains the pelvic viscera in position.**
- 2. In both sex, puborectalis part of levator ani has sphincter action on anorectal junction.**
- 3. In the female, the pubovaginalis has sphincter action on the vagina.**
- 4. The pelvic diaphragm contracts during coughing and sneezing to resist the rise in intra-pelvic pressure, and relaxes in micturition, defaecation and partitition.**
- 5. The coccygeus pulls the coccyx forwards after it has been pushed backwards during defaecation.**

# **Spermatic Cord**

- **The testis descends from abdominal wall into scrotum and pulls with it vas deferens, nerves and vessels.**
- **These structures meet at deep inguinal ring and together form spermatic cord, which suspends the testis in scrotum, and extends from deep inguinal ring to posterior border of testis.**
- **The left spermatic cord is a little longer than right.**

# **Constituent of Spermatic Cord**

**(1) Vas deferens.**

**(2) Testicular artery: Branch of abdominal aorta.**

**(3) Artery to vas deferens: Branch of superior or inferior vesicle artery.**

**(4) Cremasteric artery: Branch of inferior epigastric artery.**

## **(5) Testicular vein (pampiniform plexus):**

- The pampiniform plexus ascends from posterior border of testis and enters inguinal canal.**
- At about level of deep inguinal ring, a single testicular vein is formed, which drains into left renal vein, on left side and into inferior vena cava, on right side.**

