

Male Genital Organs

**Spermatic Cord, Scrotum, Testis, Epididymis
Prostate, Vas Deferens, Seminal Vesicles &
Ejaculatory Ducts**

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2023-2024

Thursday 9 May 2024

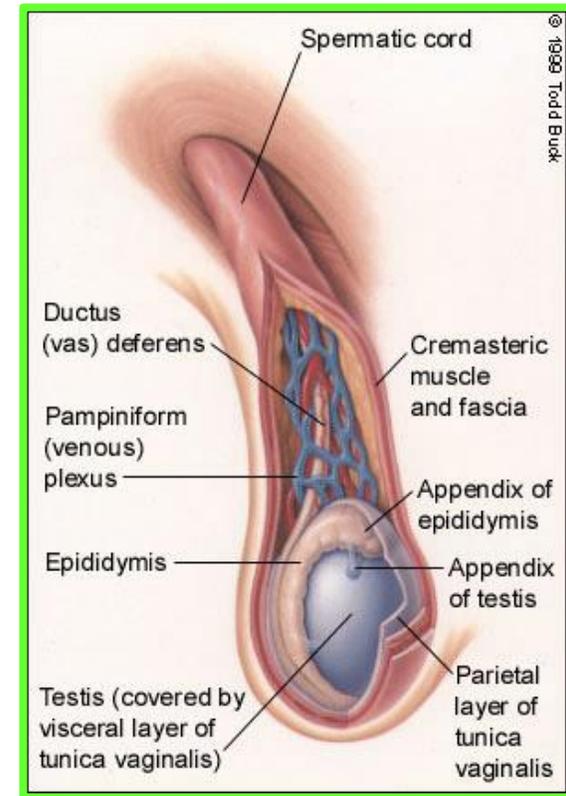
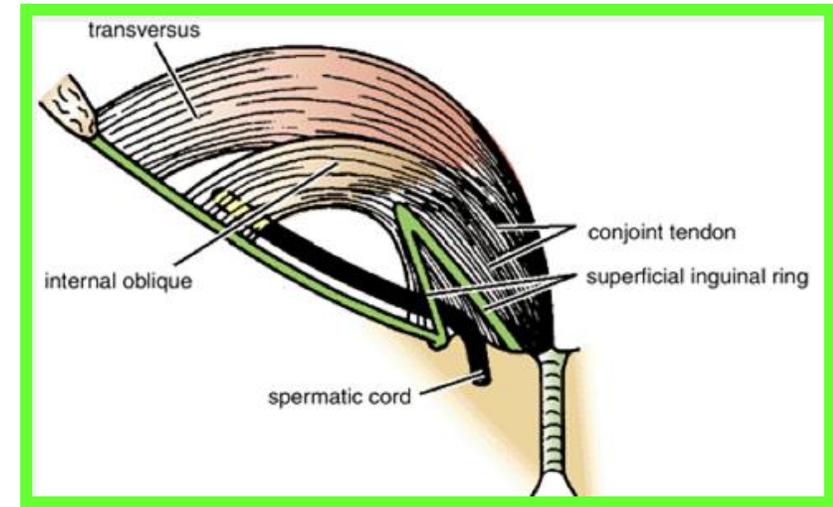
Spermatic Cord

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Is a collection of structures that pass through the inguinal canal to and from the testis. It begins at the **deep inguinal ring** lateral to the **inferior epigastric artery** and ends at the testis.

Structures of the Spermatic Cord

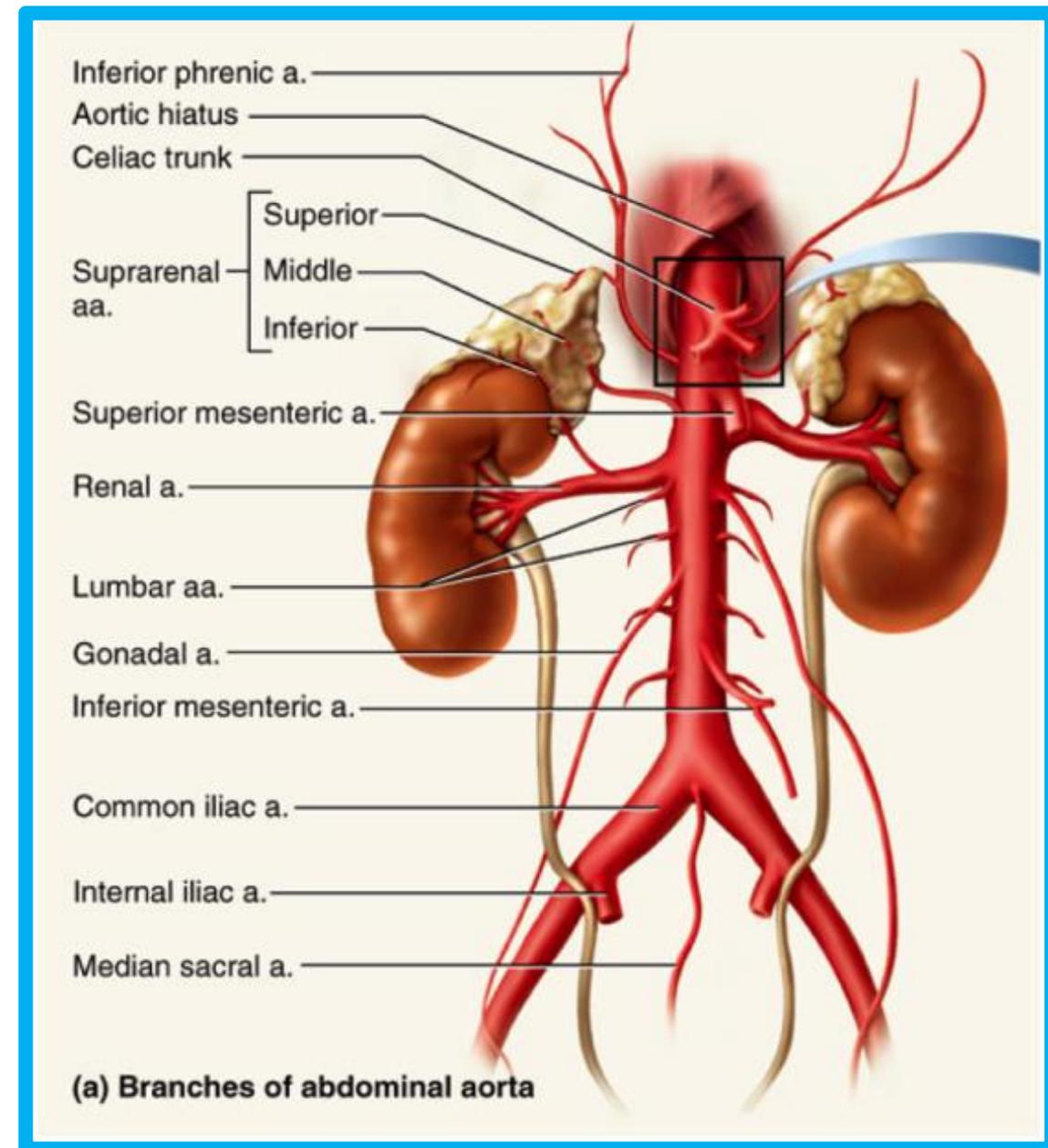
- ❖ Vas deferens
- ❖ Testicular artery
- ❖ Testicular veins (pampiniform plexus)
- ❖ Testicular lymph vessels
- ❖ Autonomic nerves
- ❖ Remains of the processus vaginalis
- ❖ Genital branch of the genitofemoral nerve, which supplies the cremasteric muscle



❖ Testicular Artery

❑ A branch of **the abdominal aorta** (at the level of the **second lumbar vertebra**), **the testicular artery** is long and slender and descends on the posterior abdominal wall.

