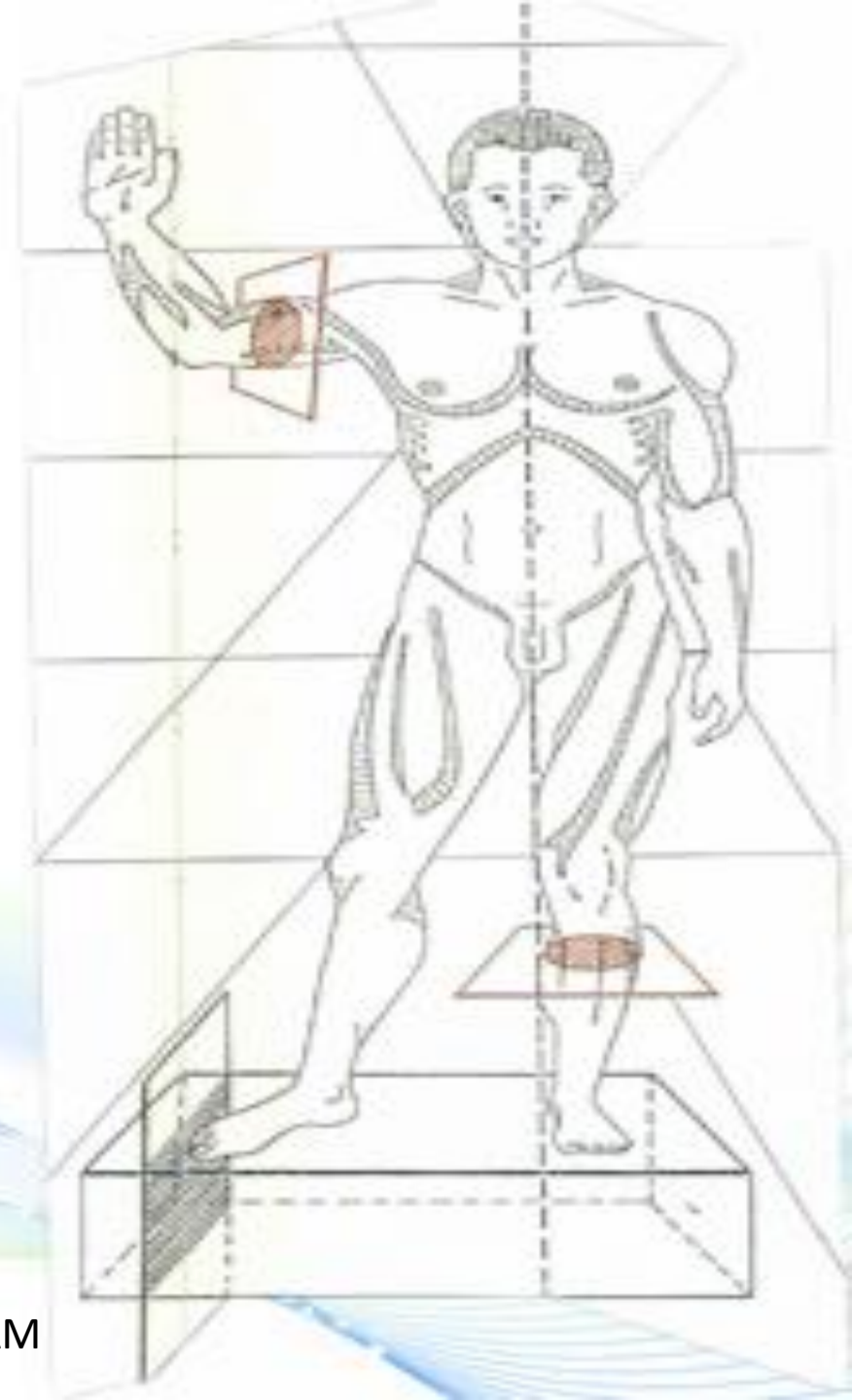
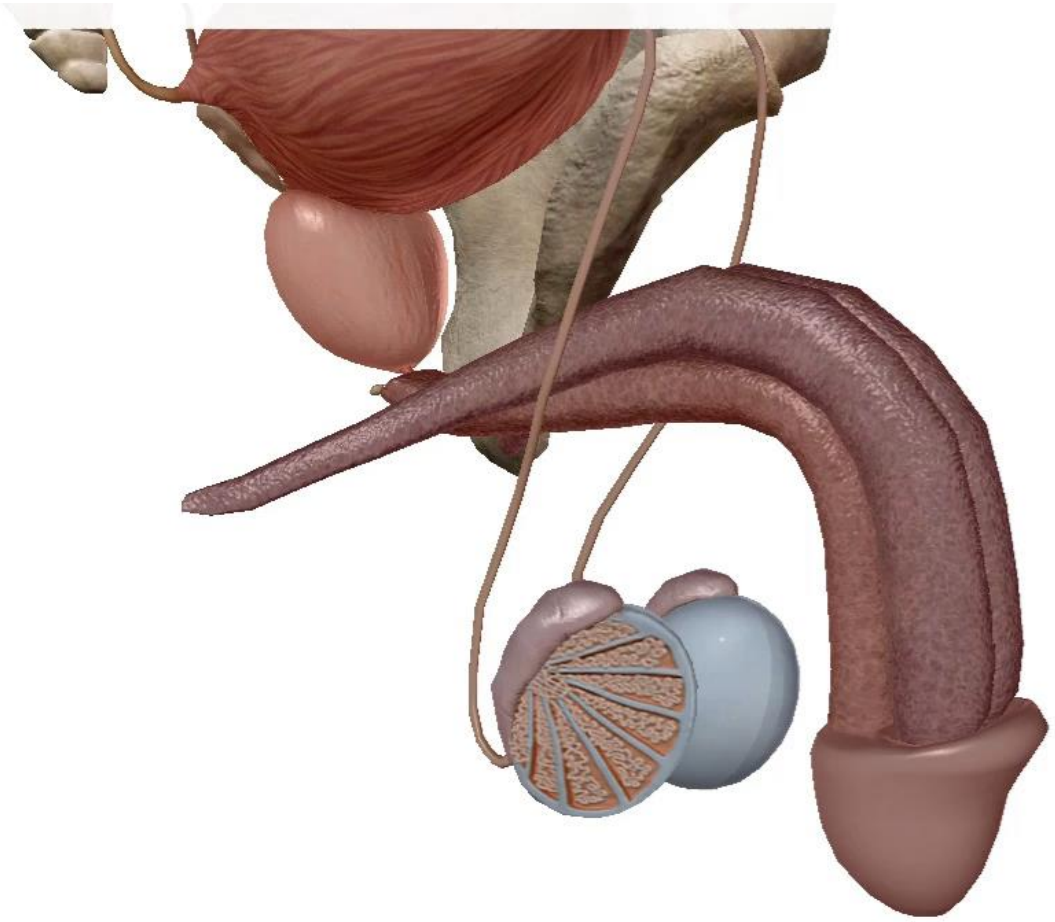
TESTIS AND EPIDIDYMIS AND DUCTUS DEFERENS



Pr. M.D.EL AMRANI Dr. BENTALEB OUSSAMA Dr. BIBORCHI HOUSSAM

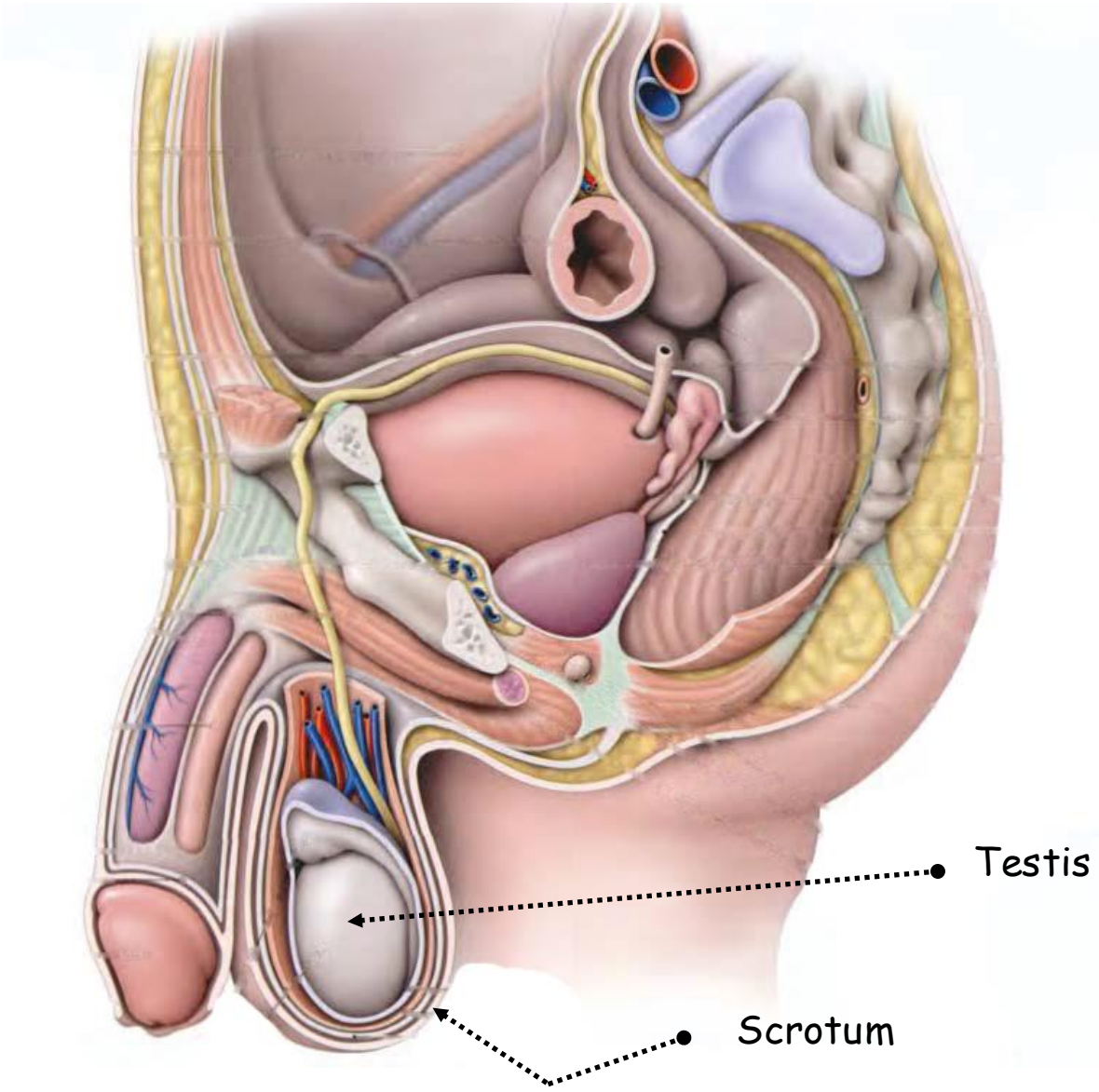
TESTIS

CONTENTS



I. INTRODUCTION

- Main male genital gland
- Paired heterocrine gland
- Situated in the scrotum of the perineum
- Exocrine function: spermatogenesis
- Endocrine function: secretion of testosterone

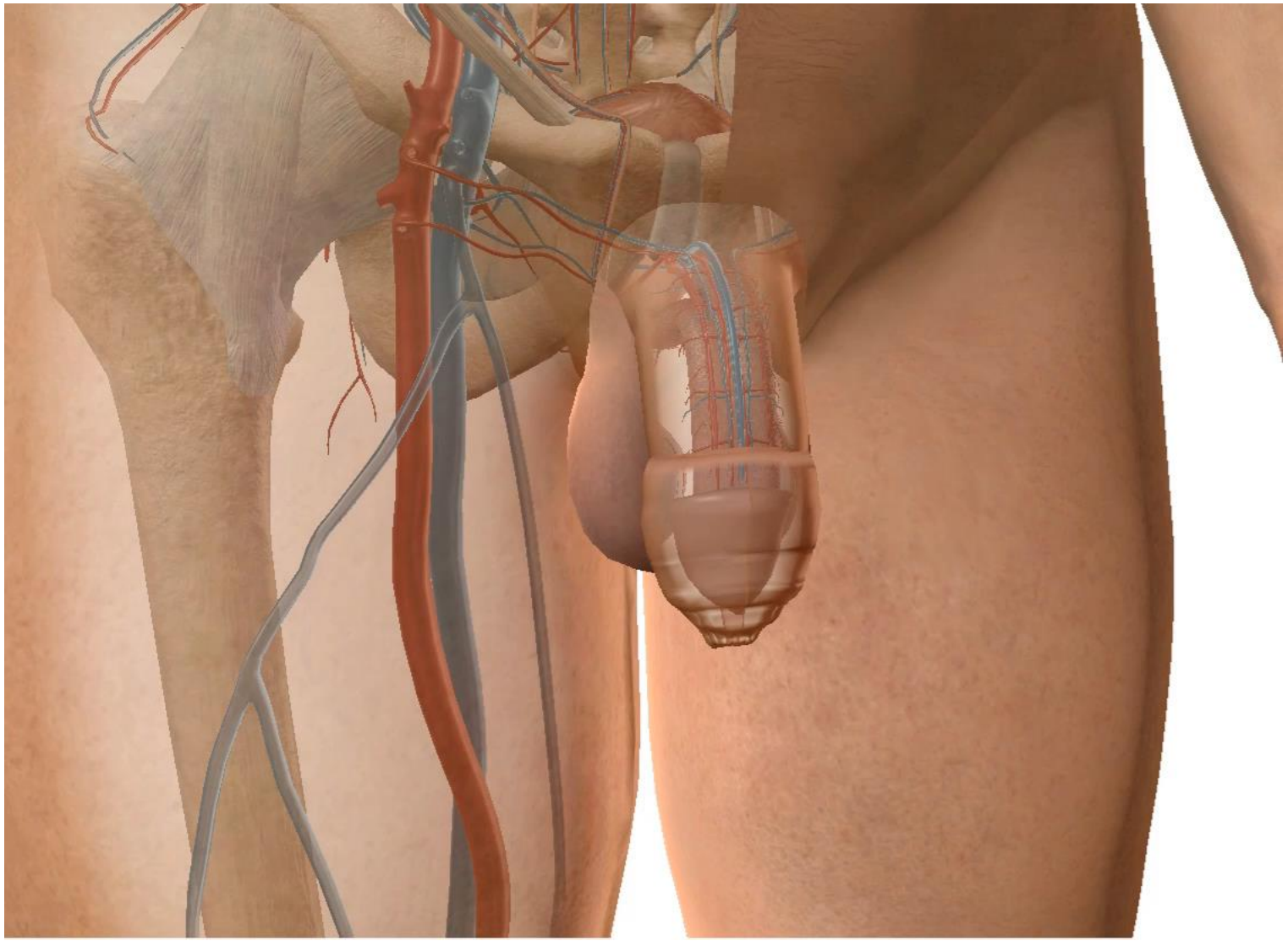


SAGITTAL SECTION OF PELVIS MINOR AND MALE GENITAL ORGANS (FROM KAMINA)