## **(6) Genital branch of genitofemoral nerve L1 and 2: Supplies cremaster muscle.**

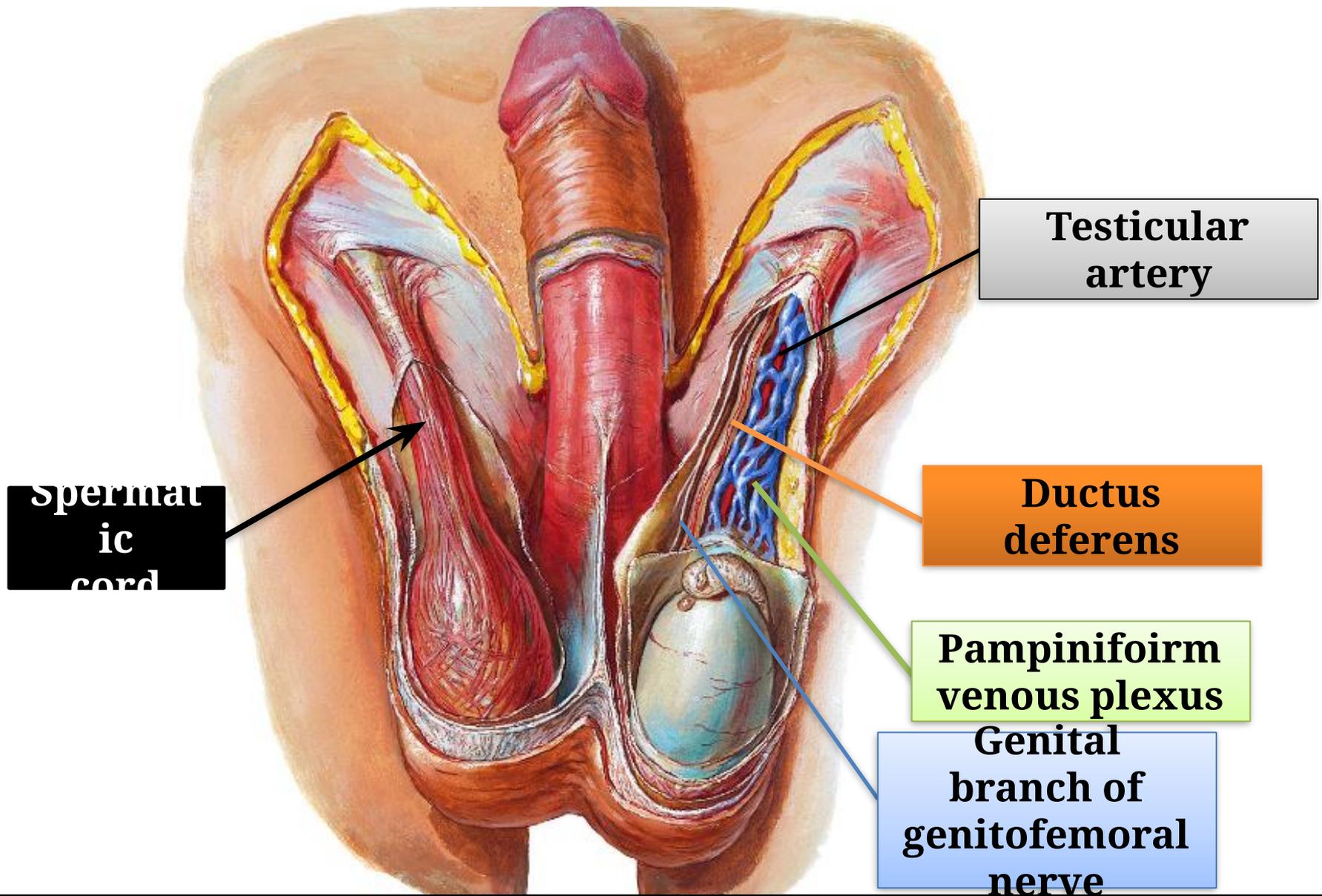
**(7) Testicular sympathetic plexus:**

- **These fibers are derived from the renal or aortic plexus of nerves.**

**They follow the testicular artery.**

**(8) Testicular lymph vessels: Follow the testicular artery and drain into para-aortic lymph nodes.**

**(9) Fibrous remains of processus vaginalis.**



**Spermatic cord**

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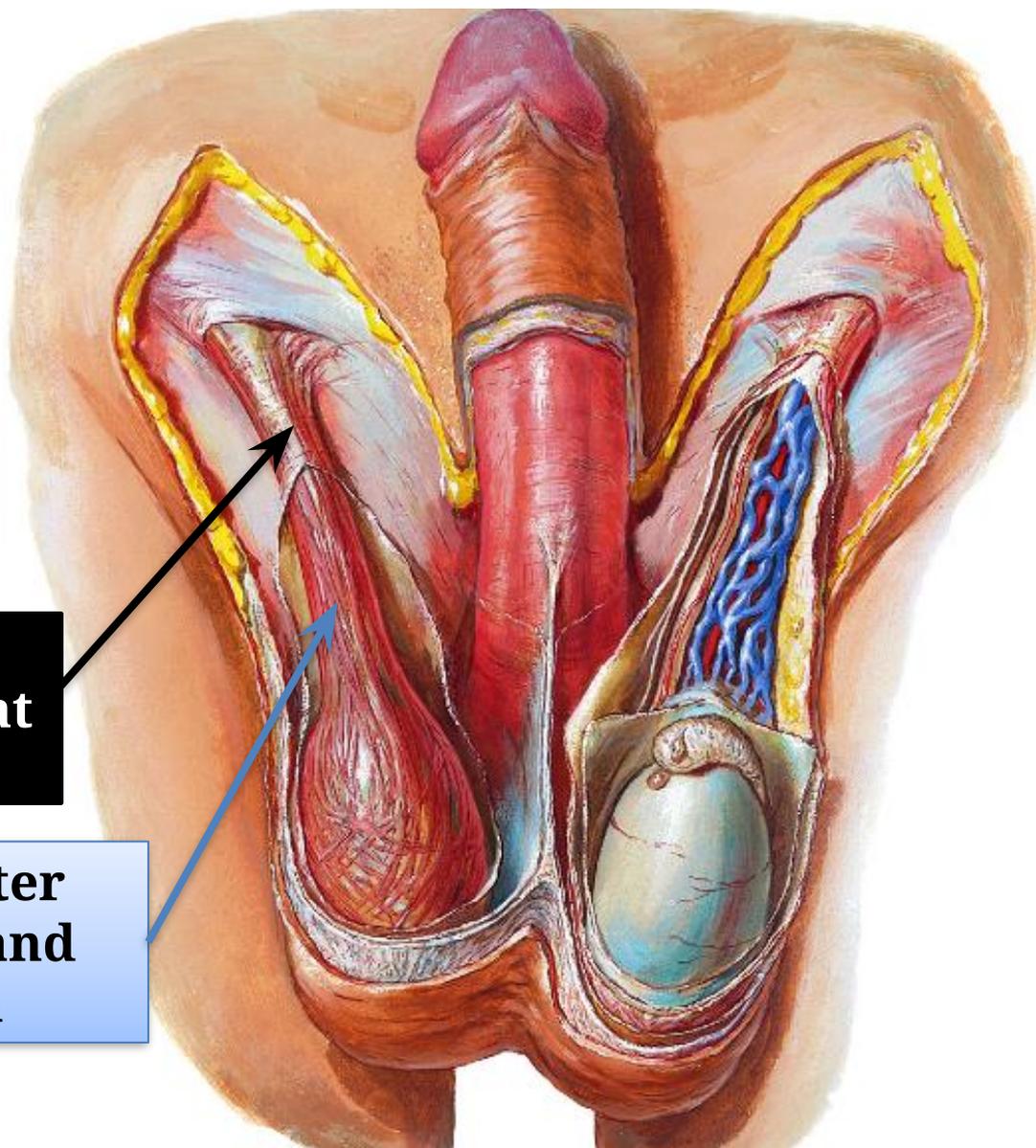
# **Covering of Spermatic Cord (Spermatic Fascia)**

- **The spermatic cord enters inguinal canal by passing through deep inguinal ring.**
- **Within canal it acquires three fascial covering from fibers of muscles between which it lies.**
- **This facial covering continues downwards into scrotum:**

**(1) Internal spermatic fascia: Acquired from fascia transversalis at deep inguinal ring.**

**(2) Cremasteric fascia: Acquired from internal oblique muscle within inguinal canal.**

**(3) External spermatic fascia: Acquired from aponeurosis of external oblique muscle at superficial inguinal ring.**



**Spermat  
ic**

**Cremaster  
muscle and  
fascia**

# **Spermatic Fascia**

## **21**

# Scrotum

- The scrotum is a cutaneous fibromuscular sac that contains testis, epididymis, and lower part of spermatic cord.
- It is situated below root of penis.
- It is divided by a median fibrous septum into right and left halves.
- The septum is indicated on under surface of the scrotum by a median longitudinal raphe, the scrotal raphe, which is continuous with the perineal raphe that extends to anus.
- The scrotal skin is very thin, of a brownish color, and often thrown into folds or rugae.
- It is covered with thinly scattered, curly hairs.