❑ It traverses the inguinal canal and supplies **the testis** and **the epididymis**

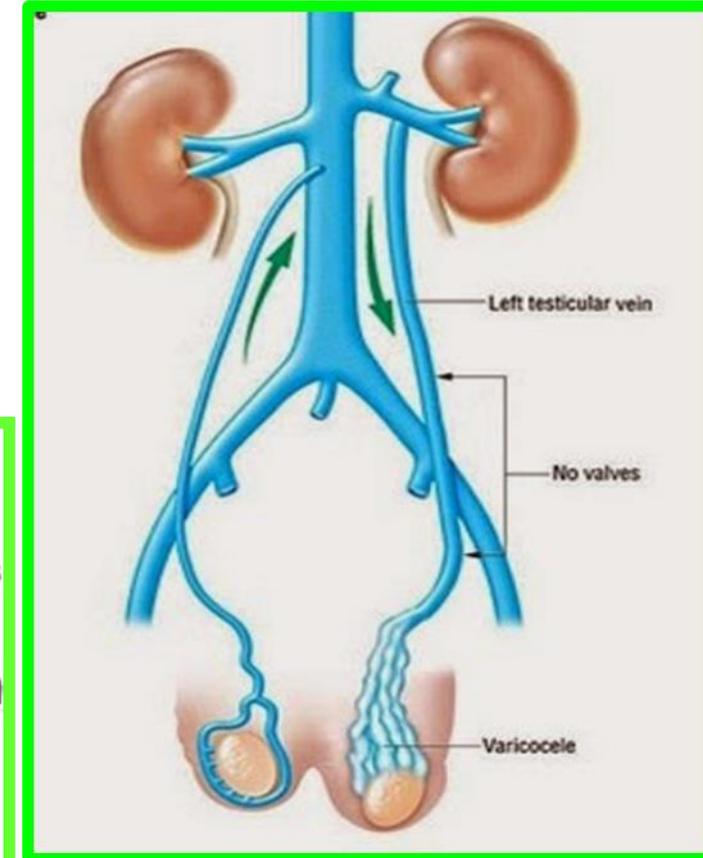
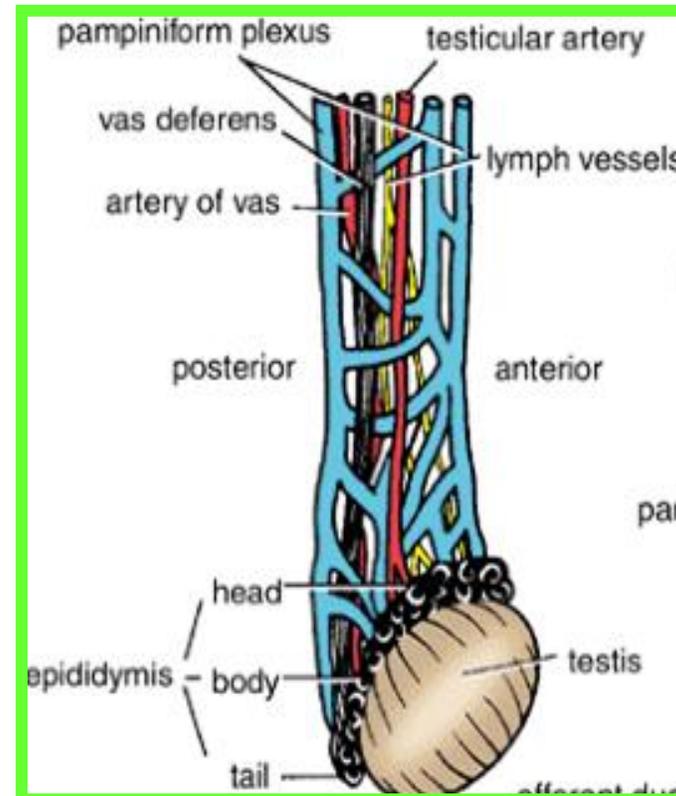


❖ Testicular Veins

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□ An extensive venous plexus, the **pampiniform plexus**, leaves the posterior border of the testis as the plexus ascends, it becomes reduced in size so that at about the level of the deep inguinal ring, **a single testicular vein** is formed.

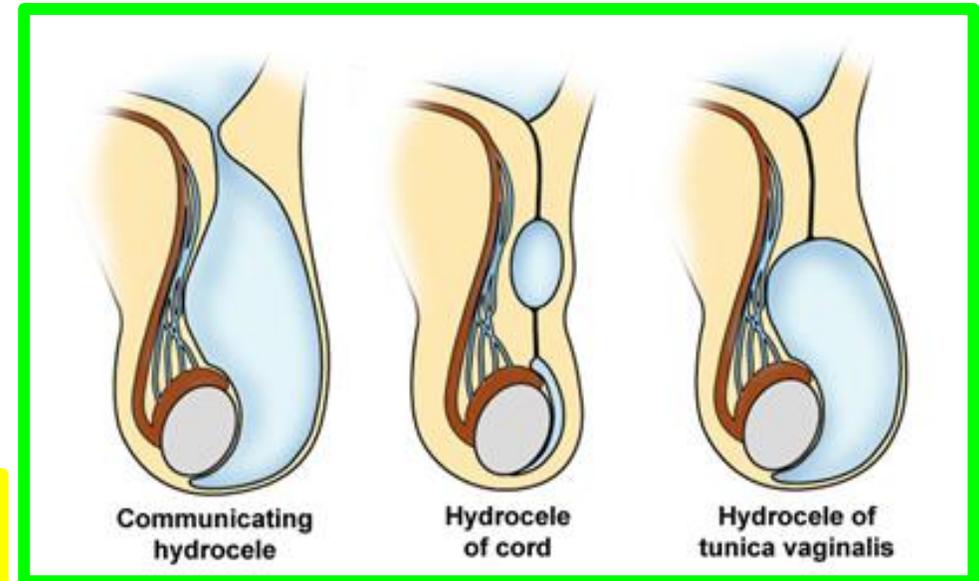
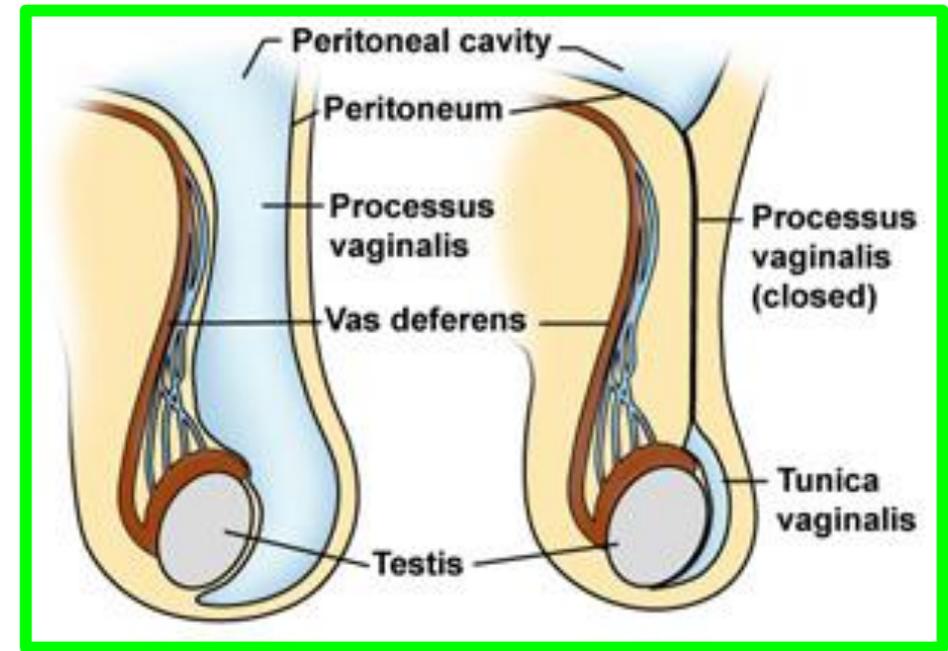
□ This runs up on the posterior abdominal wall and drains into the **left renal vein** on the left side and into the **inferior vena cava** on the right side



Varicocele ????

❖ Processus Vaginalis

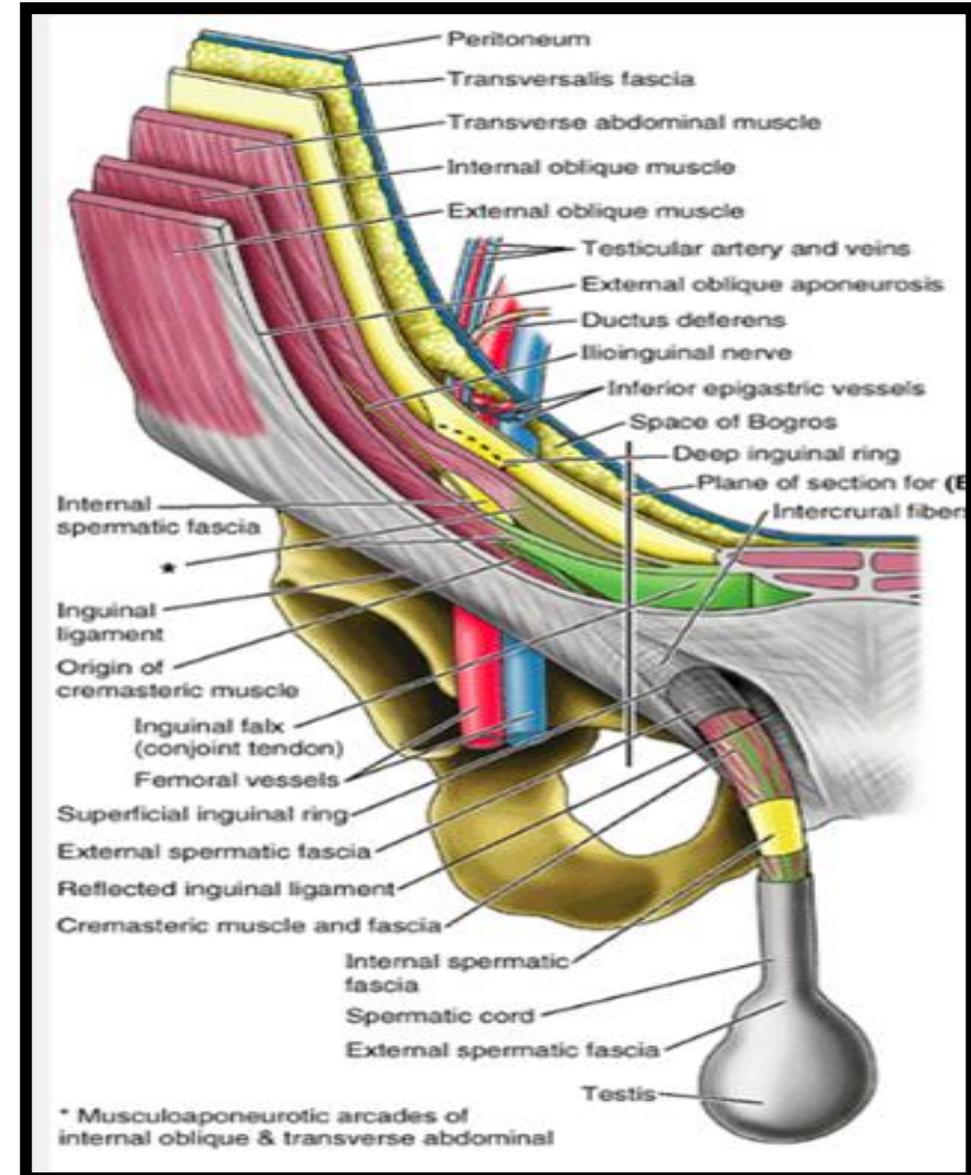
The remains of the processus vaginalis are present within the cord