II. DESCRIPTIVE ANATOMY

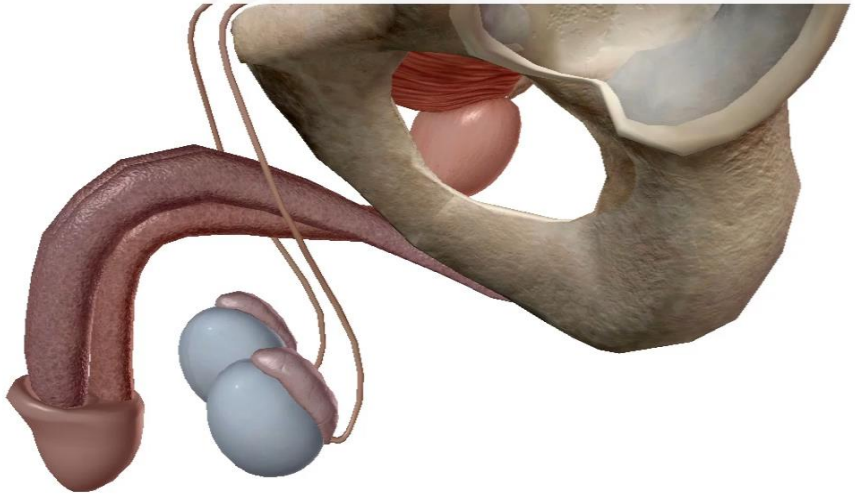
A. SITUATION

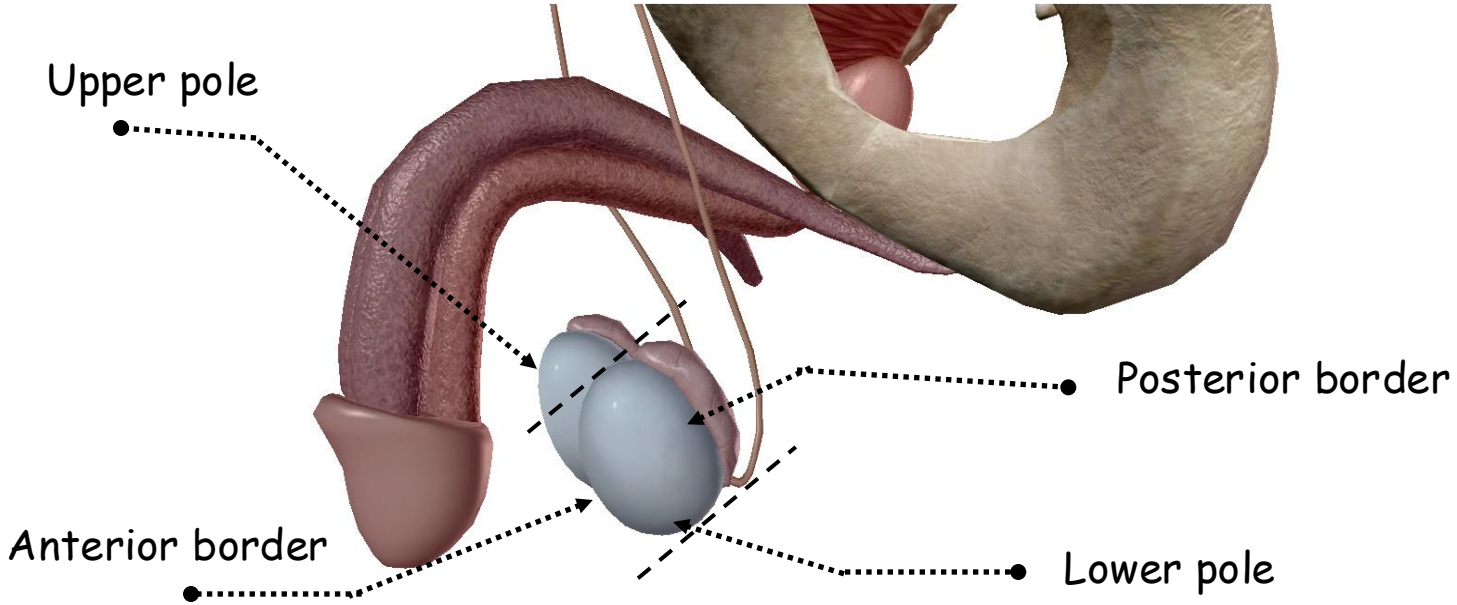
- Under the penis
- Outside the abdominal cavity
- Enclosed within the end of an elongated musculofascial pouch
- Continuous with the anterior abdominal wall
- Projects into the scrotum of perineum
- The left testis is lower down



B. SHAPE

- Oval organ
- Flattened tranversally
- Long oblique axis backwards and downwards
- Firm consistency
- Painful when pressed
- Smooth surface
- Bluish-white in colour
- 2 surfaces: medial and lateral
- 2 borders: anterior and posterior
- 2 poles: upper and lower

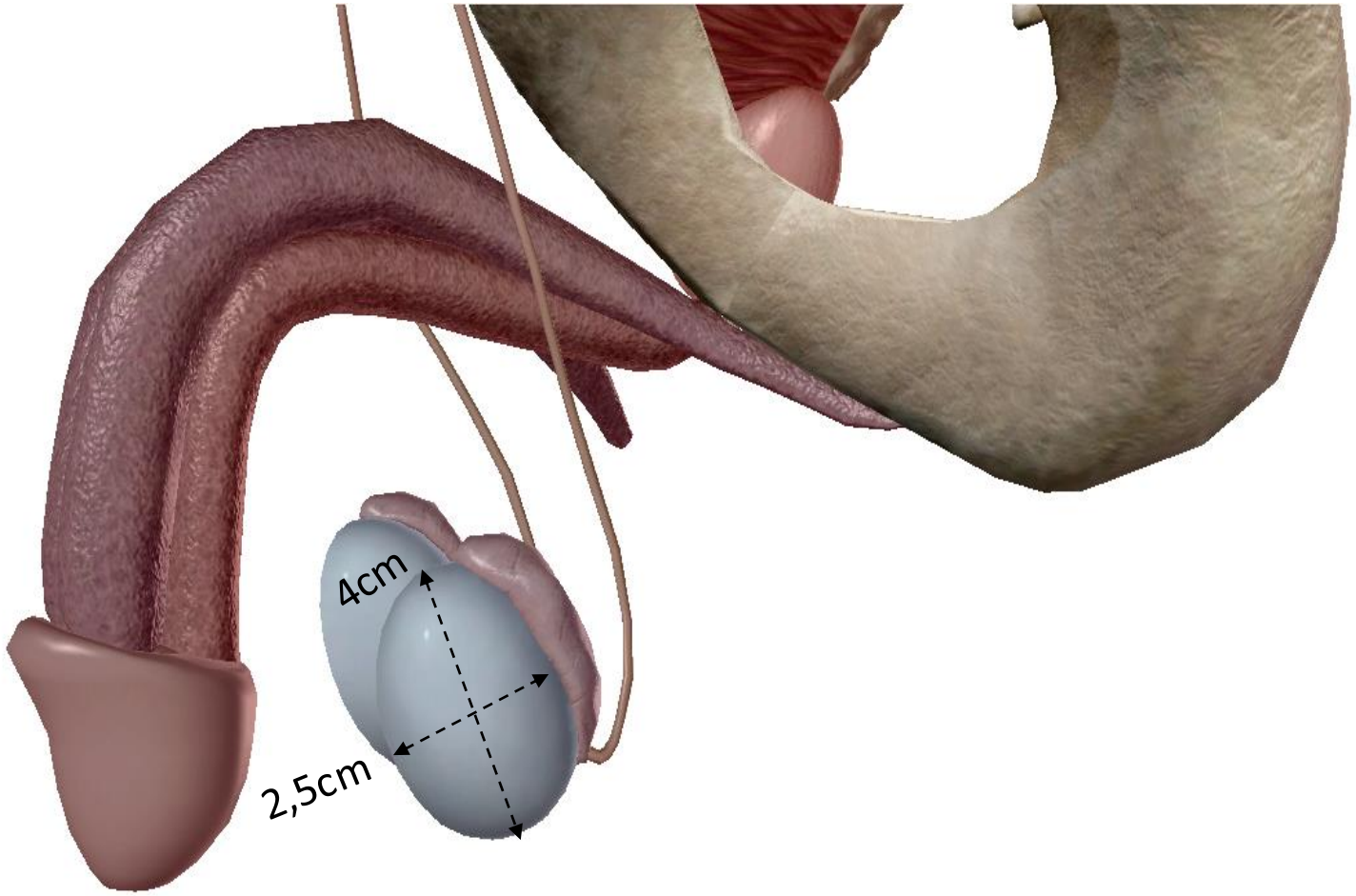




LATERAL VIEW SHOWING MALE GENITAL ORGANS

C. DIMENSIONS

- Length: 4 cm
- Width: 2.5 cm
- Weigth: 20 grams



LATERAL VIEW SHOWING MALE GENITAL ORGANS

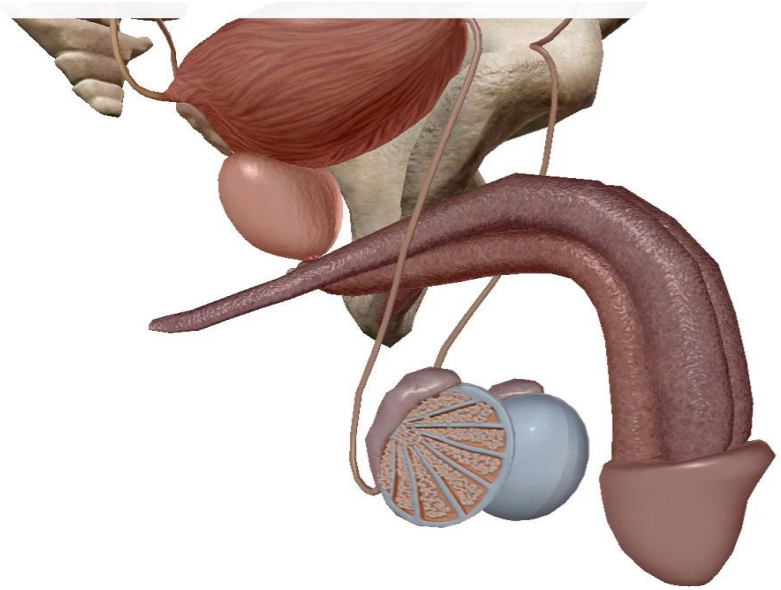
III. STRUCTURE

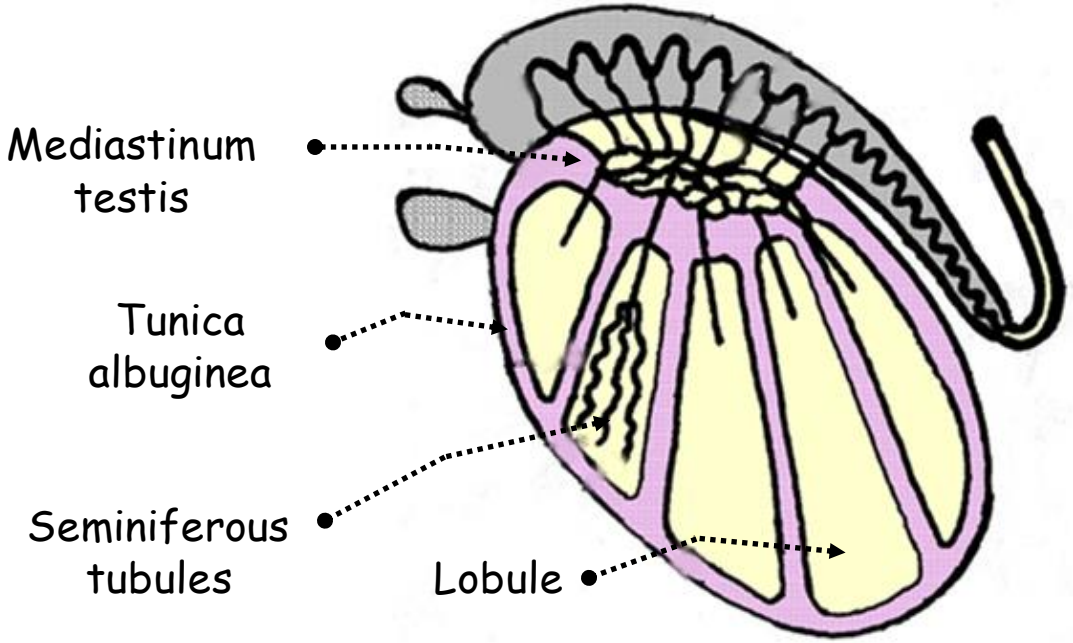
A. TUNICA ALBUGINEA

- Thick unstretchable covering of fibrous tissue
- Thickens at the posterolateral surface of the testis
- Mediastinum testis
- From which septa radiate towards the rest of the covering
- Divide the testis into some 400 lobules
- Each of which contains two to four highly convoluted seminiferous tubules