Scrotum

Perineal raphe

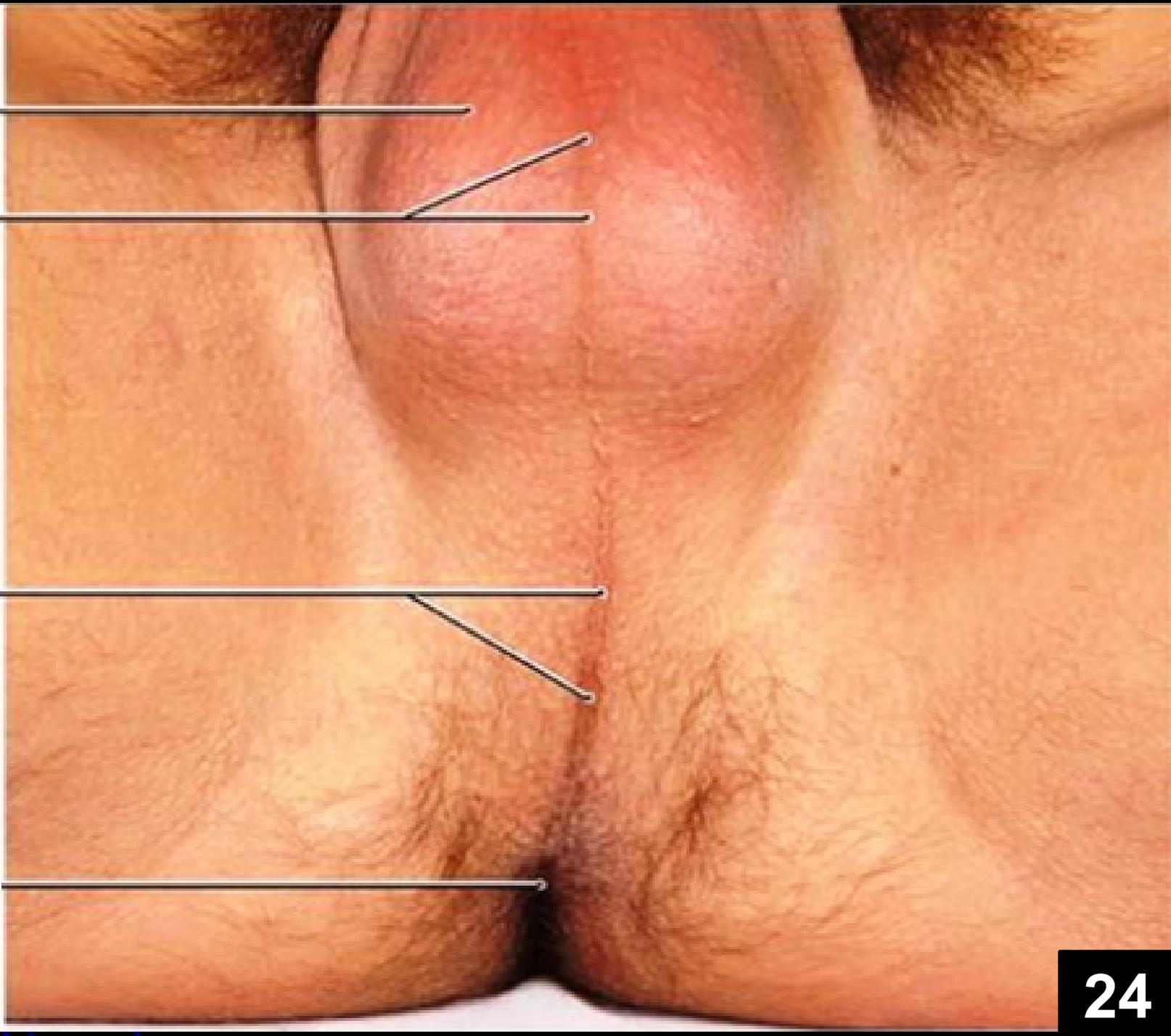
Scrotum

Scrotal raphe

Perineal raphe

**B**

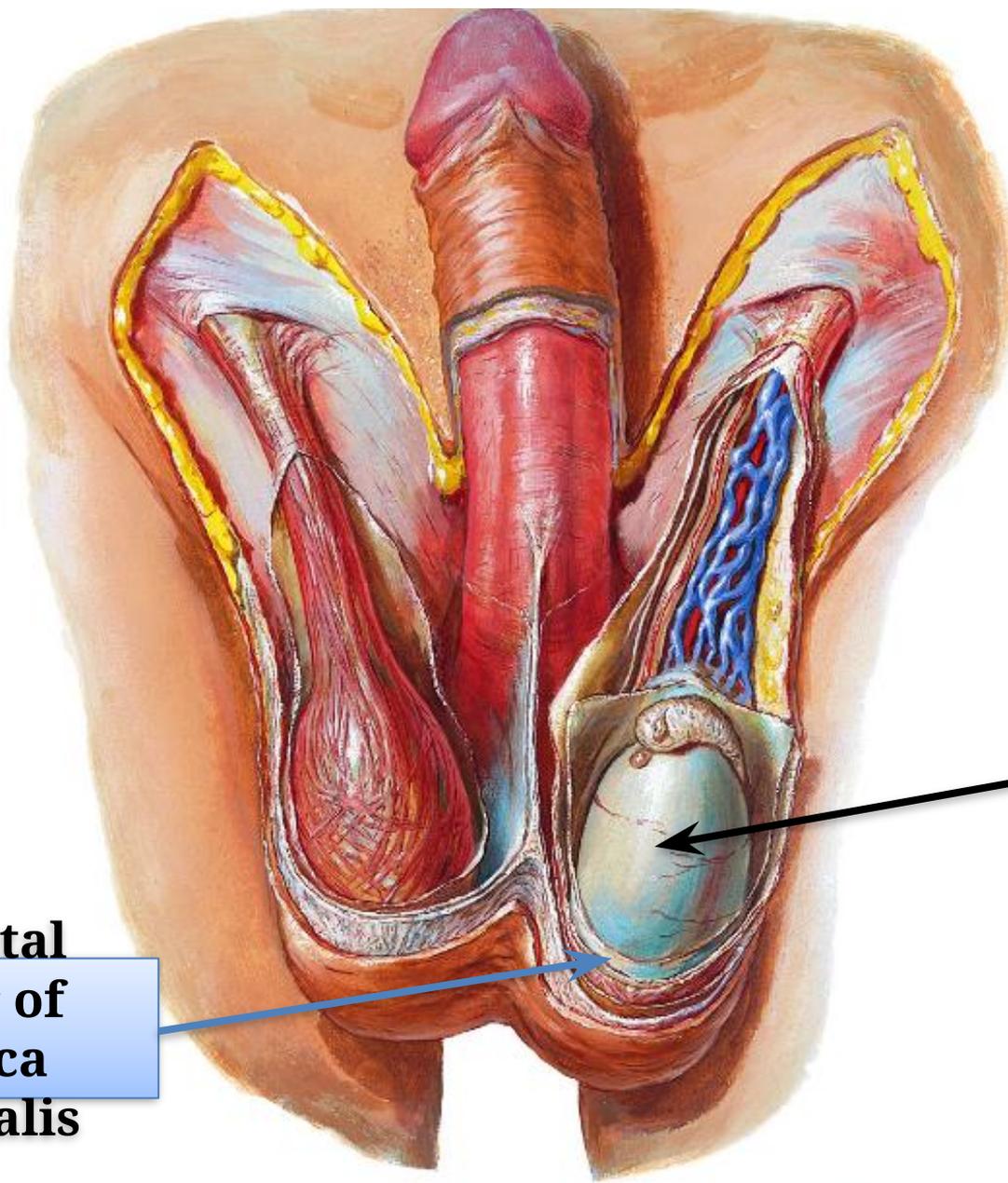
**24**



- **The scrotal skin is provided with sebaceous glands, the secretion of which has a peculiar odor. It also contains numerous sweat glands, pigment cells, and nerve endings responding to mechanical stimulation of hairs and skin, and to variations in circumambient temperature.**
- **The tunica vaginalis (lower expanded part of processus vaginalis) lies within spermatic fasciae and covers anterior, medial, and lateral surfaces of testis.**
- **Normally, just before birth, it becomes shut off from upper part of processus and peritoneal cavity.**

- **The tunica vaginalis is thus a closed sac, invaginated from behind by testis.**
- **It constitutes two layers:**
  - a. Visceral layer:**

**It is closely applied to the testis, epididymis, and inferior part of vas deferens.**
  - b. Parietal layer:**
    - **Lies adjacent to spermatic fascia.**
    - **It extends superiorly for a short distance into the distal part of spermatic cord.**
- **The small amount of fluid in cavity of tunica vaginalis separates visceral and parietal layers, allowing testis to move freely within its side of scrotum.**