Hydrocele of Spermatic Cord and/or Testis ????

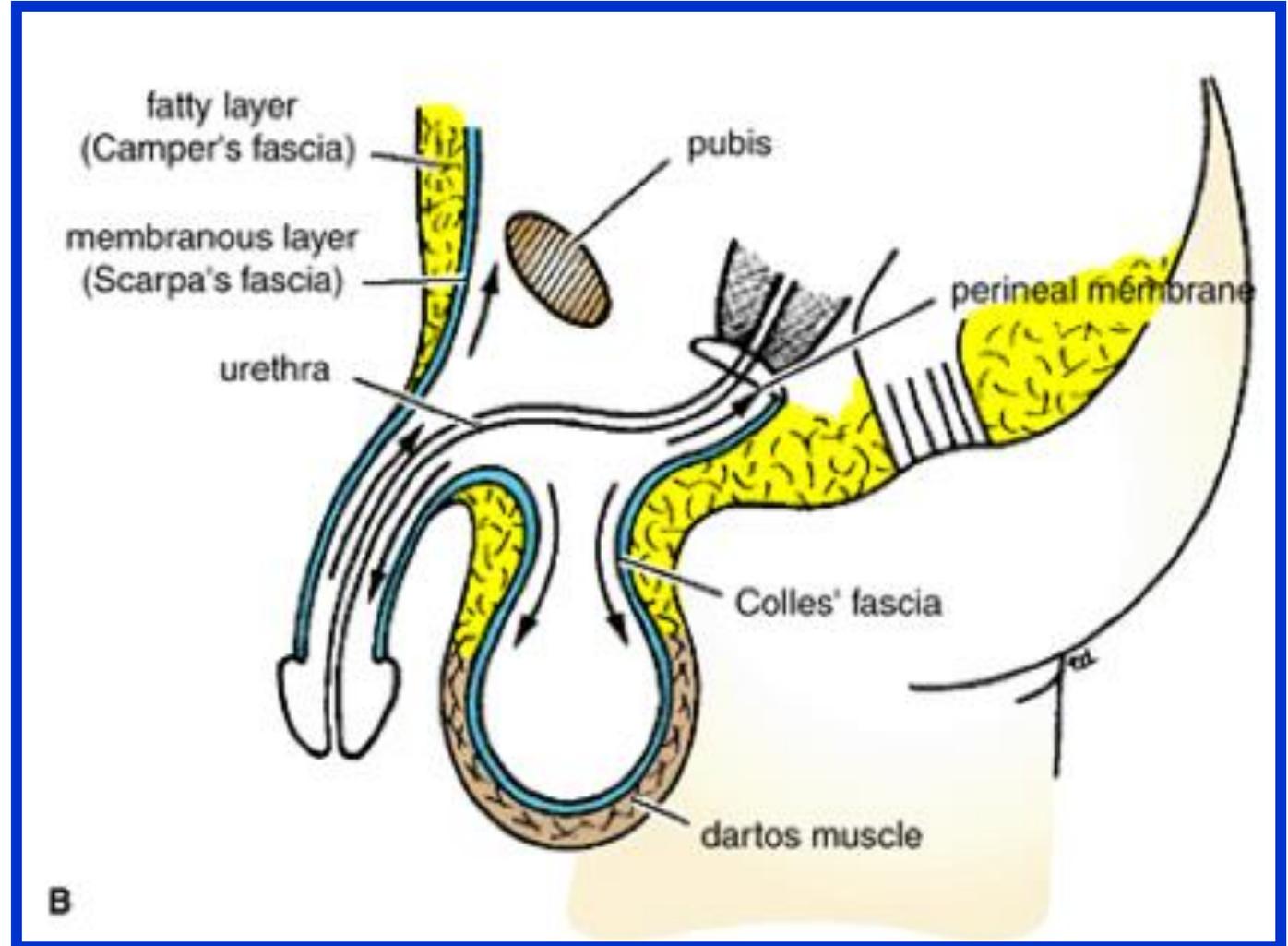
Coverings of the Spermatic Cord (the Spermatic Fasciae)

- ✓ **External spermatic fascia** derived from the external oblique aponeurosis and attached to the margins of the **superficial inguinal ring**
- ✓ **Cremasteric fascia** derived from the internal oblique muscle
- ✓ **Internal spermatic fascia** derived from the fascia transversalis and attached to the margins of the **deep inguinal ring**



Scrotum

The scrotum is an outpouching of the lower part of the anterior abdominal wall and contains the **testes**, the **epididymides**, and the **lower ends of the spermatic cords**.



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Scrotum

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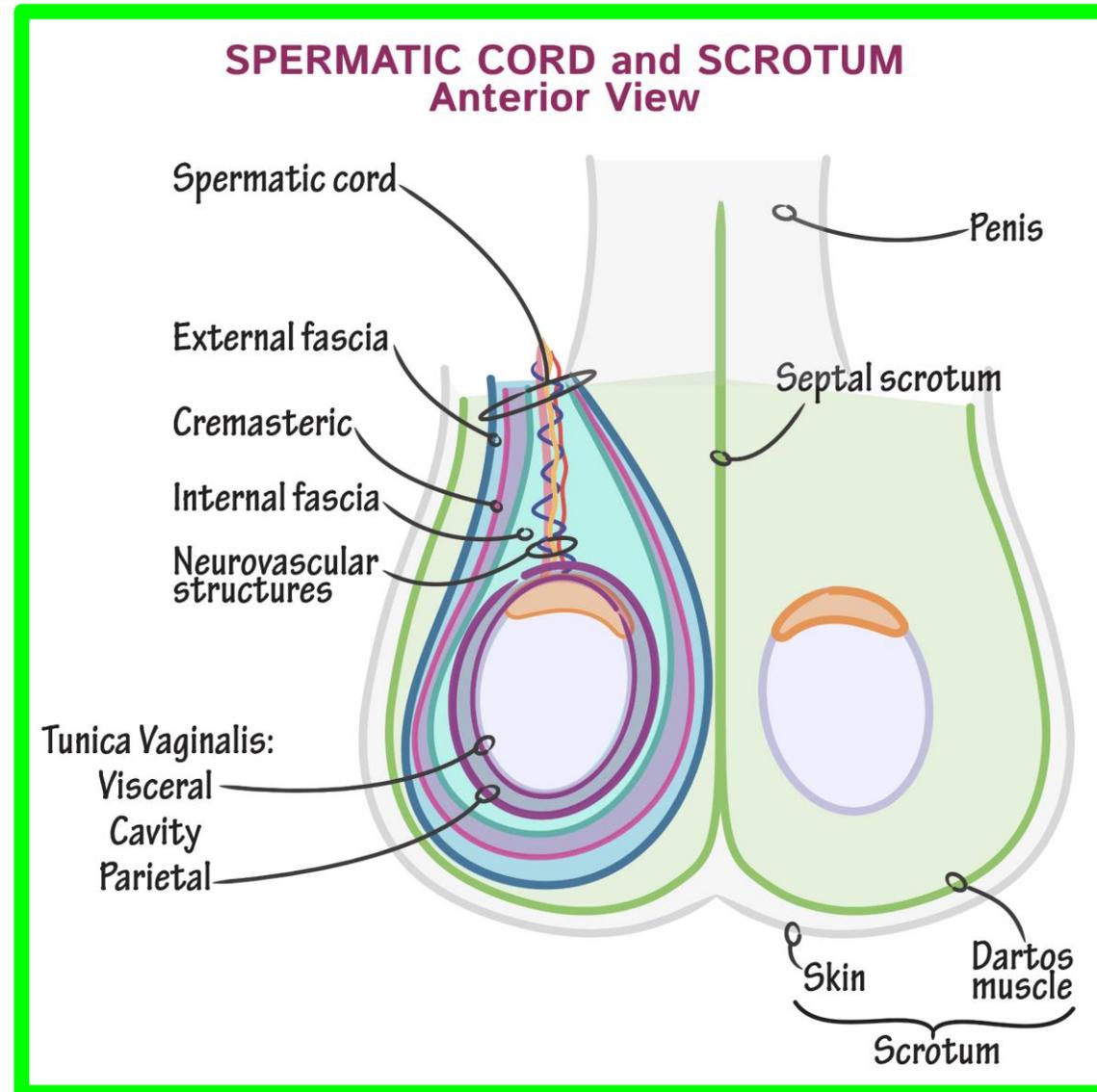
The wall of the scrotum has the following layers:

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- ❖ **Skin**
- ❖ **Superficial fascia;**
 - ✓ The **dartos muscle**, replaces the fatty (camper fascia), and
 - ✓ The membranous layer (Scarpa's fascia) is now called **Colles' fascia**.