B. TUNICA VASCULOSA TESTIS

- Doubles inside the tunica albuginea
- Extends into the testis itself to line the surfaces of individual septa
- Vascular plexus and loose connective tissue

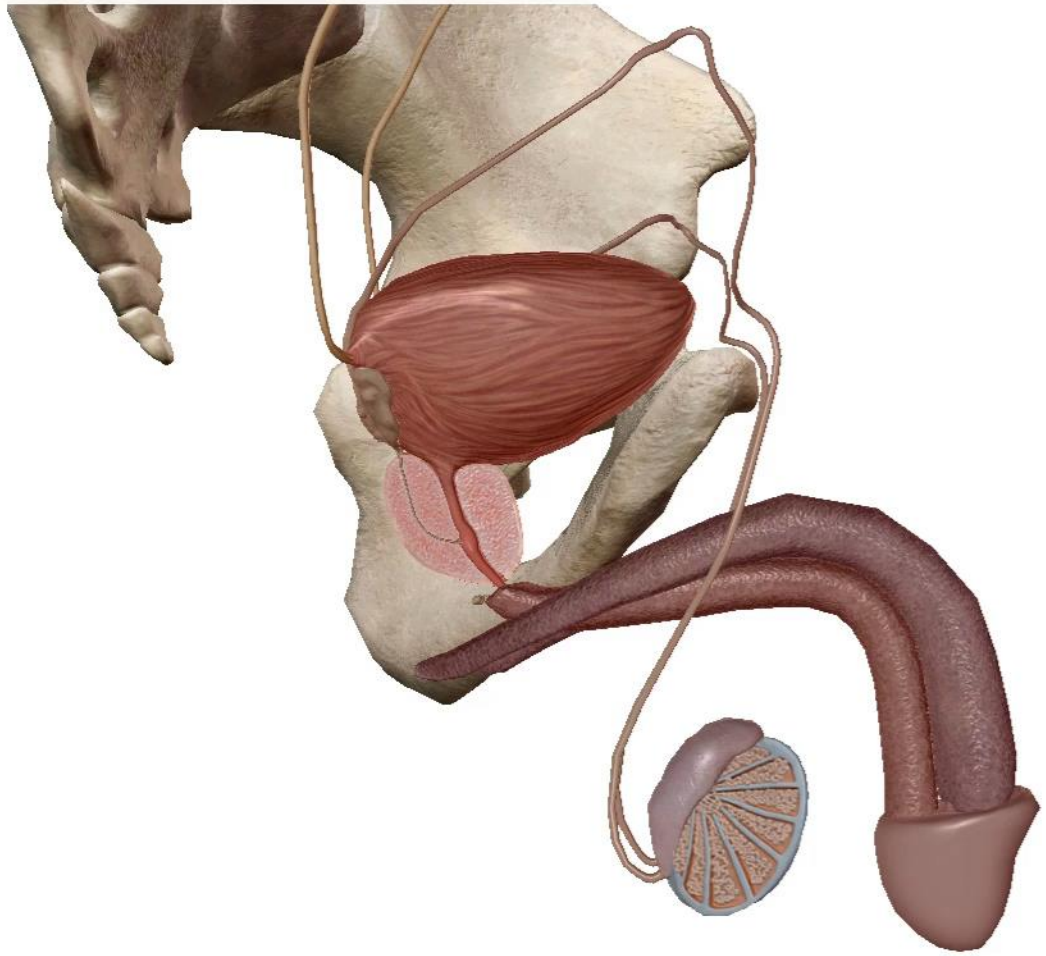




SAGITTAL SECTION OF THE TESTIS SHOWING ITS STRUCTURE

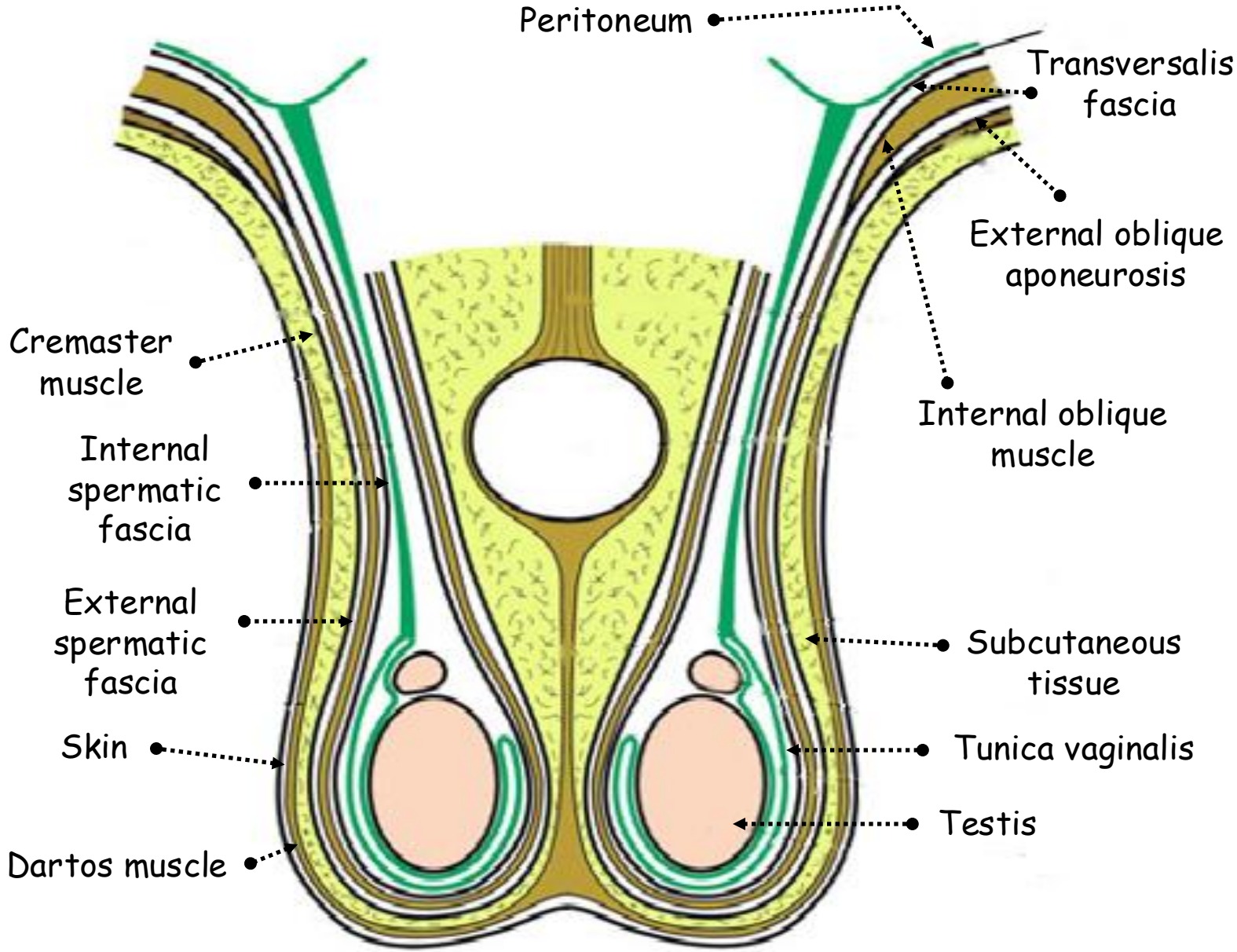
C. TESTIS PARENCHYMA

- 400 lobules
- More than 1000 seminiferous tubules
- Open into the reste testis
- Rete testis: network of intercommunicating channels lying in the mediastinum testis
- Vasa efferentia: 15 to 20 ducts from the rete which enter the commencement of the canal of the epididymis attaching the head of the epididymis to the testis
- Each tubule shows several layers of cells: outermost layer consists of spermatogonia then primary and secondary spermatocytes, spermatids and spermatozoa
- **Sustentacular cells of Sertoli:** supporting cells through branching processes embedding the germ cells
- **Interstitial cells of Leydig:** secrete testosterone, the male sex hormone



IV. SUPPORTS

- Layer-by-layer evagination of the anterior abdominal wall and downward prolongations of the coverings of the spermatic cord
- From depth to surface
- **Tunica vaginalis:** double-layer serous membrane remnant of the fetal processus vaginalis overlying the front and lateral surfaces of the testis and the epididymis forming the space of tunica vaginalis
- **Internal spermatic fascia:** investment derived from the transversalis fascia at the deep inguinal ring
- **Cremasteric fascia and cremaster muscle:** from the internal oblique and transversus aponeuroses and muscle as the spermatic cord passes through the ring into the inguinal canal
- **External spermatic fascia:** from the crura of the superficial ring made of external oblique aponeurosis
- **Scrotum:** skin, dartos muscle and subcutaneous tissue



CORONAL SECTION OF THE SCROTUM AND TESTES SHOWING THEIR SUPPORTS

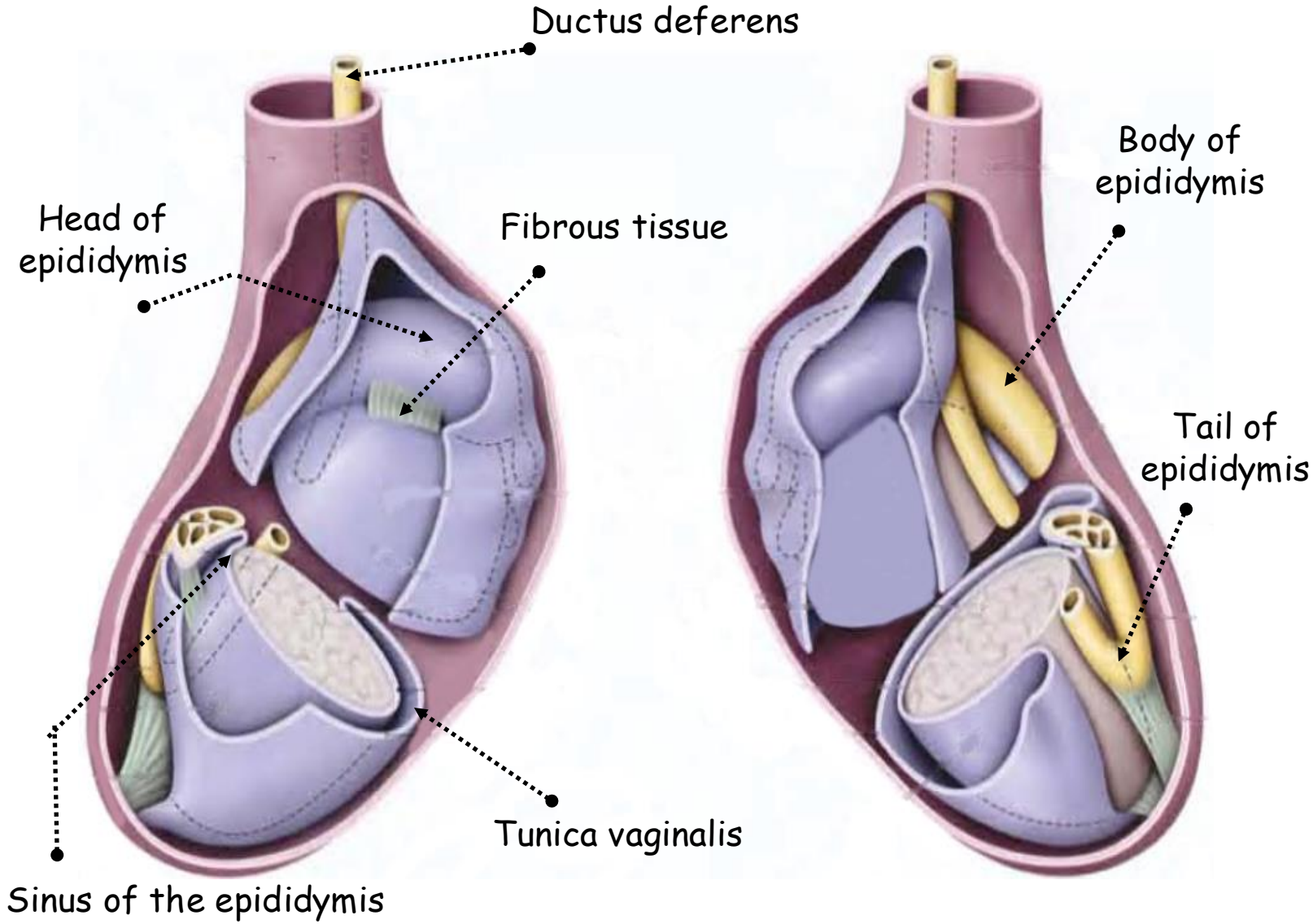
V. ANATOMICAL RELATIONS

A. MEDIAL SURFACE

- Ductus deferens
- Septum of scrotum

B. LATERAL SURFACE

- Epididymis
- Sinus of the epididymis: narrow slit between epididymis and testis