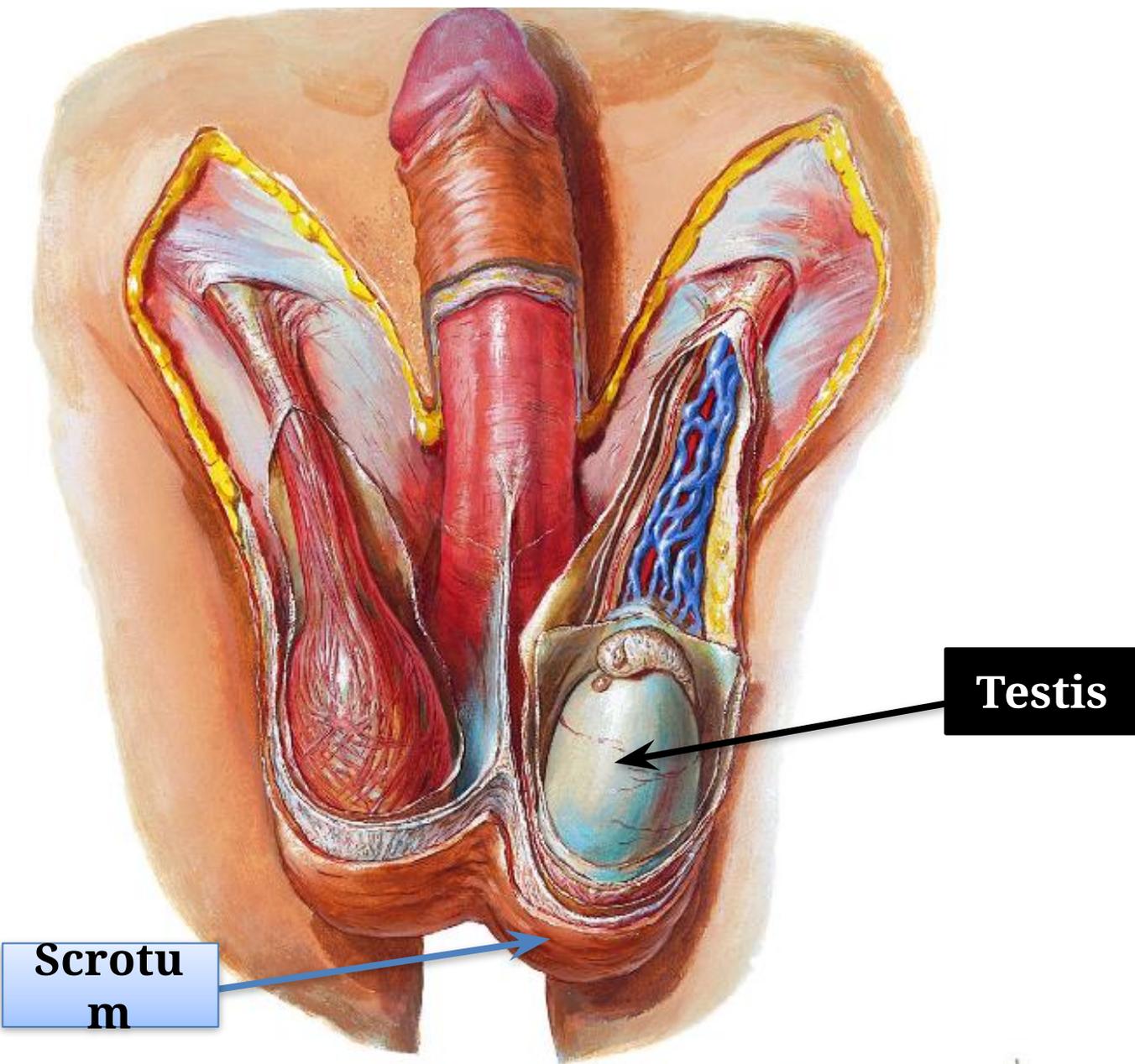
Parietal  
layer of  
tunica  
vaginalis

Visceral layer of  
tunica vaginalis  
covering the  
testis

# Tunica vaginalis

# Testes

- These are two ovoid, firm and mobile organs that produce spermatozoa and hormones, principally testosterone hormone.
- Each testis is suspended within corresponding half of scrotum.
- The left testis usually lies at a lower level than right.
- The testis is surrounded by a tough fibrous capsule called the tunica albuginea, which is thickened on the posterior surface of the testis to form the mediastinum of the testis.