❖ **External spermatic fascia** derived from the **external oblique**

❖ **Cremasteric fascia** derived from the **internal oblique**



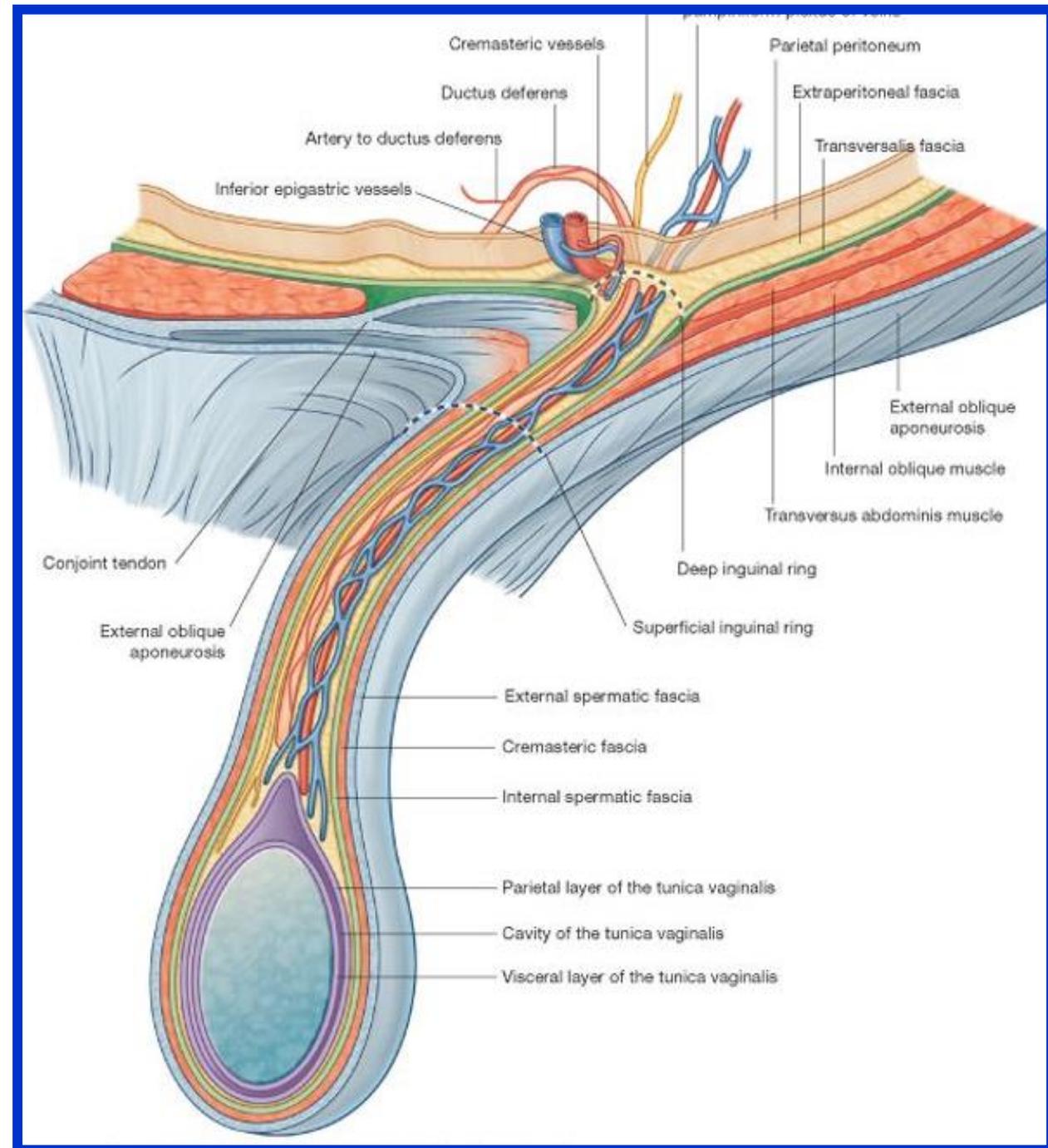
Scrotum

The wall of the scrotum:

- ❖ **Internal spermatic fascia** derived from the **fascia transversalis**
- ❖ **Tunica vaginalis**, which is a **closed sac** that covers the anterior, medial, and lateral surfaces of each testis