LATERAL AND MEDIAL VIEW OF THE TESTIS

C. ANTERIOR BORDER

- Scrotum

D. POSTERIOR BORDER

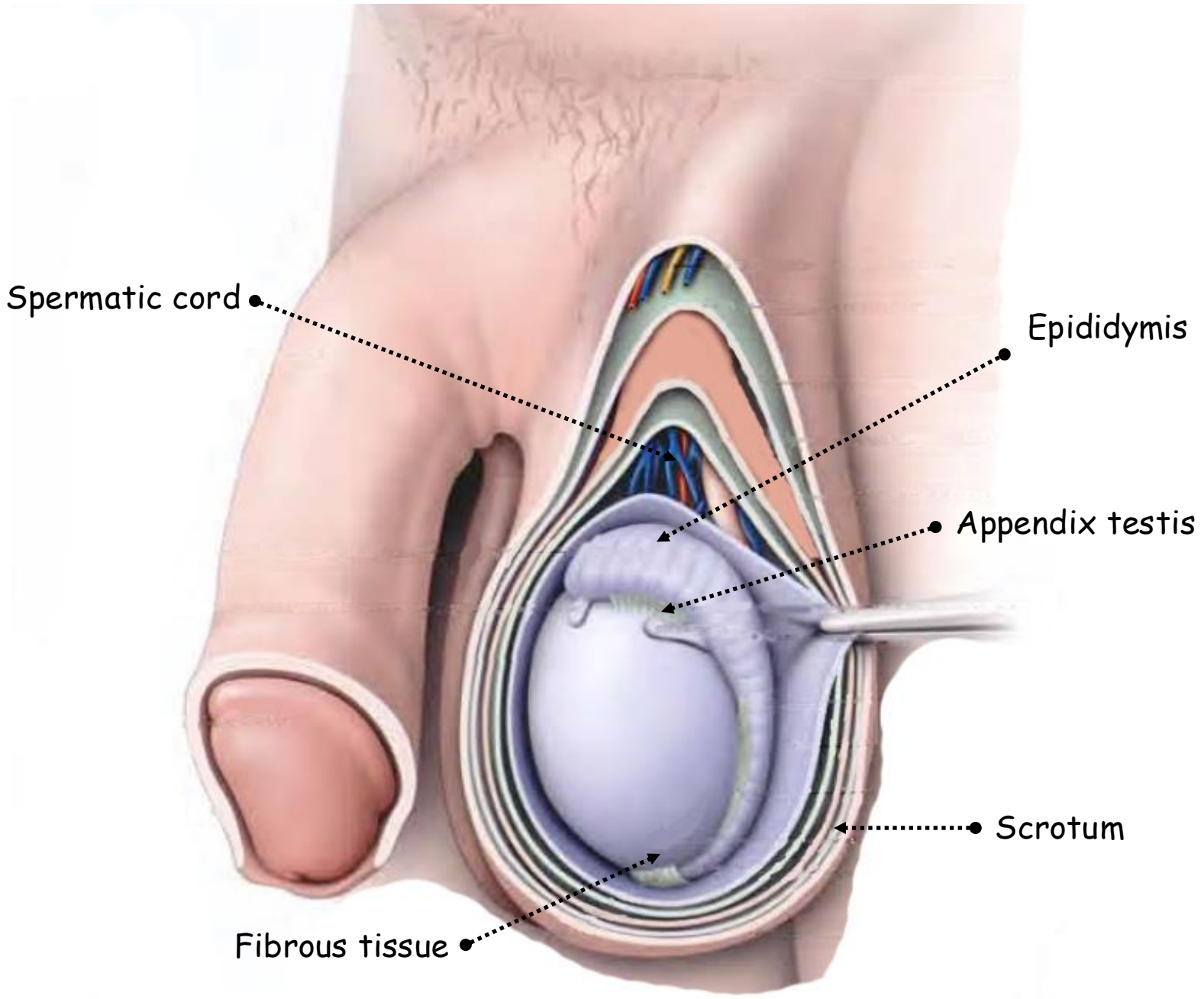
- Epididymis
- Spermatic cord and its six constituents