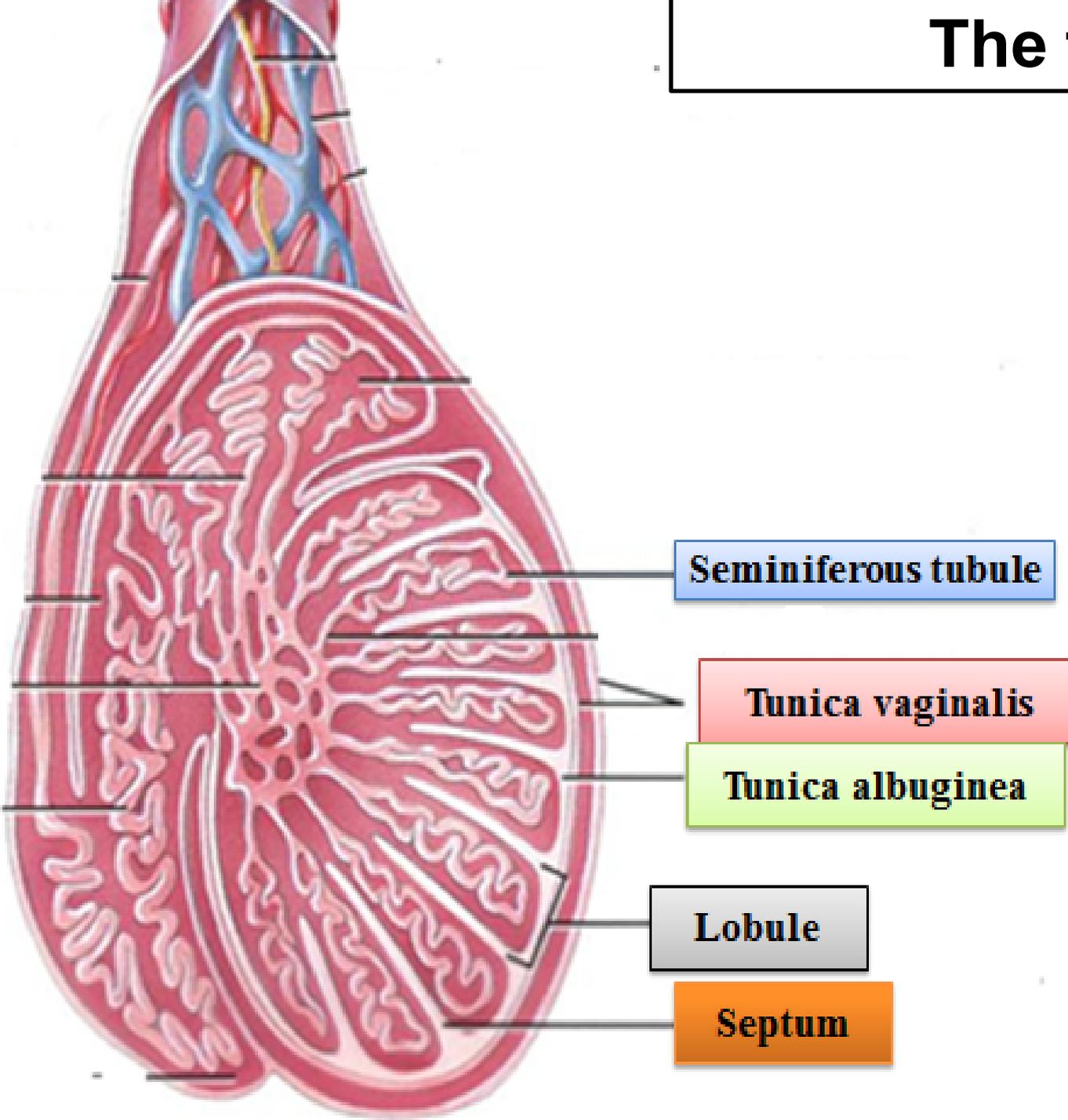


Scrotu  
m

Testis

- **Numerous incomplete fibrous septa arise from the mediastinum testis pass inward through the substance of the testis, dividing it into about 250 pyramidal-shaped lobules.**
- **Because septa are incomplete, inter-communications between lobules are expected.**
- **Each lobe is occupied by 1 – 3 seminiferous tubules.**

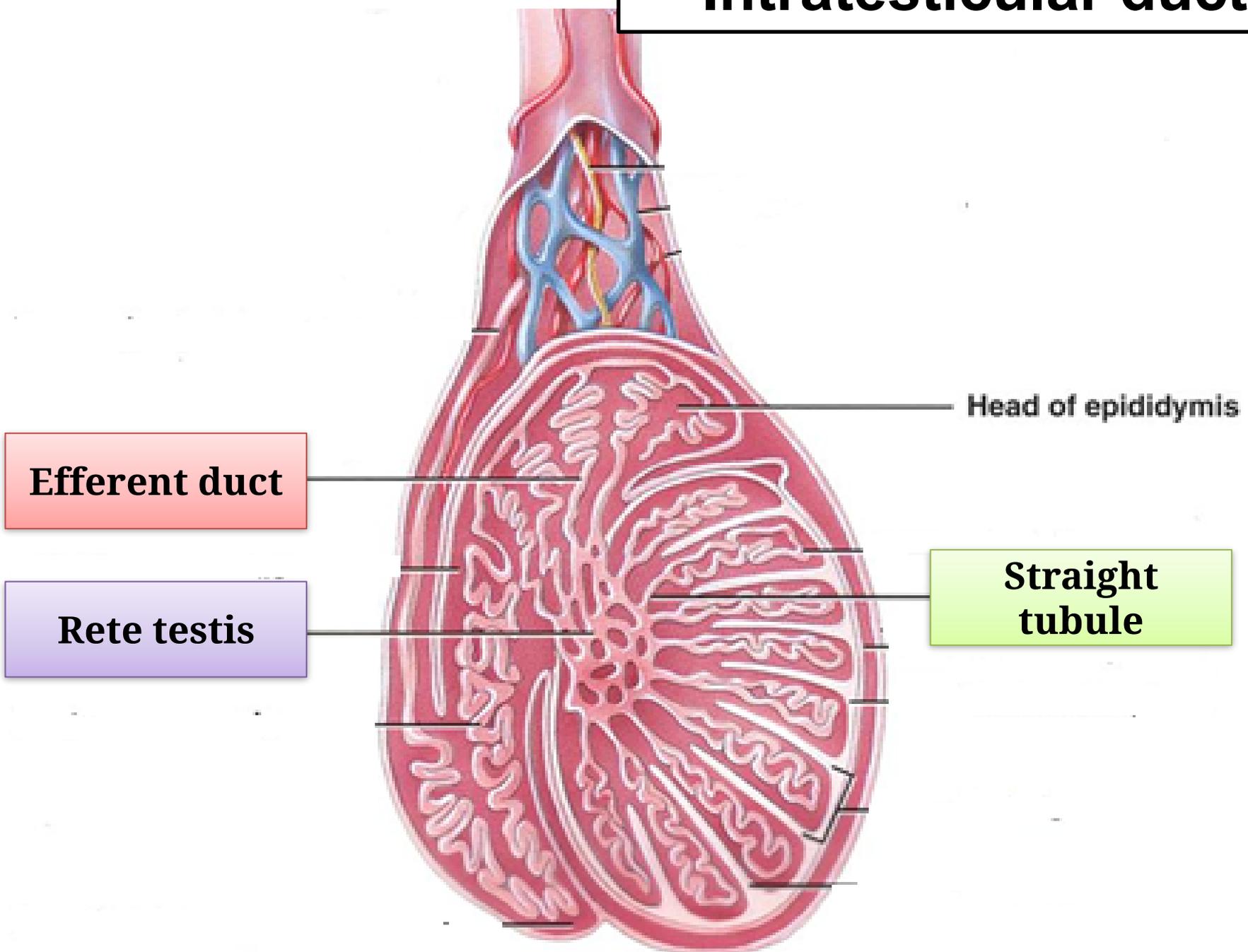
# The testis



# **Intratestitial Ducts**

- A. Straight tubules: Connect seminiferous tubules with rete testis.**
- B. Rete testis: Is a highly anastomotic network of channels, contained within mediastinum of testis.**
- C. Efferent Ducts:**
- From rete testis extends 15 – 20 efferent ducts.**
  - These tubules carry sperm from rete testis to head of epididymis.**