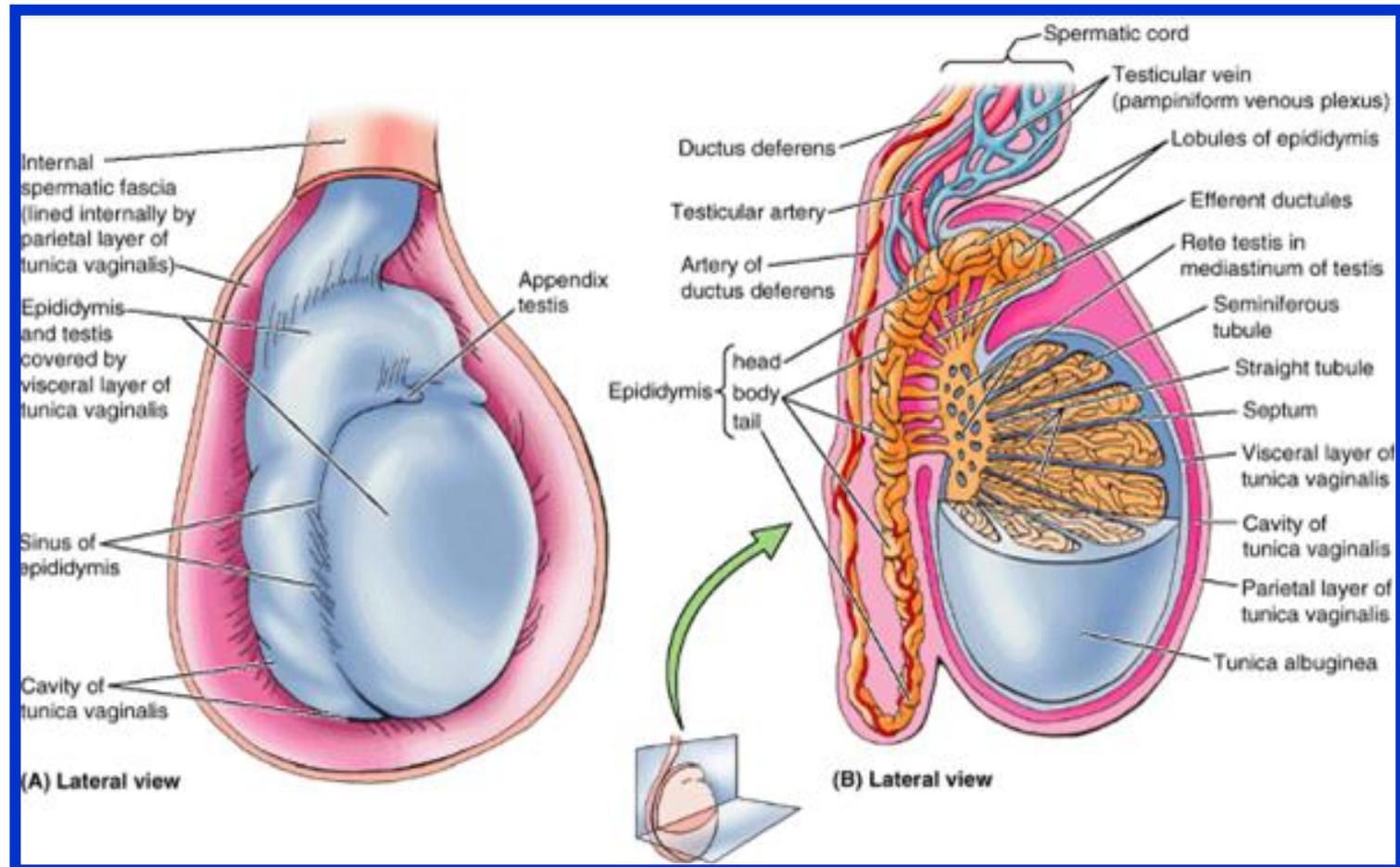
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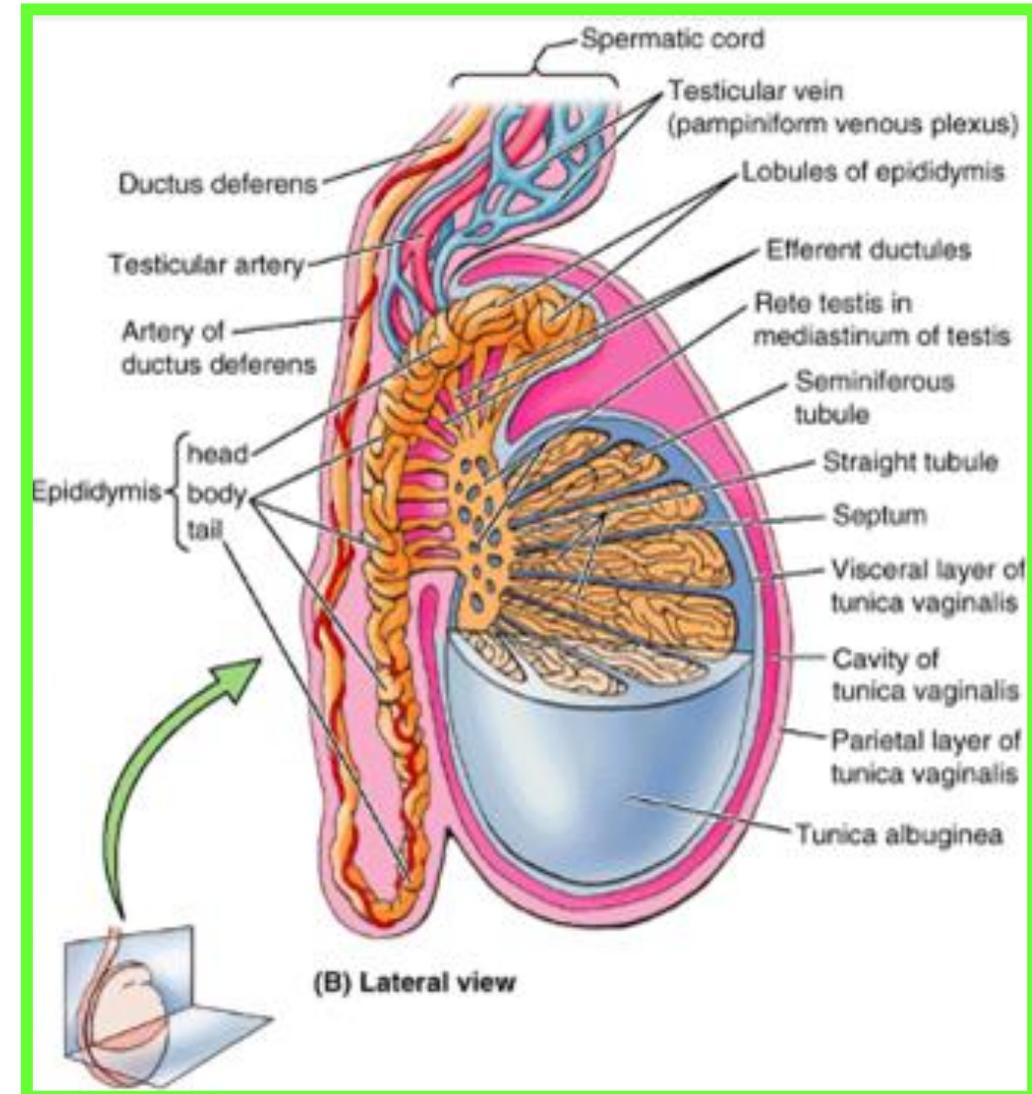
Testis

- The testis is a firm, mobile organ lying within the scrotum.
- The left testis usually lies at a lower level than the right.
- Each testis is surrounded by a tough fibrous capsule, **the tunica albuginea**



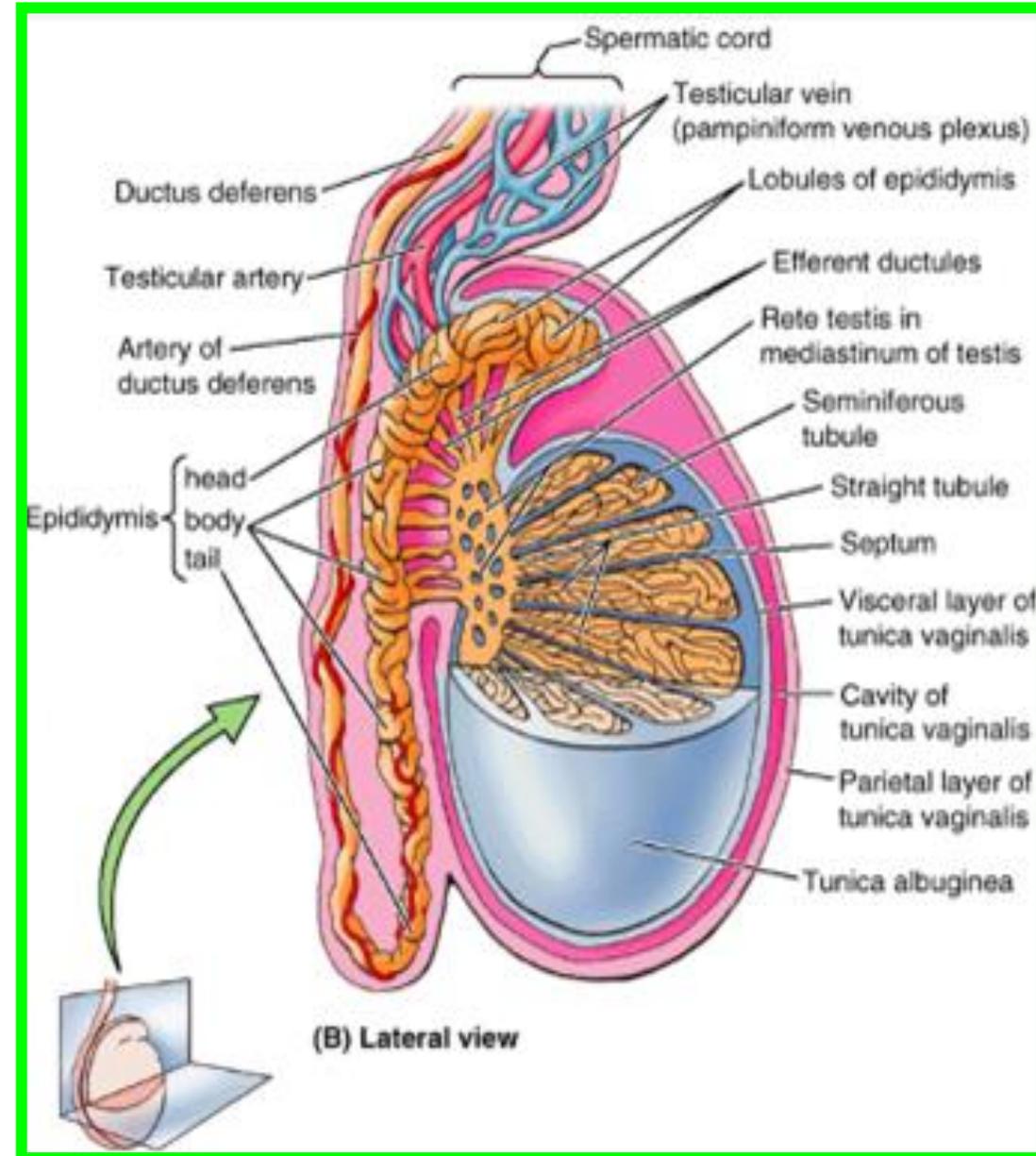
Testis

- ✓ Extending from the inner surface of the capsule is a series of fibrous septa that divide the interior of the organ into **lobules**.
- ✓ Lying within each lobule are one to three coiled **seminiferous tubules**.
- ✓ The tubules open into a network of channels called the **rete testis**.
- ✓ Small **efferent ductules** connect the rete testis to the upper end of the **epididymis**