E. UPPER POLE

- Appendix testis: sessile cyst of 2 or 3 mm of diameter
- Fibrous tissue

F. LOWER POLE

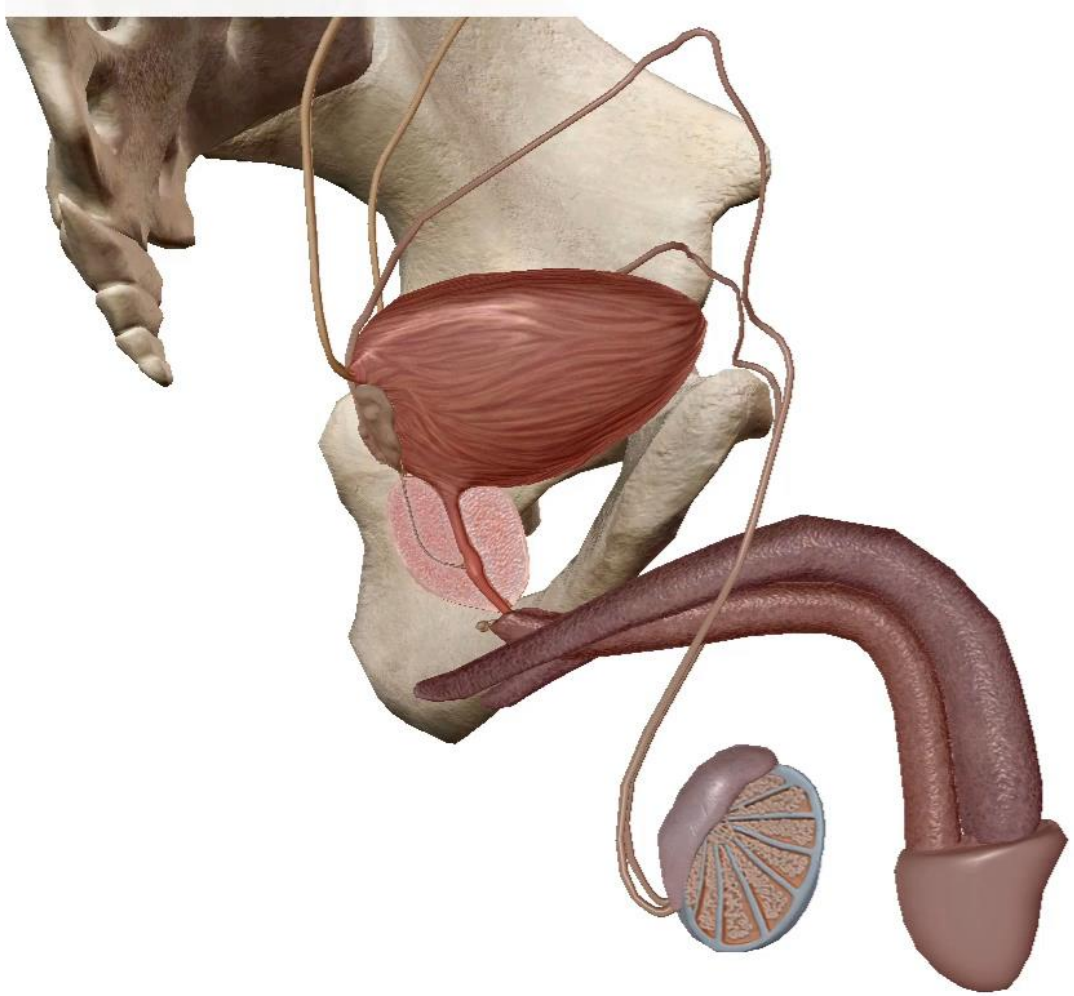
- Fibrous tissue



LATERAL VIEW OF THE TESTIS AND EPIDIDYMIS

EPIDIDYMIS AND DUCTUS DEFERENS

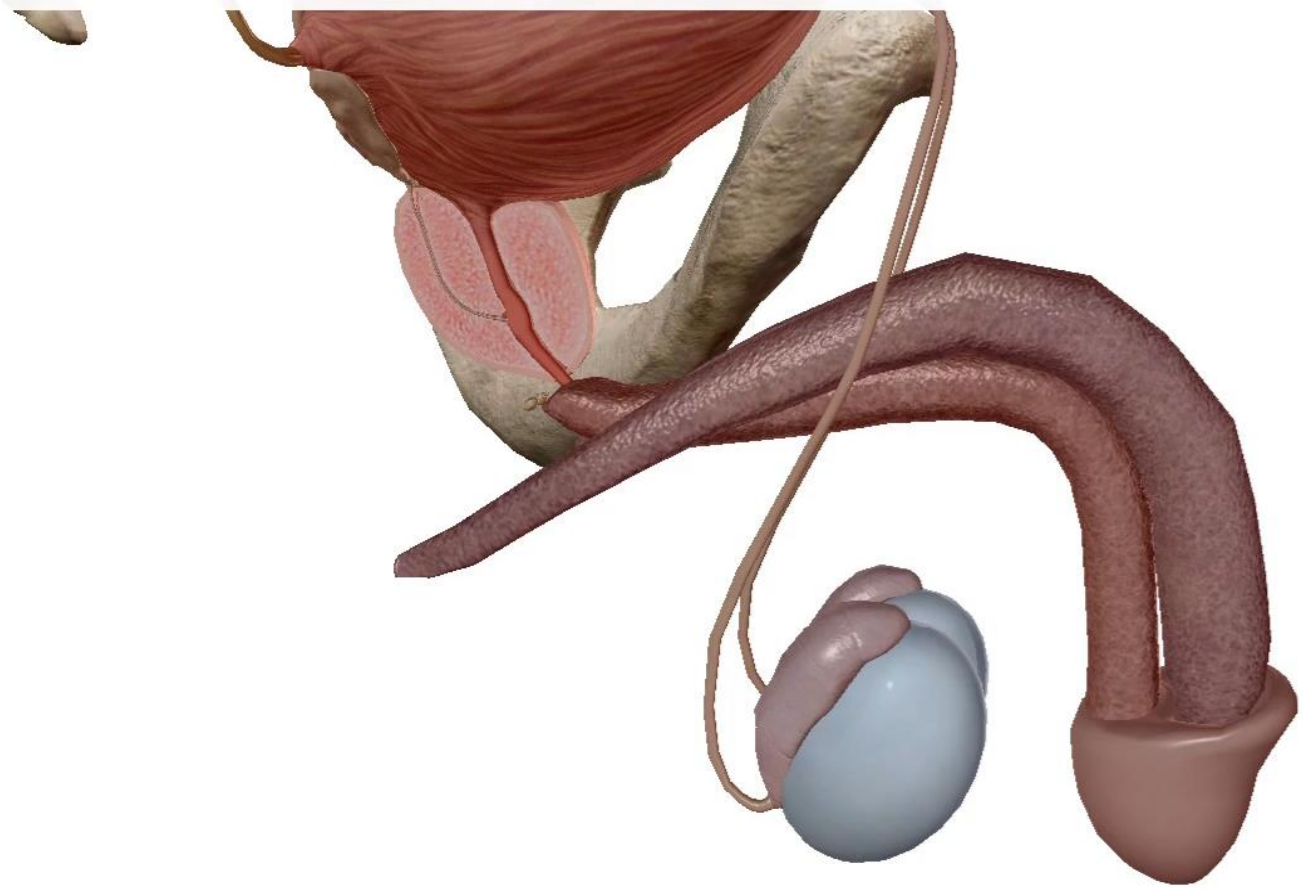
CONTENTS



I. DESCRIPTIVE ANATOMY

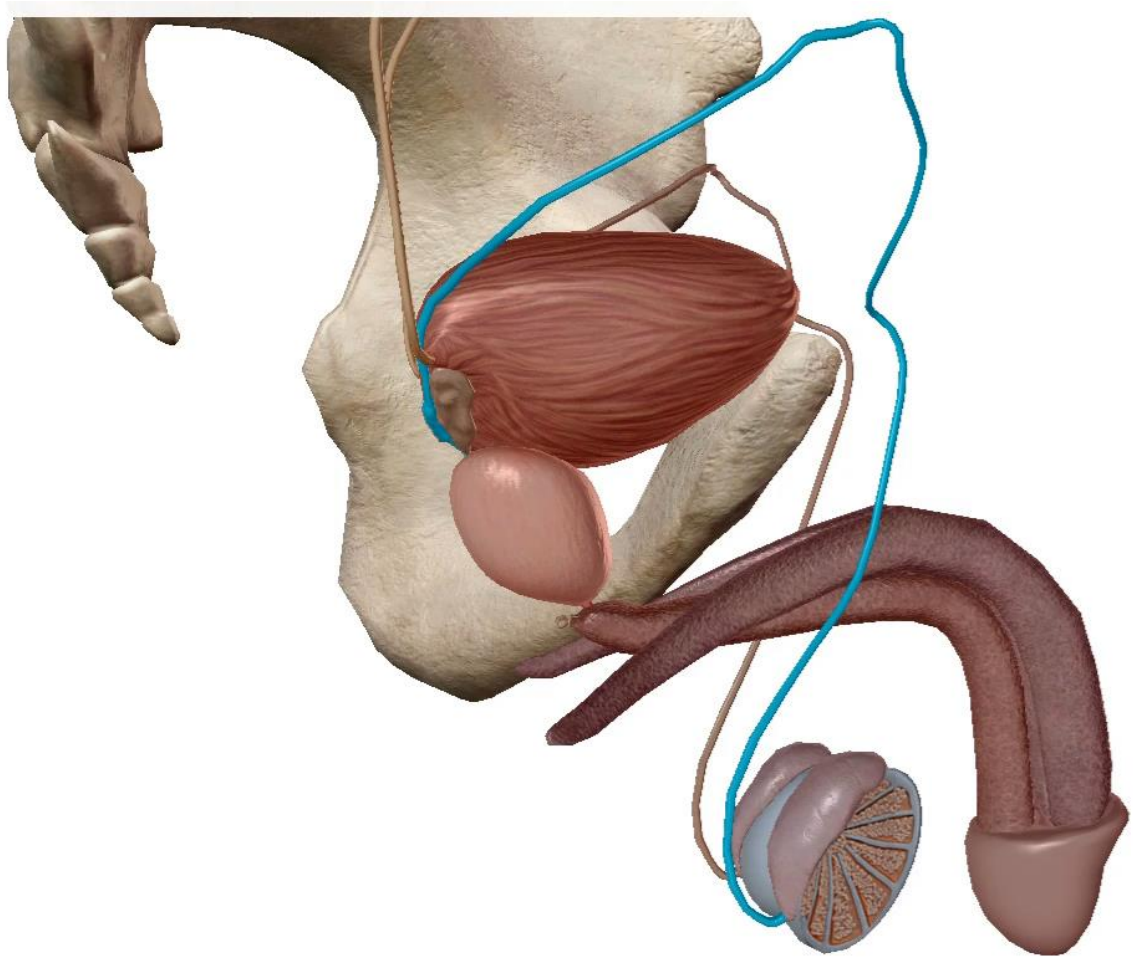
A. EPIDIDYMIS

- Single 7 m long tube
- Highly coiled and packed together by fibrous tissue
- Resulting 5 cm long and 1 cm wide mass
- Upper pole: large head or globus major
- Lower pole: small tail or globus minor continuous with ductus deferens
- Body: applied in crescentic manner to the posterolateral part of the testis
- Storage and maturation of spermatozoa

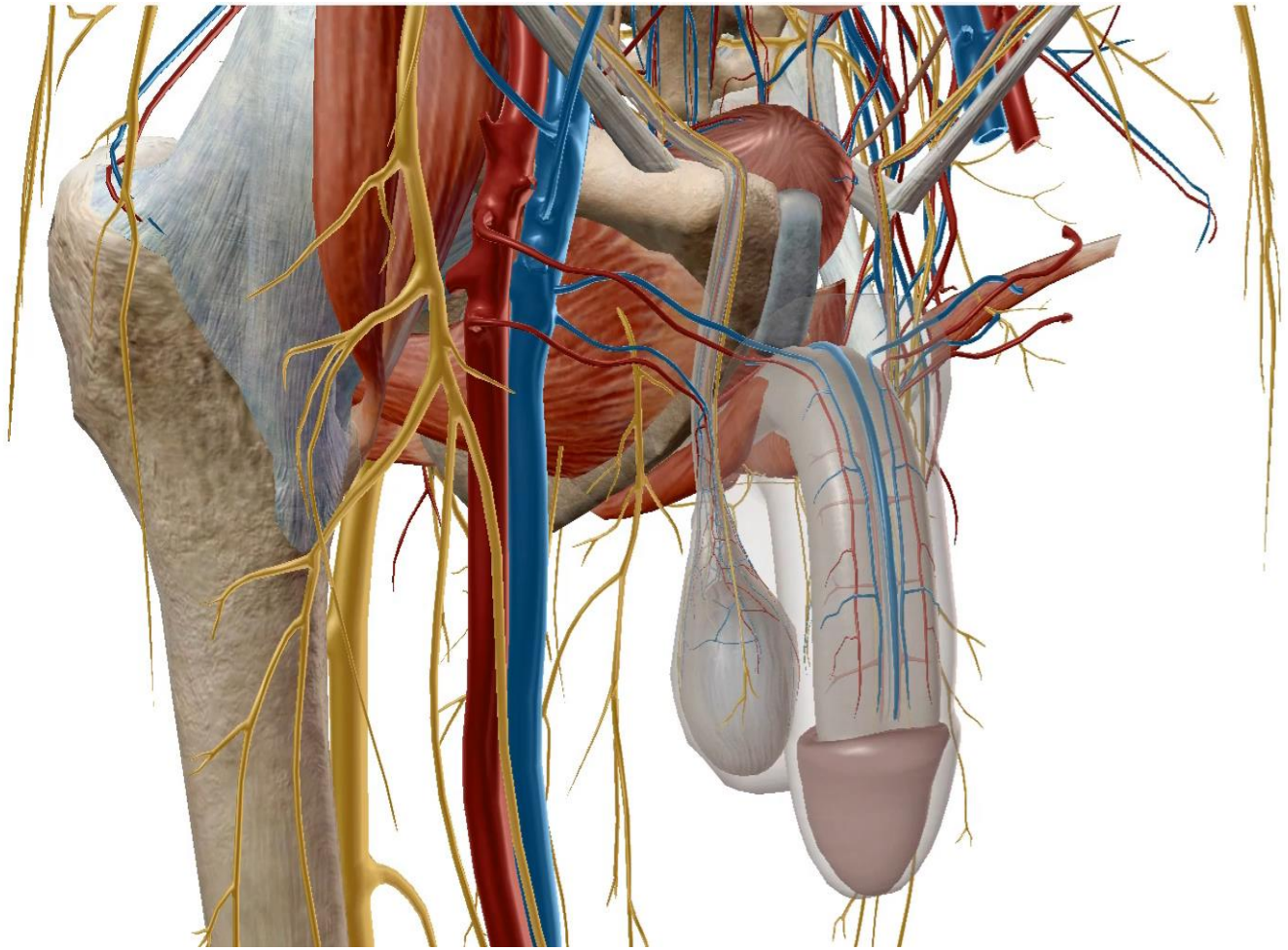


B. DUCTUS DEFERENS

- Vas
- Direct continuation of the canal of the epididymis
- Thick wall of smooth muscle
- Length: 40 cm
- Internal diameter: 2 mm

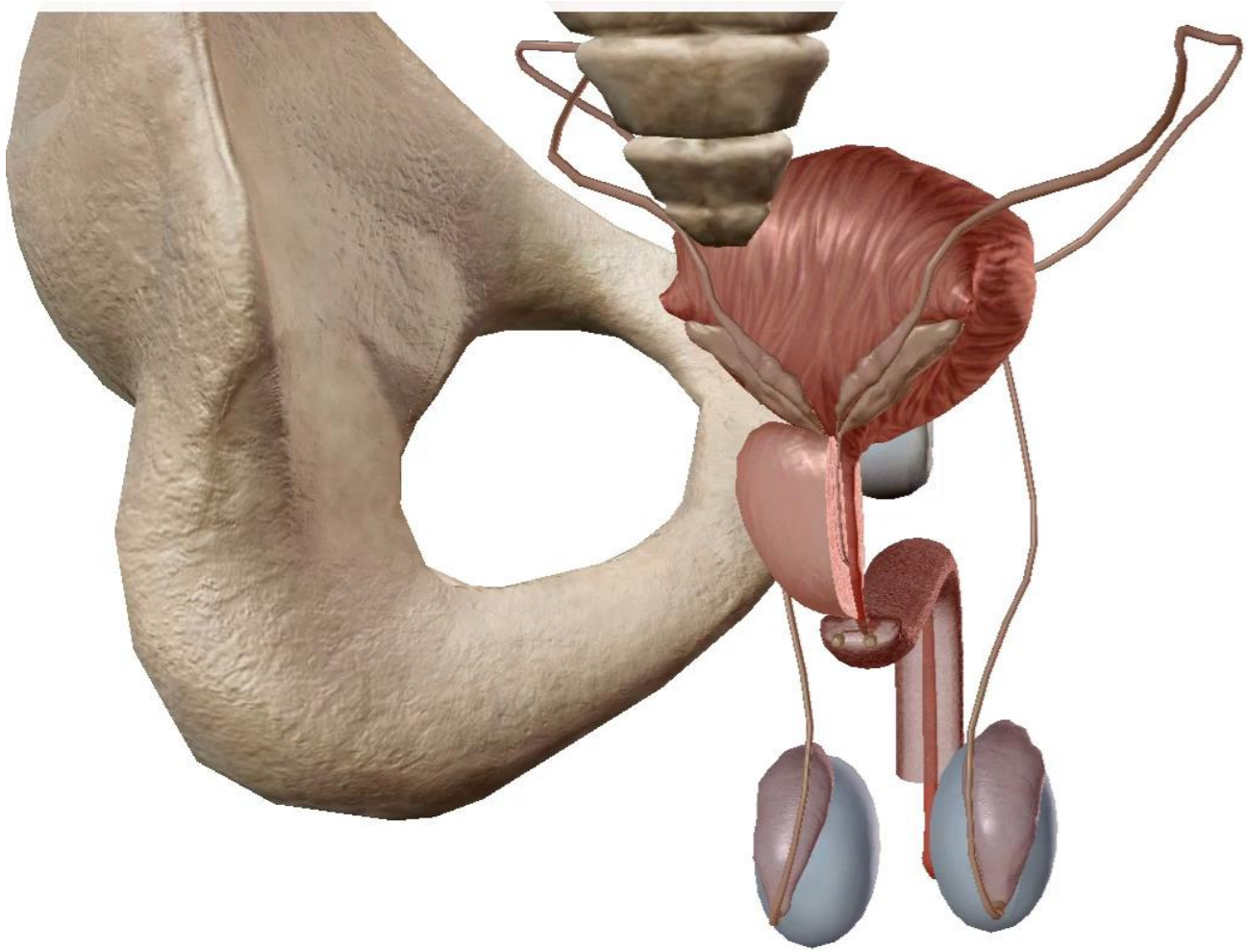


- Medial to the testis in the scrotum
- Enters the spermatic cord
- Passes through the inguinal canal contained in the spermatic cord
- Across the side wall of the pelvis just under peritoneum
- Crosses the external iliac vessels forwards
- Curves medially and forwards
- Crosses the ureter forwards
- Turns downwards approaching its opposite fellow side by side
- Dilates in fusiform manner forming a storehouse of spermatozoa of 5 mm of diameter parallel and medial to seminal vesicle
- Looses its thick muscle wall
- Joins with the outlet of the seminal vesicle to form the ejaculatory duct



C. EJACULATORY DUCT

- Passes obliquely through the prostate alongside the prostatic utricle
- Opens on the side of the urethral crest
- 2.5 cm long and 2 mm of internal diameter



II. STRUCTURE

A. TUNICA ALBUGINEA

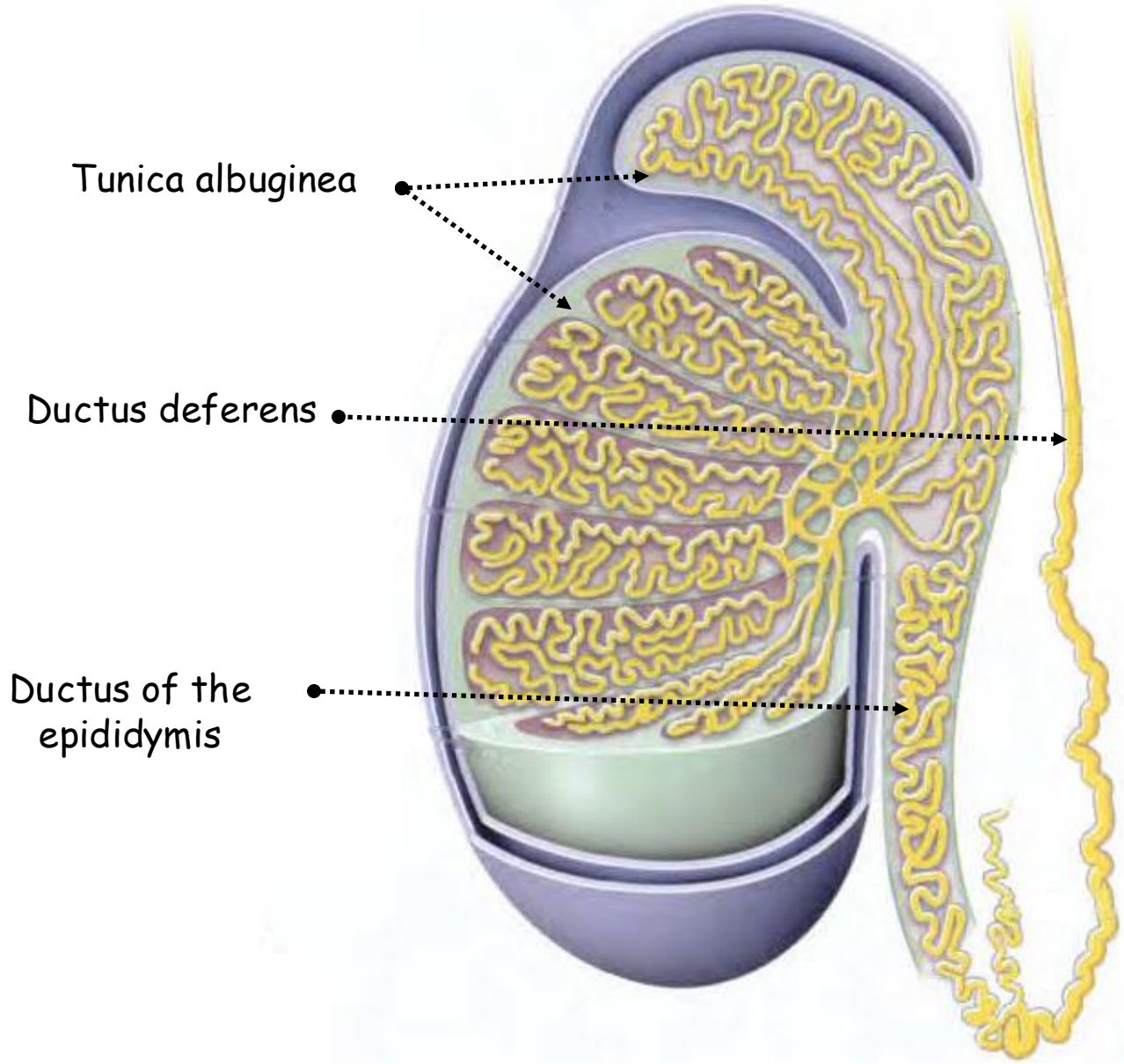
- Continuous with that of testis
- Thin
- Fibrous tissue