# Intratesticular ducts



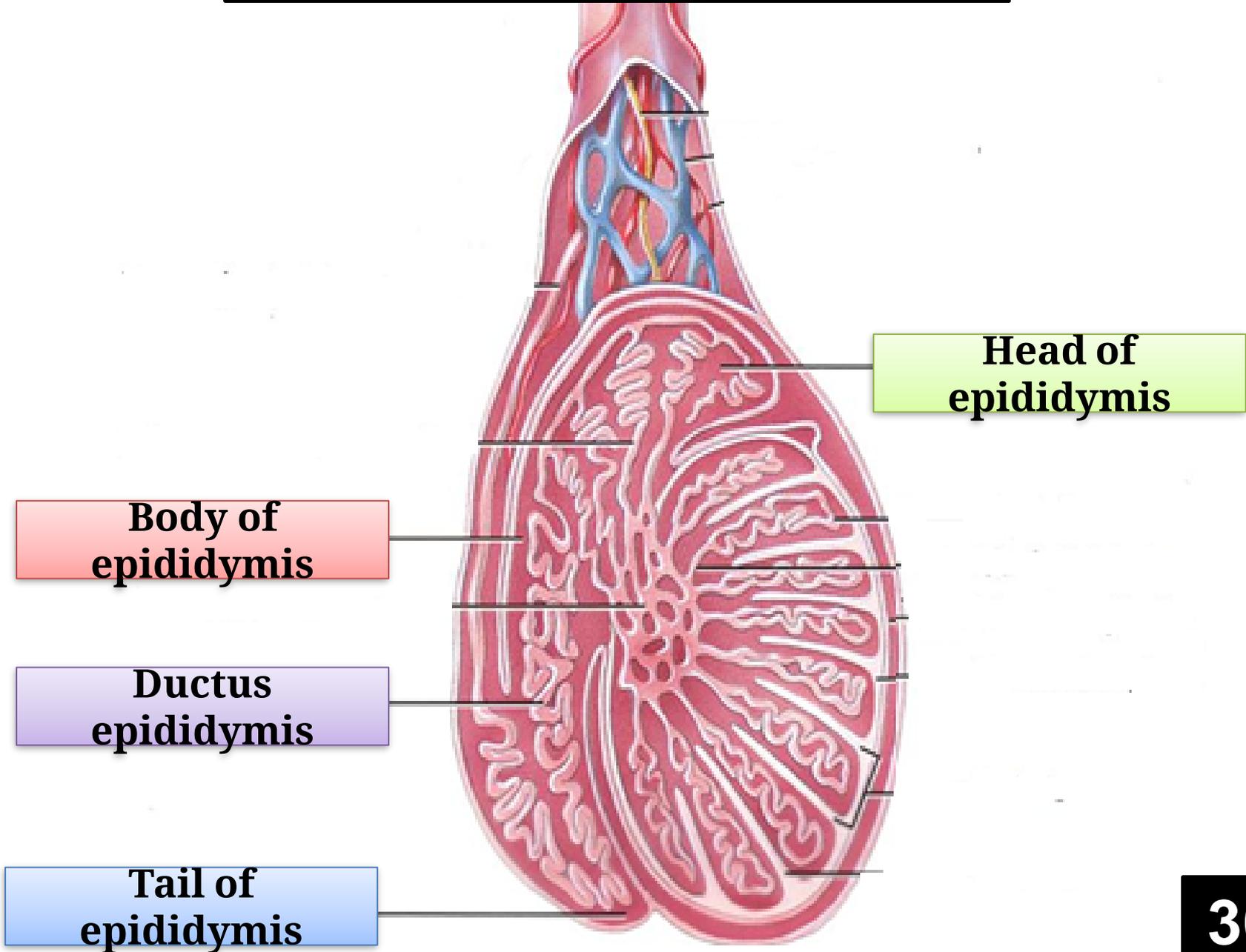
# **Excretory Genital Ducts**

## **A. Ductus Epididymis:**

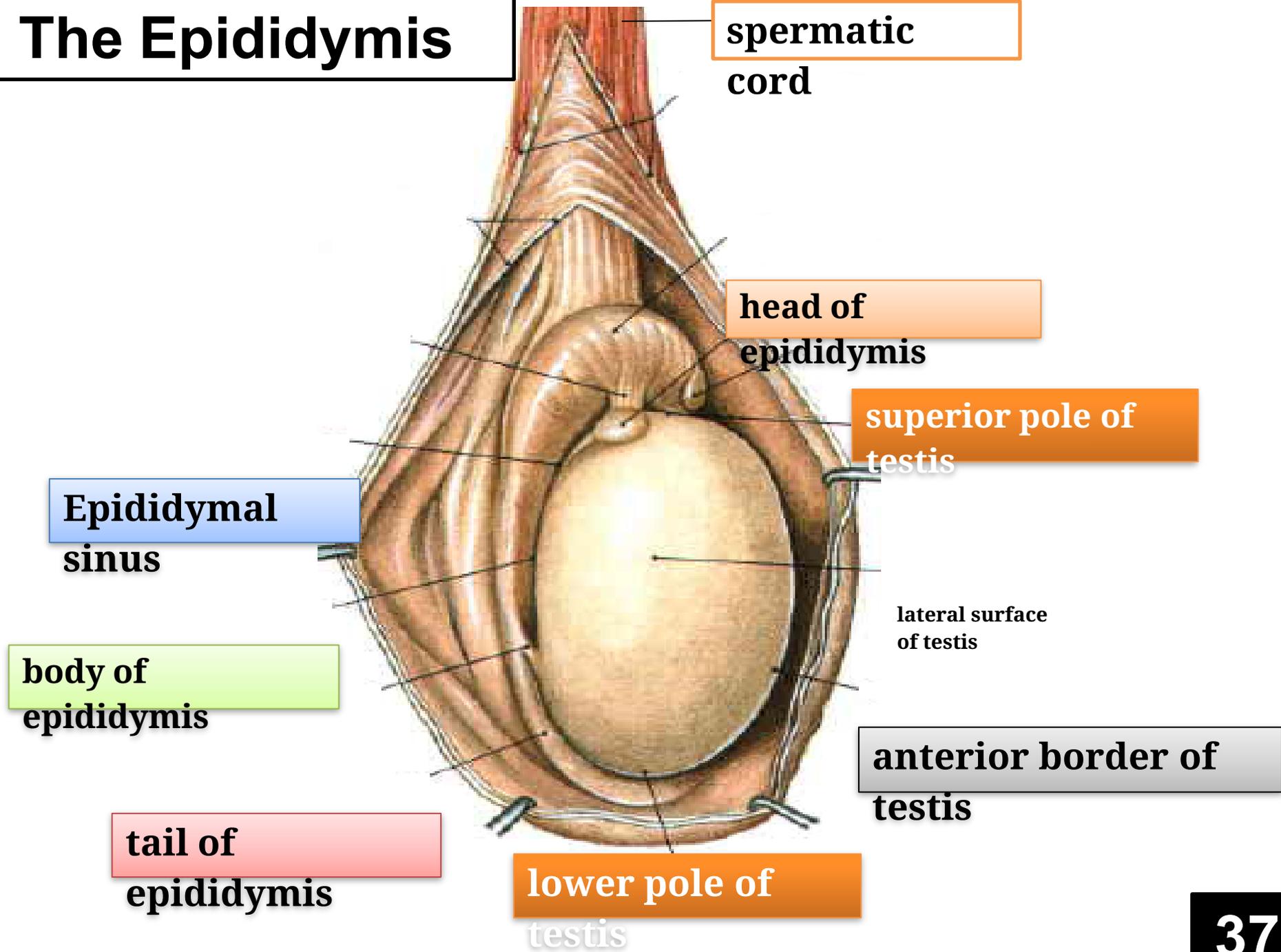
- It is a firm comma-shaped structure, closely applied to posterior margin of testis, with vas deferens lying on its medial side.**
- It is formed by minute convolution of duct of the epididymis (4 – 6 m long), so highly compact that appear solid.**
- It has an expanded upper end, head, a middle portion, body, and a pointed lower portion, tail.**

- Laterally, a distinct groove, sinus of epididymis lies between testis and epididymis, which is lined with visceral layer of tunica vaginalis.
- The major function of epididymis is storage and maturation of spermatozoa; in epididymis spermatozoa develop motility.