Epididymis

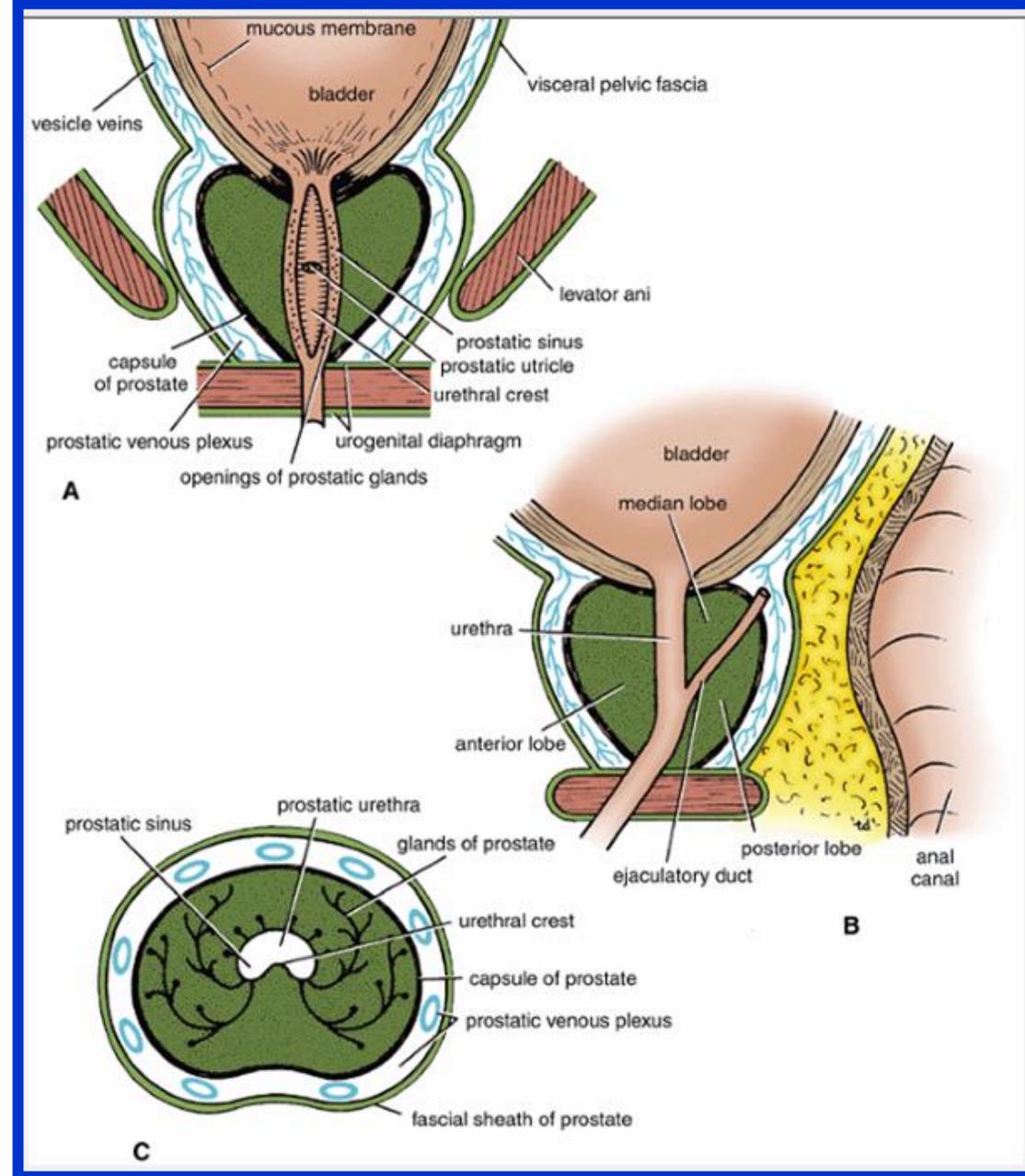
- ❑ The epididymis is a firm structure lying posterior to the testis, with the vas deferens lying on its medial side
- ❑ It has an expanded upper end, **the head**, **a body**, and a pointed **tail** inferiorly.
- ❑ Laterally, a distinct groove lies between the testis and the epididymis, which is lined with the inner visceral layer of the tunica vaginalis and is called the **sinus of the epididymis**.



Male Genital Organs

Prostate

- ❖ The prostate is a **fibromuscular glandular organ** that surrounds the prostatic urethra
- ❖ The glandular part makes up approximately **two thirds** of the prostate; the **other third** is fibromuscular.
- ❖ It is about **1.25 in. (3 cm)** long and lies between:
The neck of the bladder above and **The Urogenital diaphragm** below

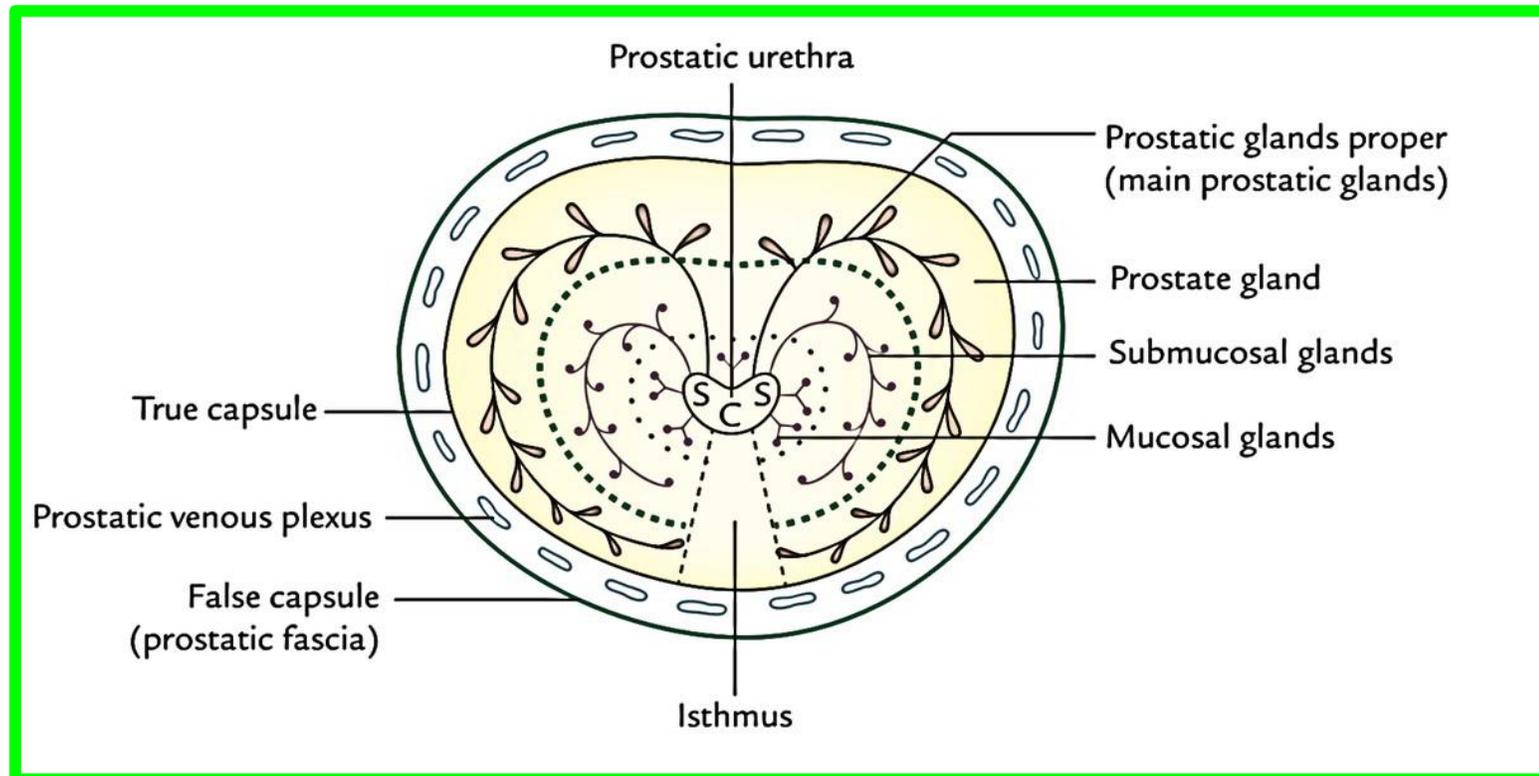


Prostate

** The prostatic capsule:

- 1- **True capsule:** thin fibrous sheath surrounds the gland.
- 2- **False capsule:** the visceral layer of pelvic fascia.(continuous anterolaterally with the **puboprostatic ligaments**, and dense posteriorly, continuous with **the rectovesical septum**).

The prostatic venous plexus lies between both capsules.