B. DUCTUS OF THE EPIDIDYMIS

- The wall is of thin fibrous tissue
- The lining is of tall columnar epithelium with stereocilia

C. DUCTUS DEFERENS

- Very thick wall and narrow lumen
- Visceral muscles arranged in three layers middle circular and inner and outer longitudinal with interweaving of fibres
- The lining mucous membrane is a thin layer of dense fibrous tissue, surfaced with tall columnar epithelium with stereocilia



SAGITTAL SECTION OF THE EPIDIDYMIS AND TESTIS

III. SUPPORTS

- Spermatic cord
- Suspends the testis and the epididymis
- Three coverings: internal spermatic fascia, cremasteric fascia and cremaster muscle and the external spermatic fascia
- Extends from the upper pole of testicle until the deep inguinal ring
- Strictly complete outside the superficial inguinal ring
- Constituents:

  -Ductus deferens most posterior

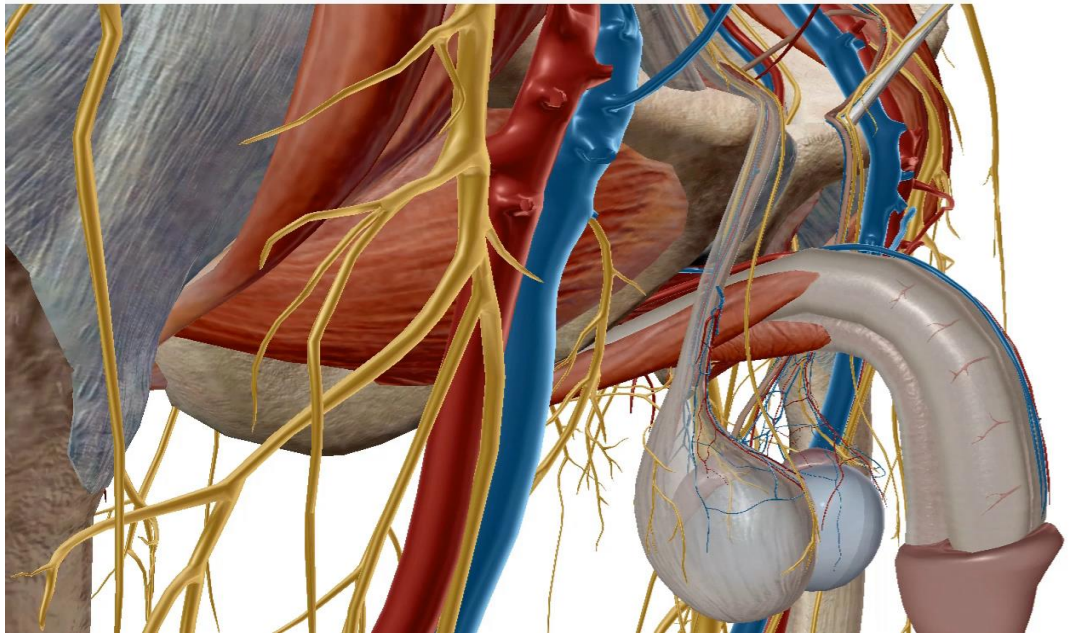
  -Testicular, cremasteric and of ductus deferens arteries

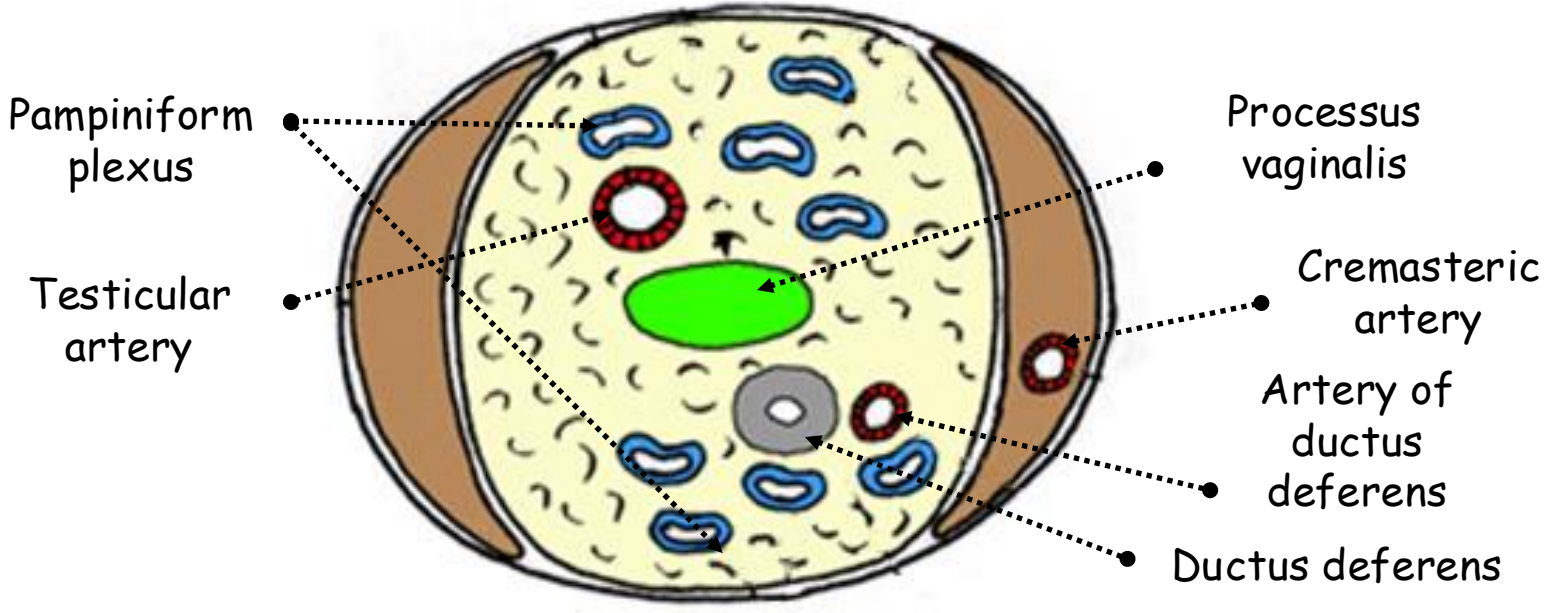
  -Pampiniform plexus

  -Lymphatics

  -Genital branch of genitofemoral nerve

  -Processus vaginalis





HORIZONTAL SECTION OF THE SPERMATIC CORD

IV. ANATOMICAL RELATIONS

A. EPIDIDYMIS

1. Head:

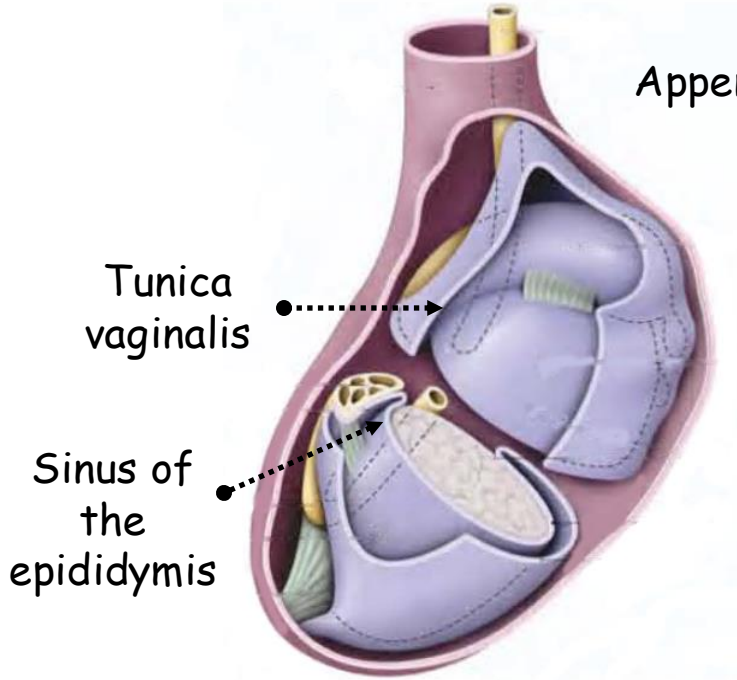
- Covered by tunica vaginalis
- Attached to testis by fibrous tissue in its inferior and lateral surfaces
- Appendix epididymis forwards

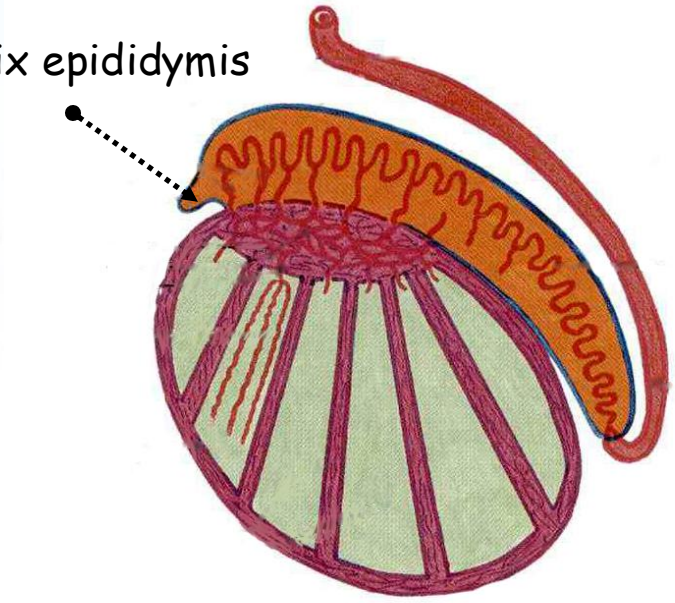
2. Body:

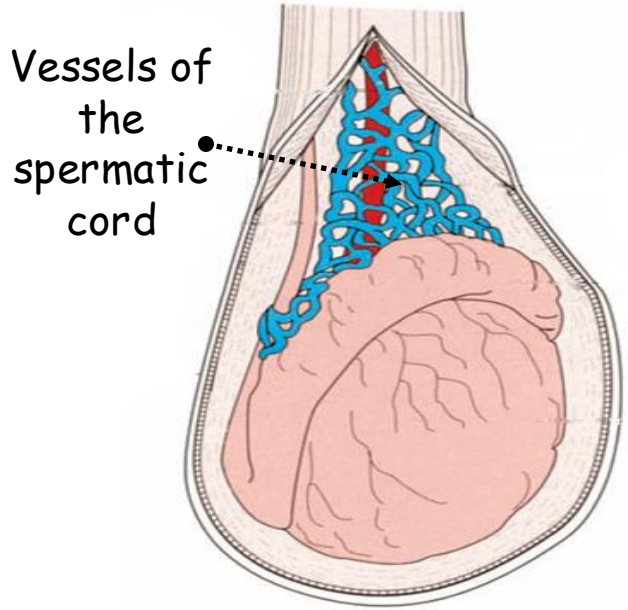
- Covered by tunica vaginalis in the superior part of its lateral surface
- Sinus of the epididymis forwards
- Ductus deferens and spermatic cord towards its medial surface

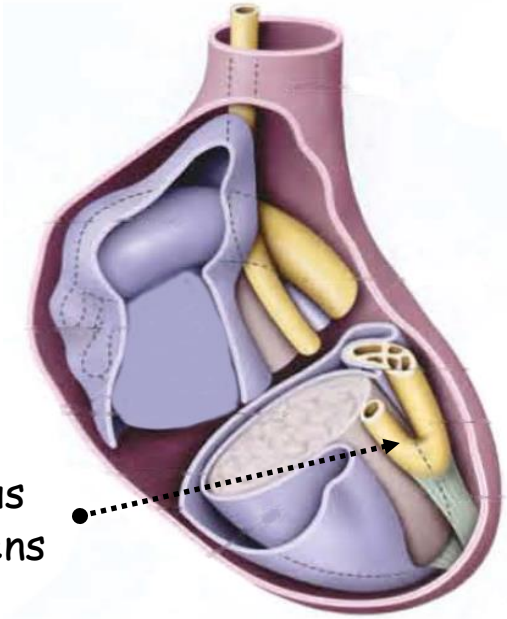
3. Tail:

- Covered by tunica vaginalis in its anterior surface
- Attached to testis by fibrous tissue in its anterior surface
- Ductus deferens and fibrous tissue in its lower pole