# The Epididymis



# The Epididymis



## **B. Ductus (Vas) Deferens:**

- Is a cordlike structure that can be palpated between finger and thumb in upper part of the scrotum.**
- It is a thick walled muscular tube about 45 cm long that conveys mature sperm from epididymis to ejaculatory duct.**
- It is at first very tortuous, but, becoming gradually straighter.**
- It merges from tail of epididymis and ascends over posterior border of testis, along the medial side of epididymis, to reach upper pole of testis.**

- **It leaves the canal at deep inguinal ring and turns round lateral side of inferior epigastric artery and pass medially behind this artery and across external iliac vessels.**
- **Next it descends to pelvic brim, where it continue downward along lateral wall of lesser pelvis deep to parietal layer of peritoneum, crossing ureter.**
- **About level of ischial spine, it bends at an acute angle and runs downwards, medially, and slightly forwards between posterior surface of bladder and rectum, along medial side of corresponding seminal vesicle and come to lie alongside vas deferens of other side.**

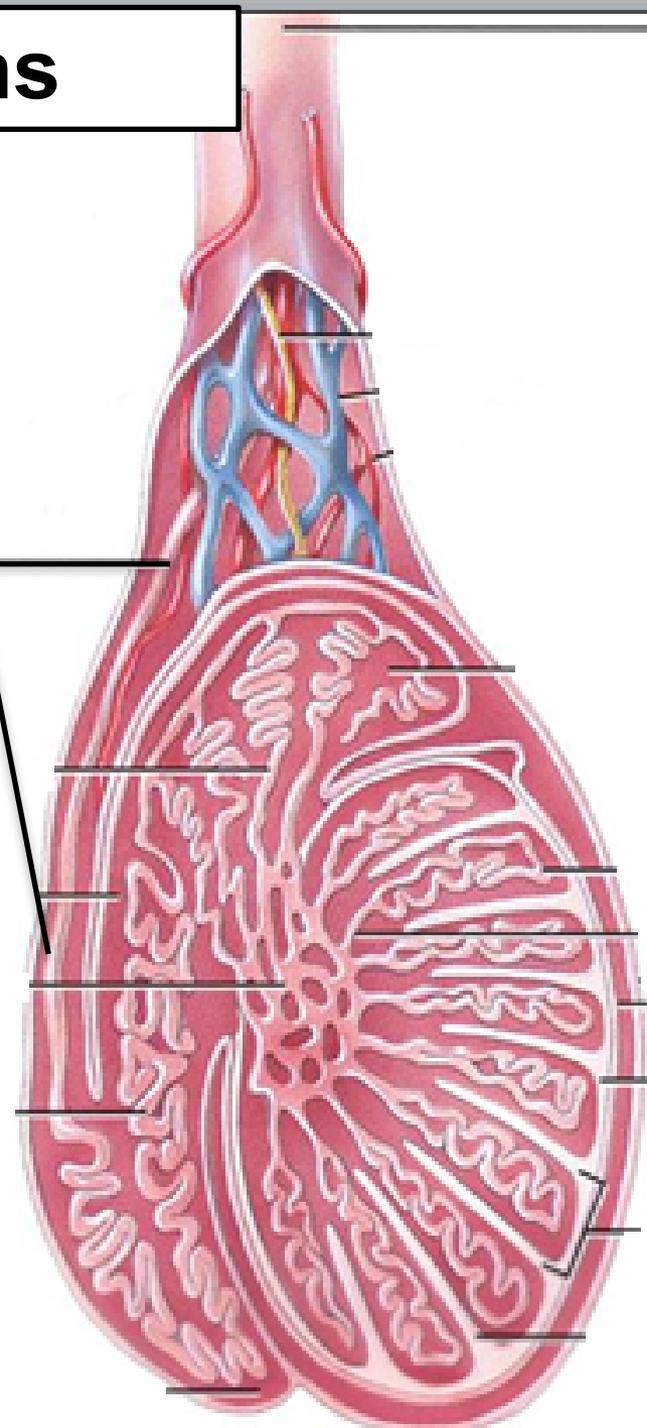
- **Its terminal part is dilated, the ampulla of vas deferens.**
- **The inferior end of ampulla joins duct of seminal vesicle to form ejaculatory duct.**