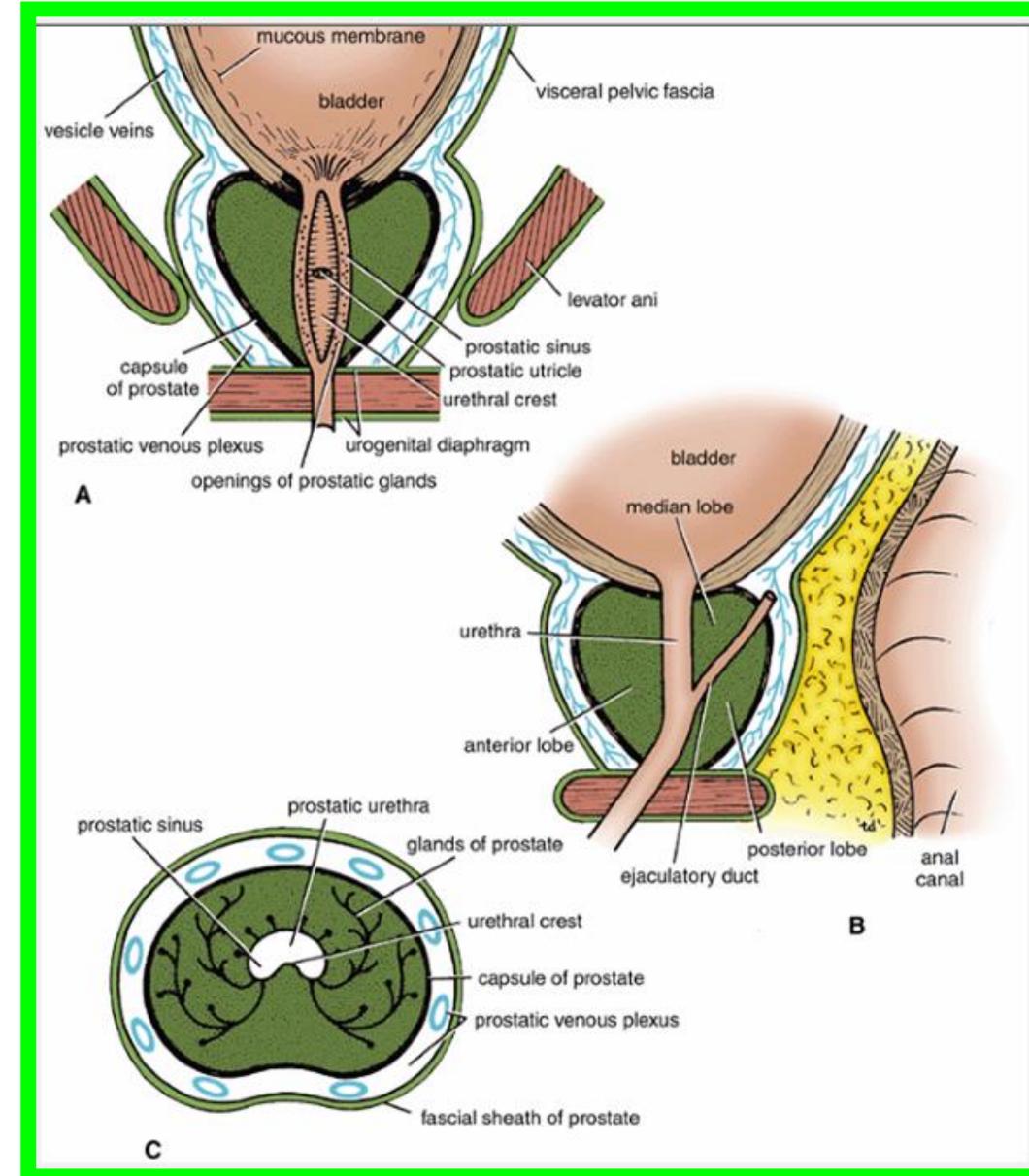
Prostate

❖ The somewhat conical prostate has:

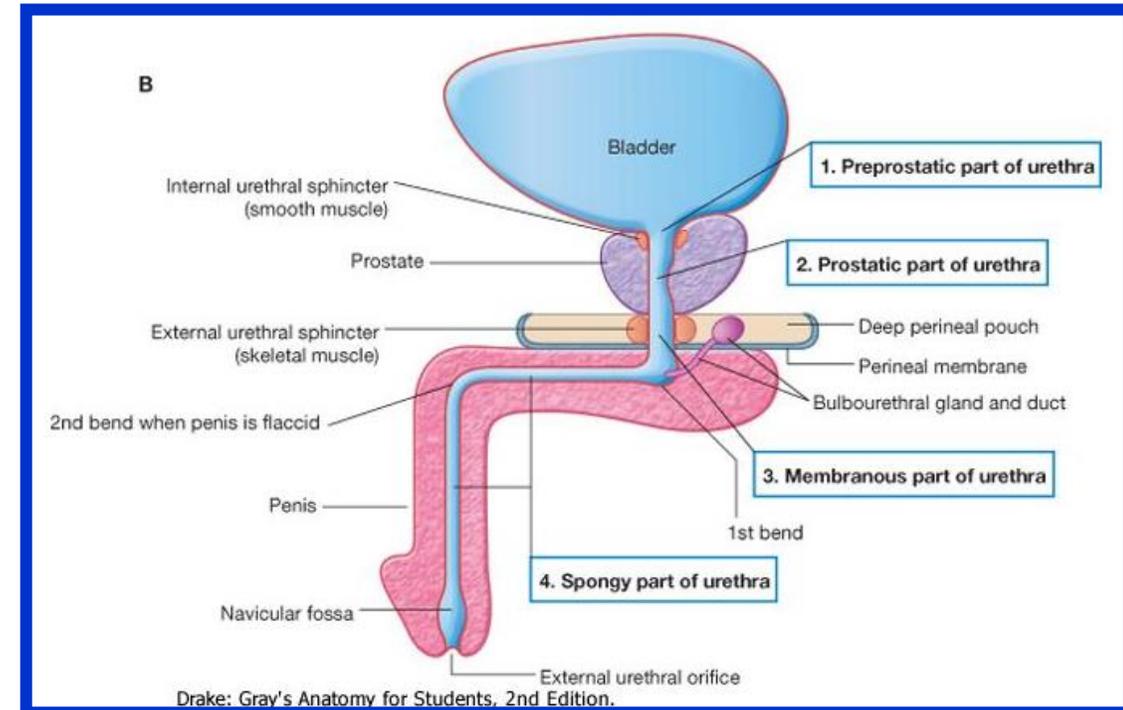
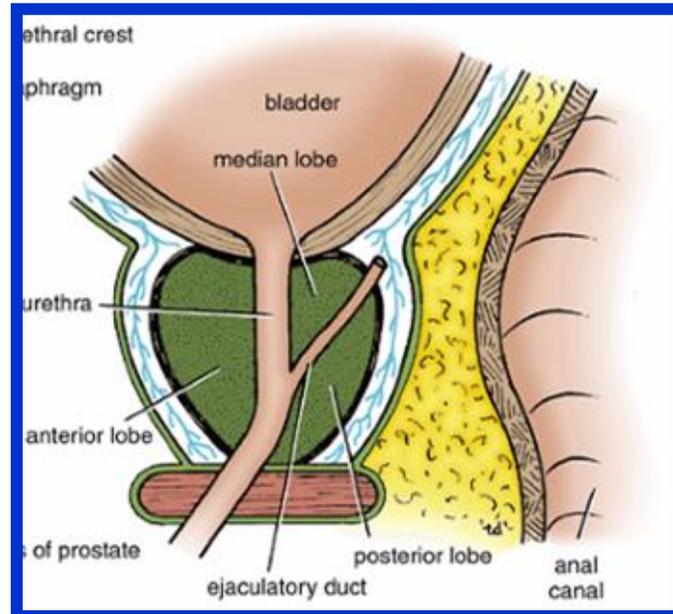
❖ **A base**, which lies **against the bladder neck** above

❖ **An apex**, which lies **against the urogenital diaphragm** below.