FIGURES SHOWING THE ANATOMICAL RELATIONS OF THE EPIDIDYMIS

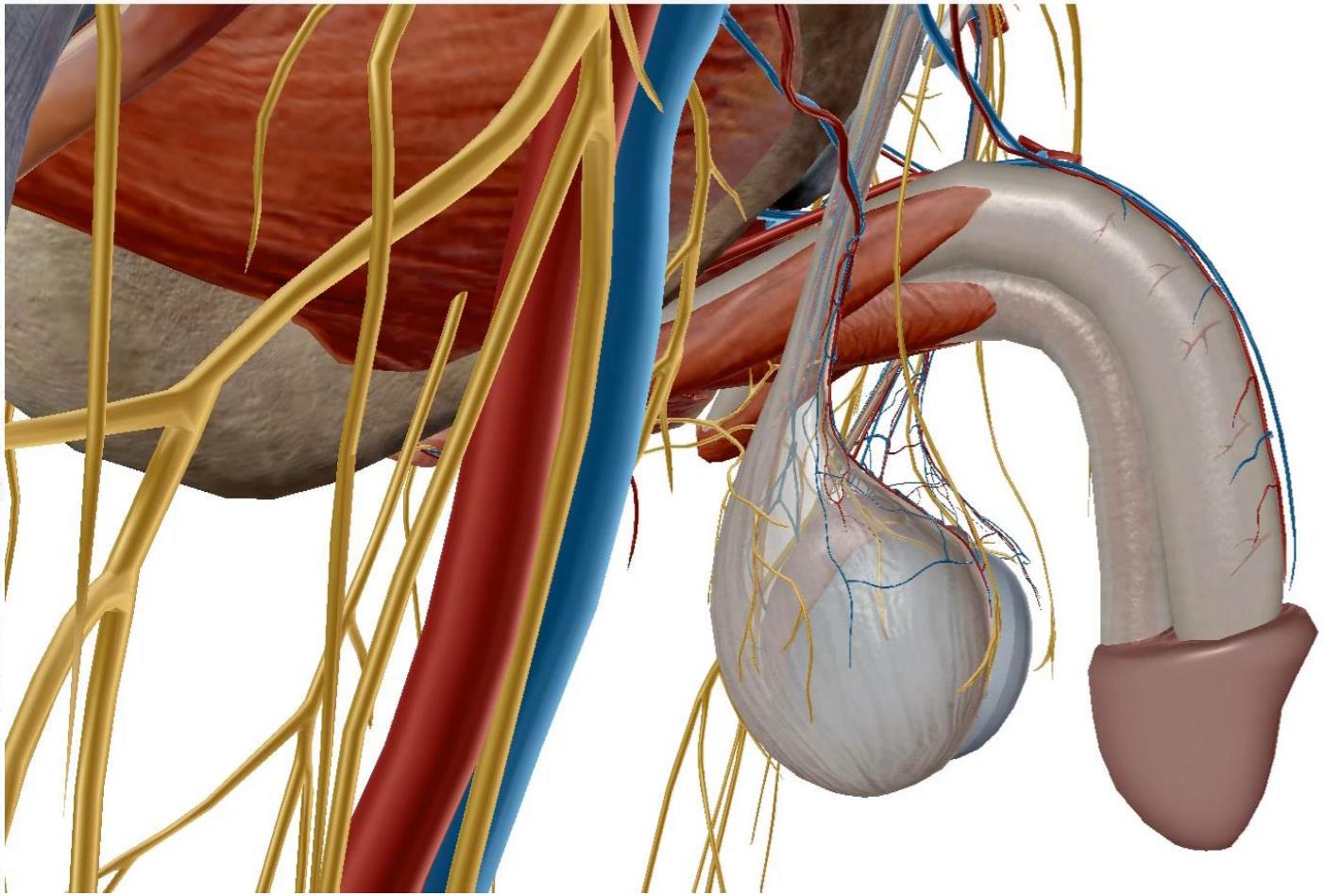
B. DUCTUS DEFERENS

1. In the scrotum:

- Posterior border of testis
- Medial surface of epididymis and testis
- Genital vessels

2. In the spermatic cord:

- Most posterior element
- All the constituents of the spermatic cord forwards



3. In the inguinal canal:

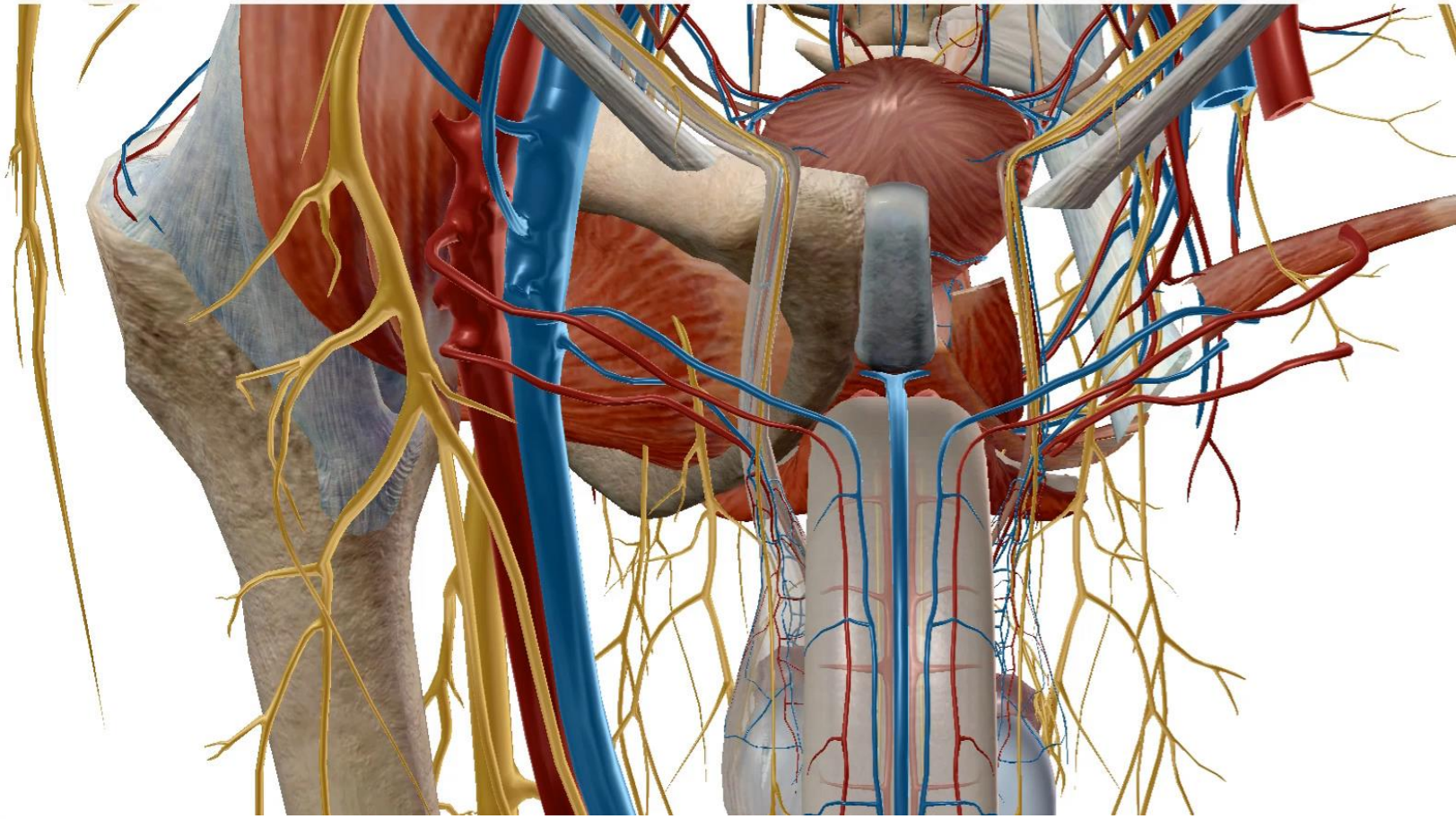
- Walls of the inguinal canal
- Genital branches of genitofemoral and ilioinguinal nerves

4. In the iliac fossa:

- Inferior epigastric vessels below
- External iliac vessels behind and laterally
- Obturator pedicle backwards and laterally
- Inferolateral surfaces of the bladder medially
- Umbilical artery and ureter below

5. In the pelvic cavity:

- Base of bladder forwards
- Ureter backwards
- Seminal vesicle laterally
- Base of prostate below



BLOOD SUPPLY; LYMPH DRAINAGE AND NERVE SUPPLY

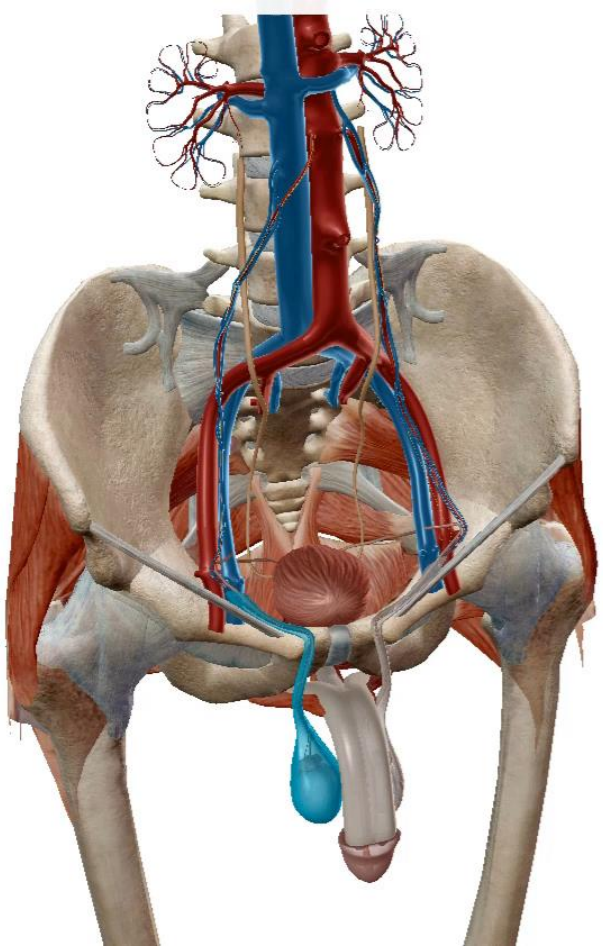
CONTENTS

I. BLOOD SUPPLY

A. ARTERIES

1. Testicular artery:

- Arises from the aorta towards L2-L3 vertebrae
- Runs in the spermatic cord, gives off a branch to the epididymis, and reaches the back of the testis
- Divides into medial and lateral branches
- Sweep around horizontally within the tunica albuginea
- Branches from these vessels penetrate the substance of the organ



2. Artery of ductus deferens:

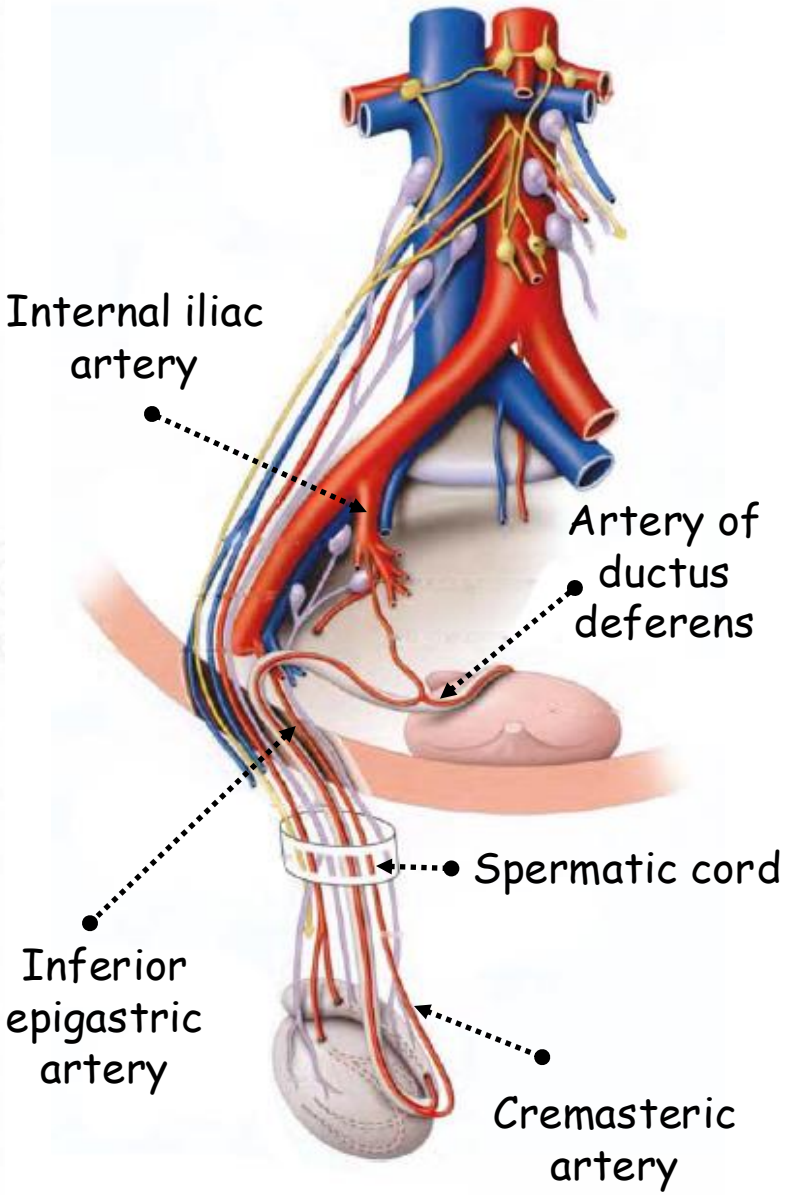
- Rises from the superior or inferior vesical arteries
- Accompanies the ductus deferens
- Ends at the tail of epididymis anastomosing with testicular and cremasteric arteries