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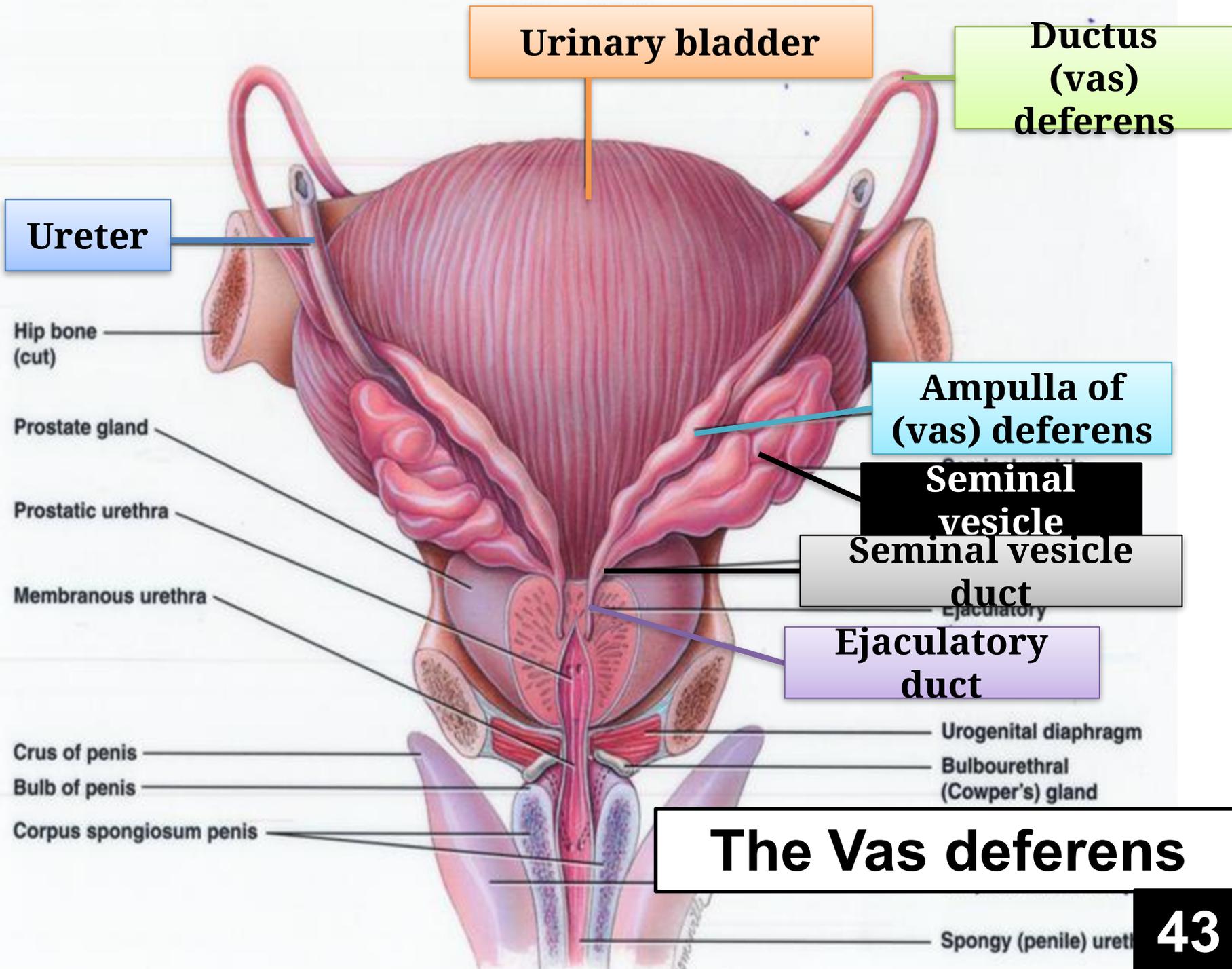
# The Vas deferens

Spermatic cord

Ductus (vas) deferens







Urinary bladder

Ductus (vas) deferens

Ureter

Hip bone (cut)

Prostate gland

Prostatic urethra

Membranous urethra

Crus of penis

Bulb of penis

Corpus spongiosum penis

Ampulla of (vas) deferens

Seminal vesicle

Seminal vesicle duct

Ejaculatory duct

Urogenital diaphragm

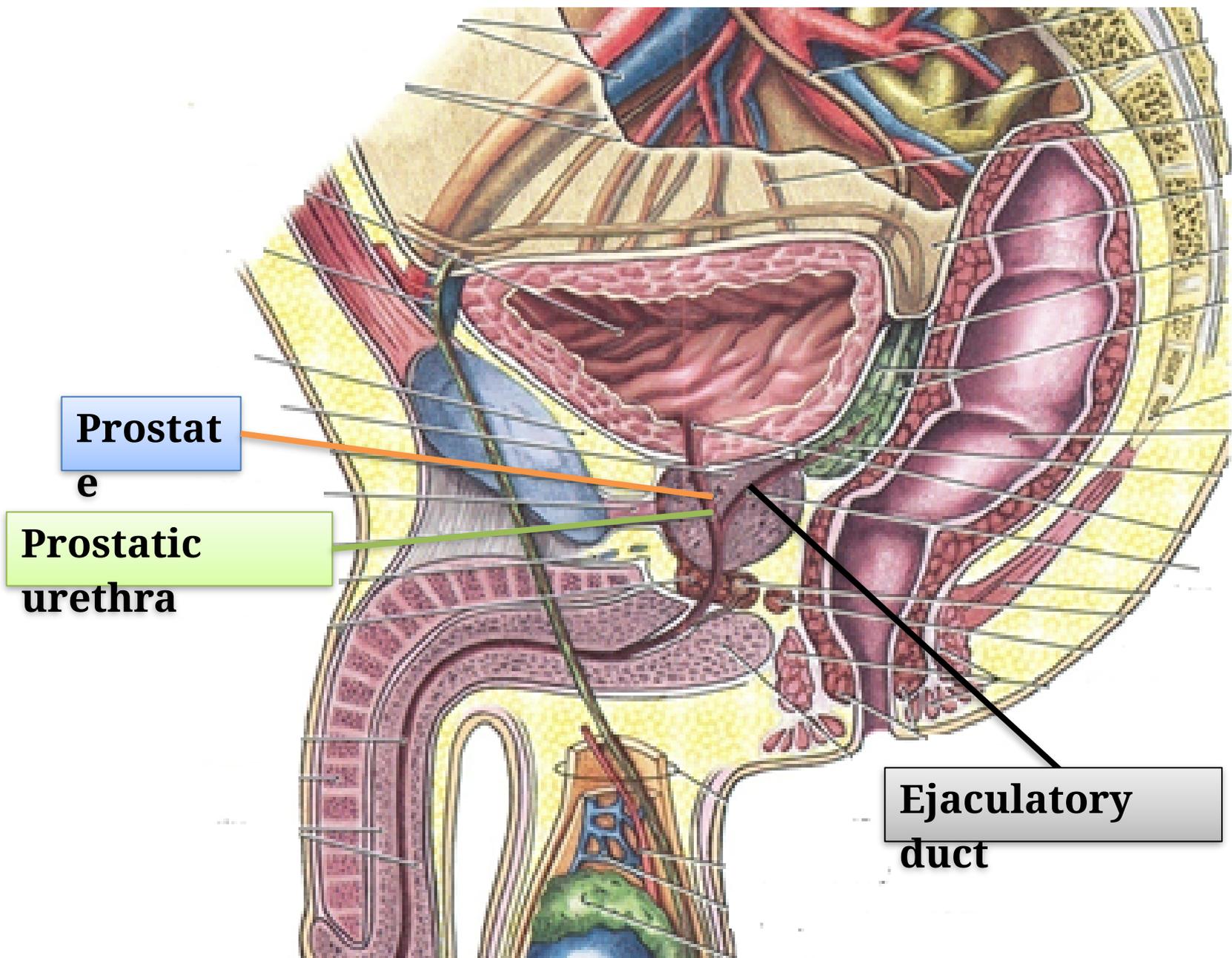
Bulbourethral (Cowper's) gland

# The Vas deferens

Spongy (penile) urethra

## **C. Ejaculatory Ducts:**

- About 2.5 cm long and are formed by union of terminal end of vas deferens with duct of seminal vesicle.**
- They pierce posterior surface of prostate and open into upper part of prostatic urethra close to margins of opening of utricle.**



Prostat  
e

Prostatic  
urethra

Ejaculatory  
duct

# The Ejaculatory duct