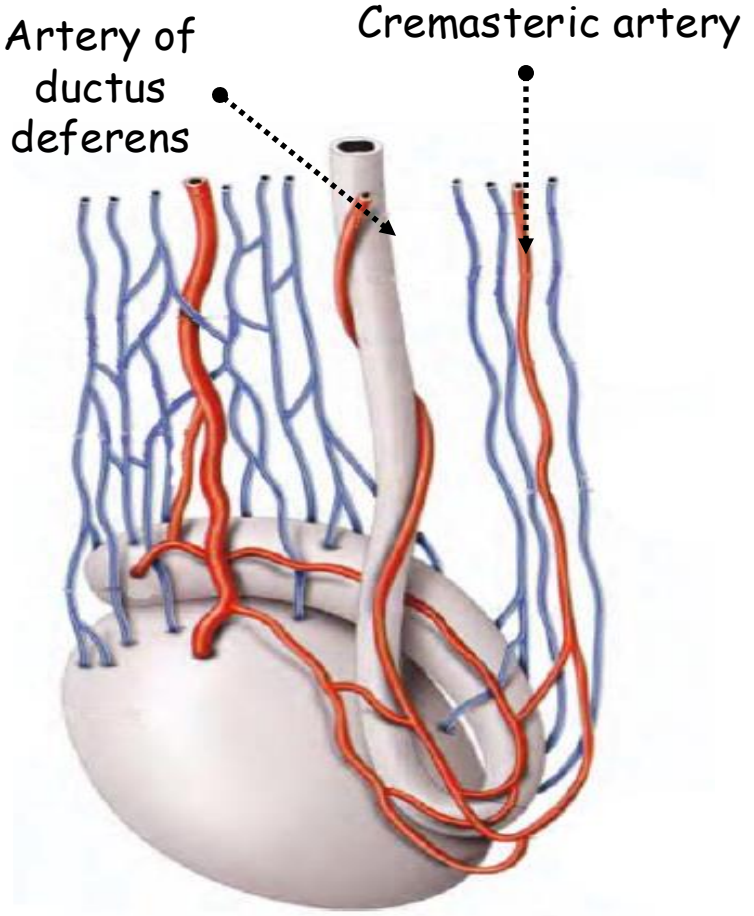
3. Cremasteric artery:

- Rises from the inferior epigastric artery
- Crosses the inguinal canal and the spermatic cord
- Ends at the tail of epididymis

4. Inferior vesical artery:

- Supplies the ampulla of ductus deferens



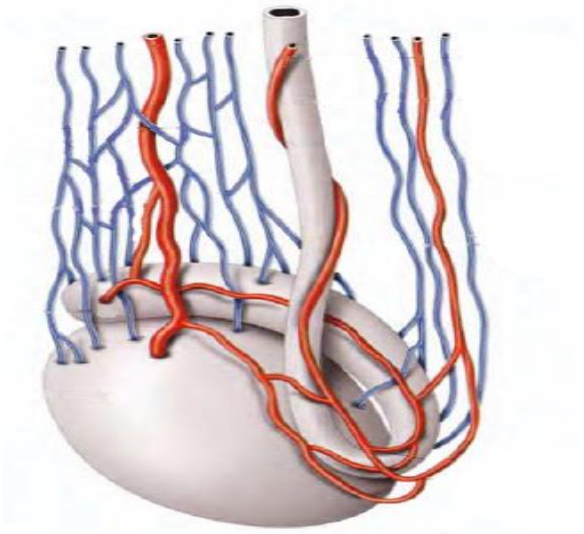


FIGURES SHOWING THE ARTERIES OF THE TESTES AND EPIDIDYMIS AND DUCTUS DEFERENS

B. VEINS

1. Pampiniform plexus:

- Venules reach the mediastinum, from which several veins pass upwards in the spermatic cord and surround the testicular artery with a mass of intercommunicating veins, the pampiniform plexus



MEDIAL VIEW OF THE LEFT TESTIS SHOWING ITS BLOOD SUPPLY

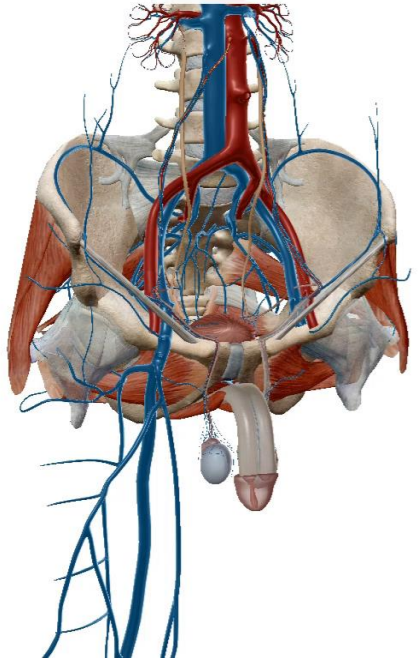
B. VEINS

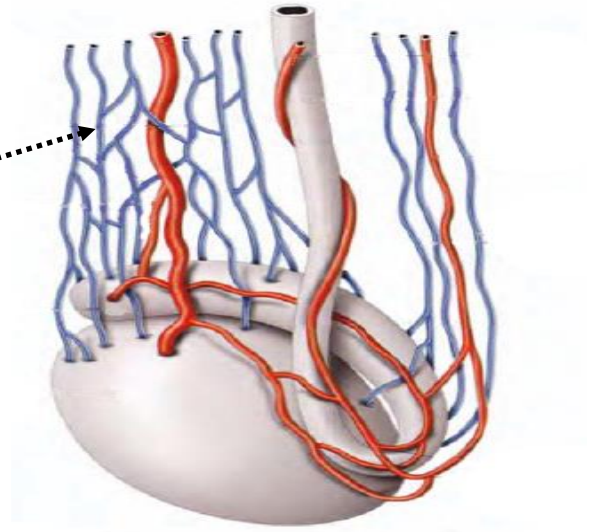
1. Pampiniform plexus:

- Venules reach the mediastinum, from which several veins pass upwards in the spermatic cord and surround the testicular artery with a mass of intercommunicating veins, the pampiniform plexus
- In the inguinal canal the plexus may have separated out into about four veins which join to form two that leave the deep inguinal ring, perhaps becoming single on psoas major on the posterior abdominal wall, the testicular vein
- The left vein invariably joins the left renal vein and the right is said to drain directly into the inferior vena cava

2. Cremasteric veins:

- Anastomosed with the pampiniform plexus
- Travel the inguinal canal
- Flow into the inferior epigastric vein





MEDIAL VIEW OF THE LEFT TESTIS SHOWING ITS BLOOD SUPPLY

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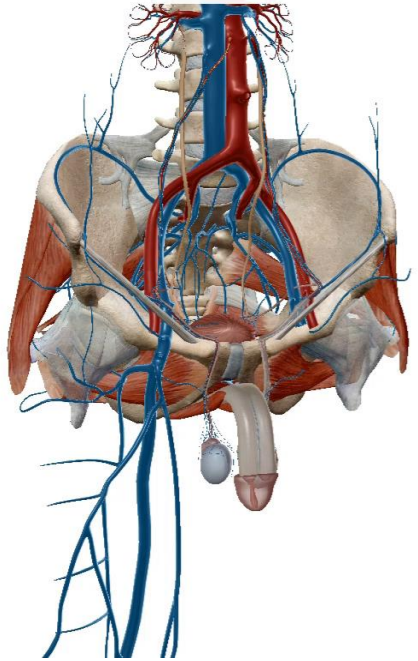

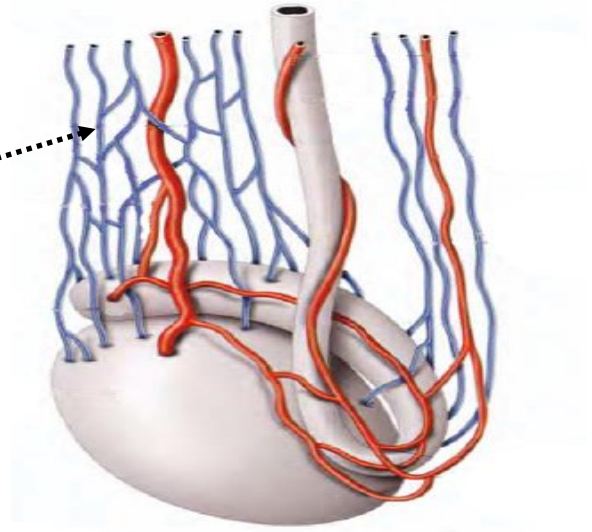

MEDIAL VIEW OF THE LEFT TESTIS SHOWING ITS BLOOD SUPPLY

II. LYMPH DRAINAGE

- Lymphatics of testis run back with the testicular artery to para-aortic nodes lying alongside the aorta at the level of origin of the testicular arteries towards L2 vertebra
- Lymphatics of ductus deferens drain into external and internal iliac nodes

III. NERVES

- **Sympathetic:**
  - -T10 segment of the cord
  - -Greater or lesser splanchnic nerve to the coeliac ganglion
  - -Postganglionic grey fibres reach the testis along the testicular artery as the testicular plexus
- **Sensory:** same way
- No parasympathetic supply

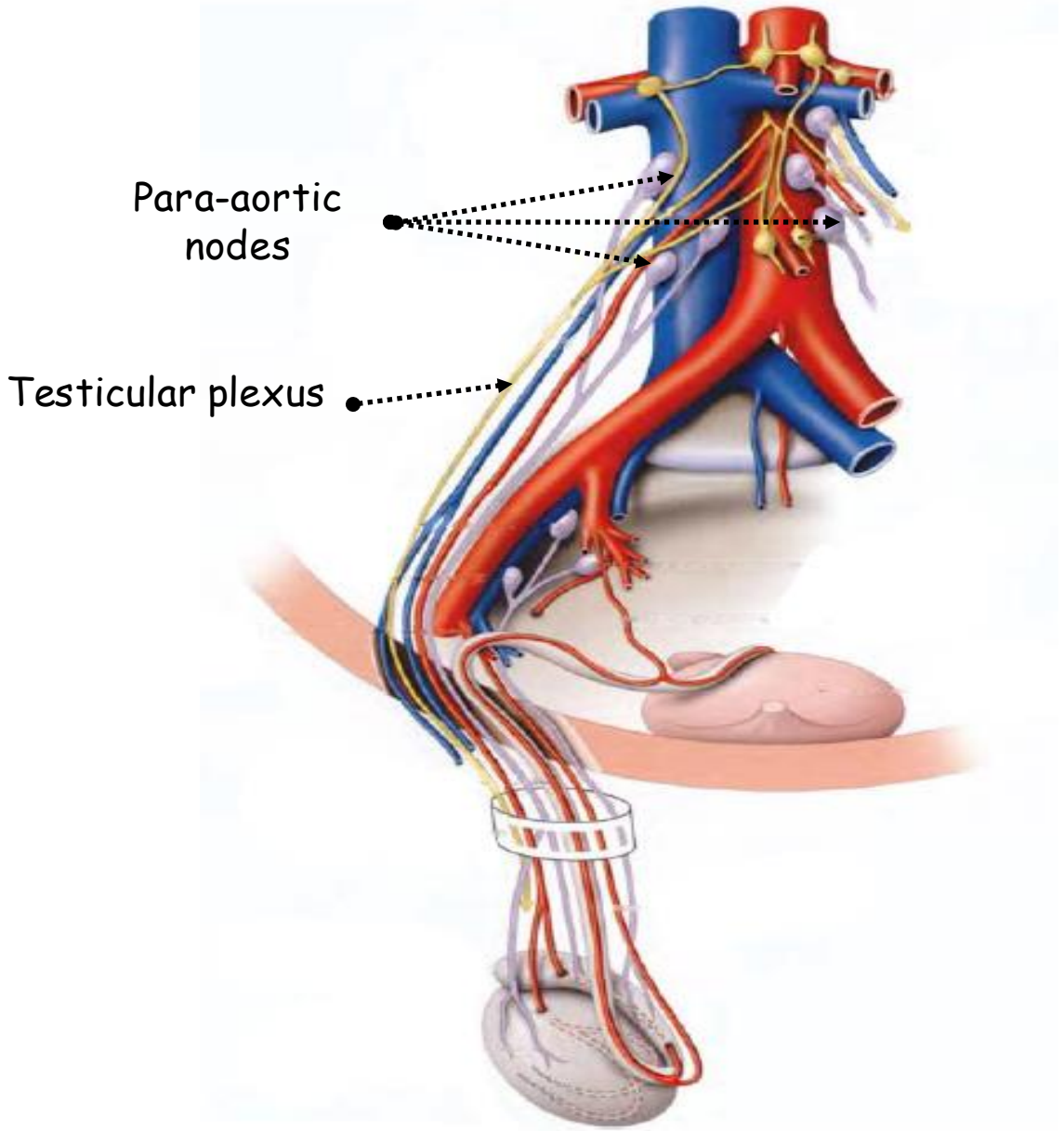

FIGURE SHOWING BLOOD SUPPLY; LYMPH DRAIANGE AND NERVE SUPPLY OF THE TESTIS

V. CONCLUSION

- Major role in spermatogenesis and thus fertilization
- Spermatozoa production and storage
- Series of highly coiled tubes
- Straddling the scrotum, the iliac fossa and the pelvis
- Several anatomical relations

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