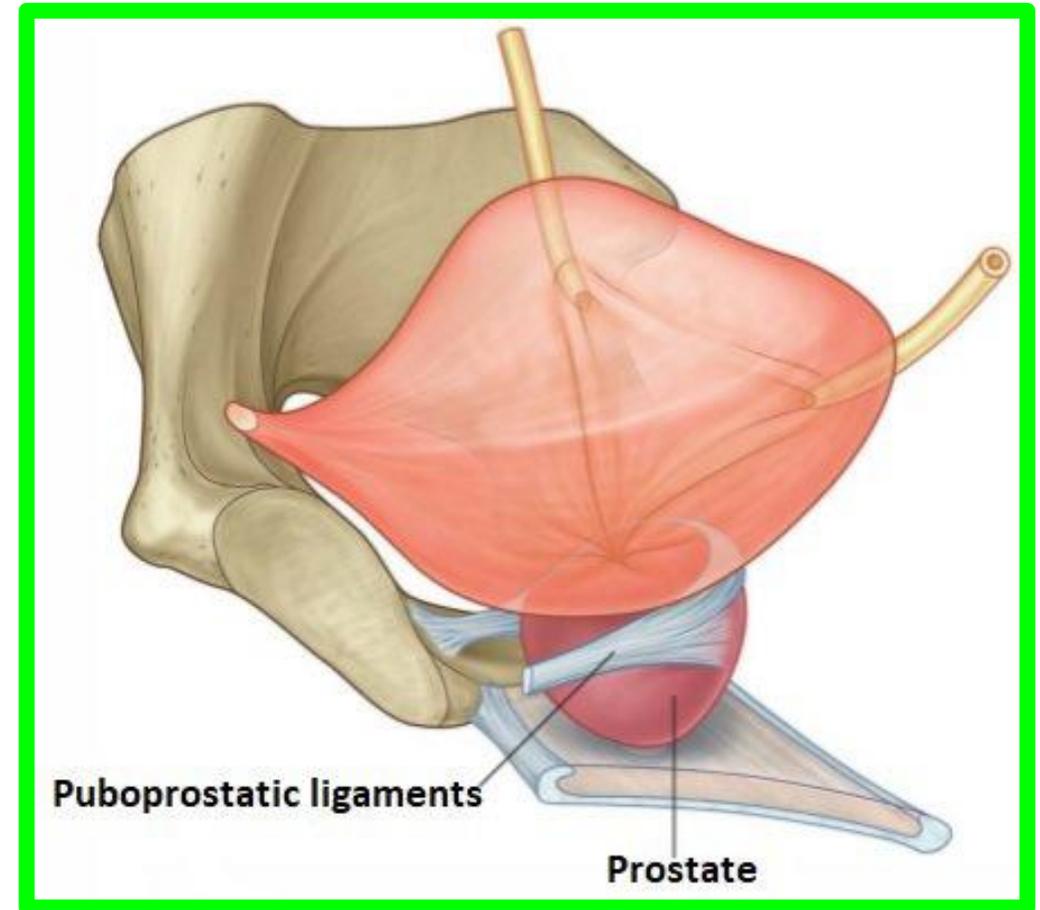
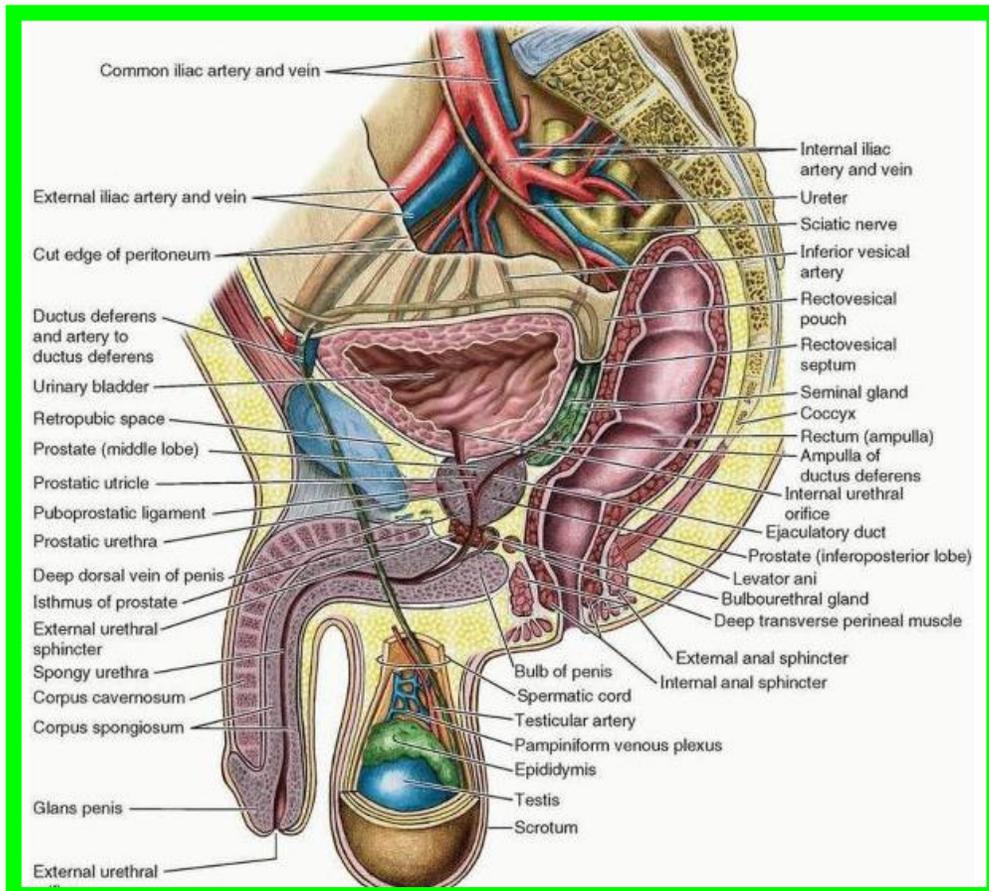
□ **The two ejaculatory ducts** pierce the upper part of the posterior surface of the prostate to open into **the prostatic urethra** at the lateral margins of **the prostatic utricle**.



- ❖ **Superiorly:** The base of the prostate is continuous with the neck of the bladder, the smooth muscle passing without interruption from one organ to the other.
- ❖ The urethra enters the center of the base of the prostate
- ❖ **Inferiorly:** The apex of the prostate lies on the upper surface of the urogenital diaphragm. The urethra leaves the prostate just above the apex on the anterior surface



- ❖ **Anteriorly:** The prostate is related to **the symphysis pubis**, separated from it by the extraperitoneal fat in the retropubic space (**cave of Retzius**).
- ❖ The prostate is connected to the posterior aspect of the pubic bones by **the fascial puboprostatic ligaments**

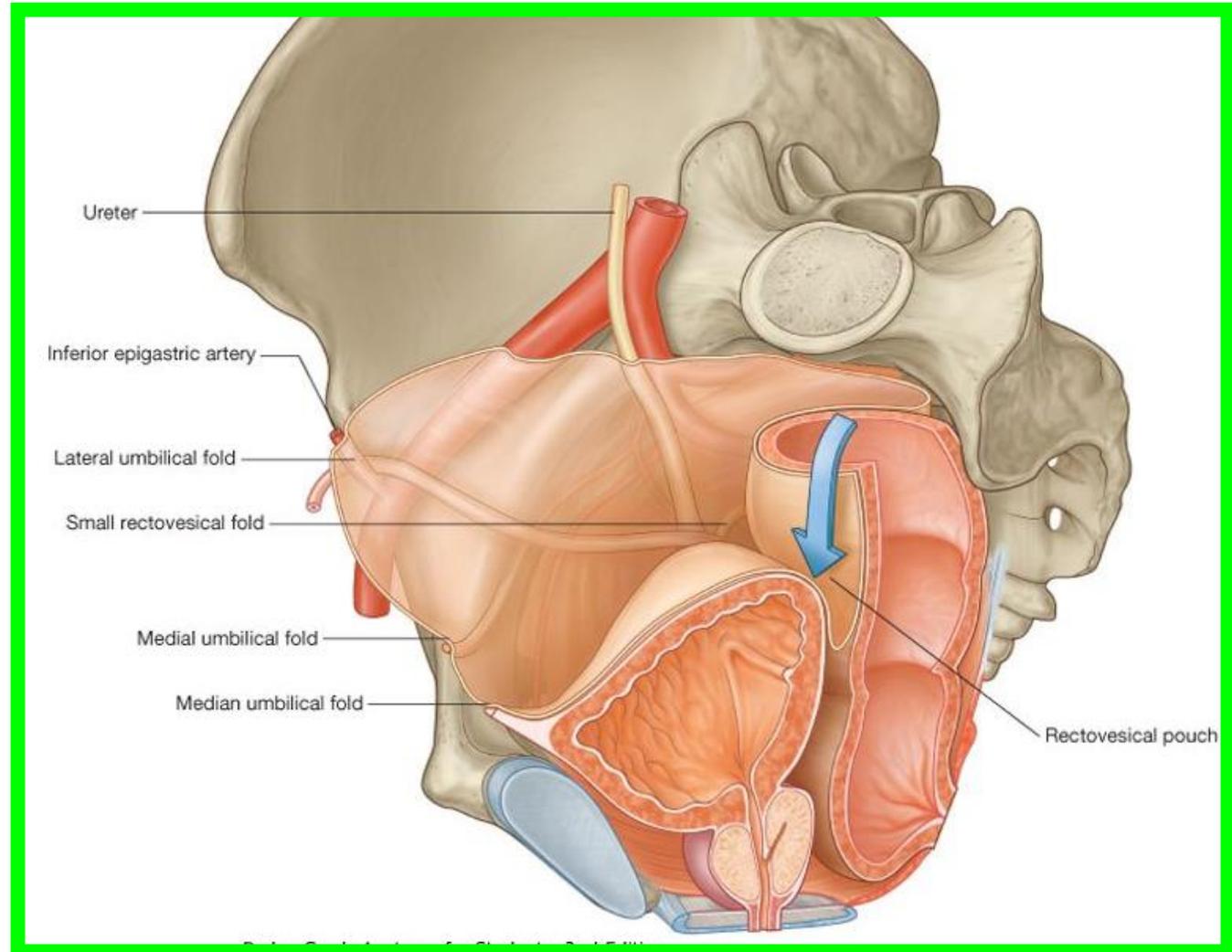


Prostate

- ❖ **Posteriorly:** The prostate is closely related to the anterior surface of **the rectal ampulla** and is separated from it by **the Rectovesical septum (fascia of Denonvilliers)**

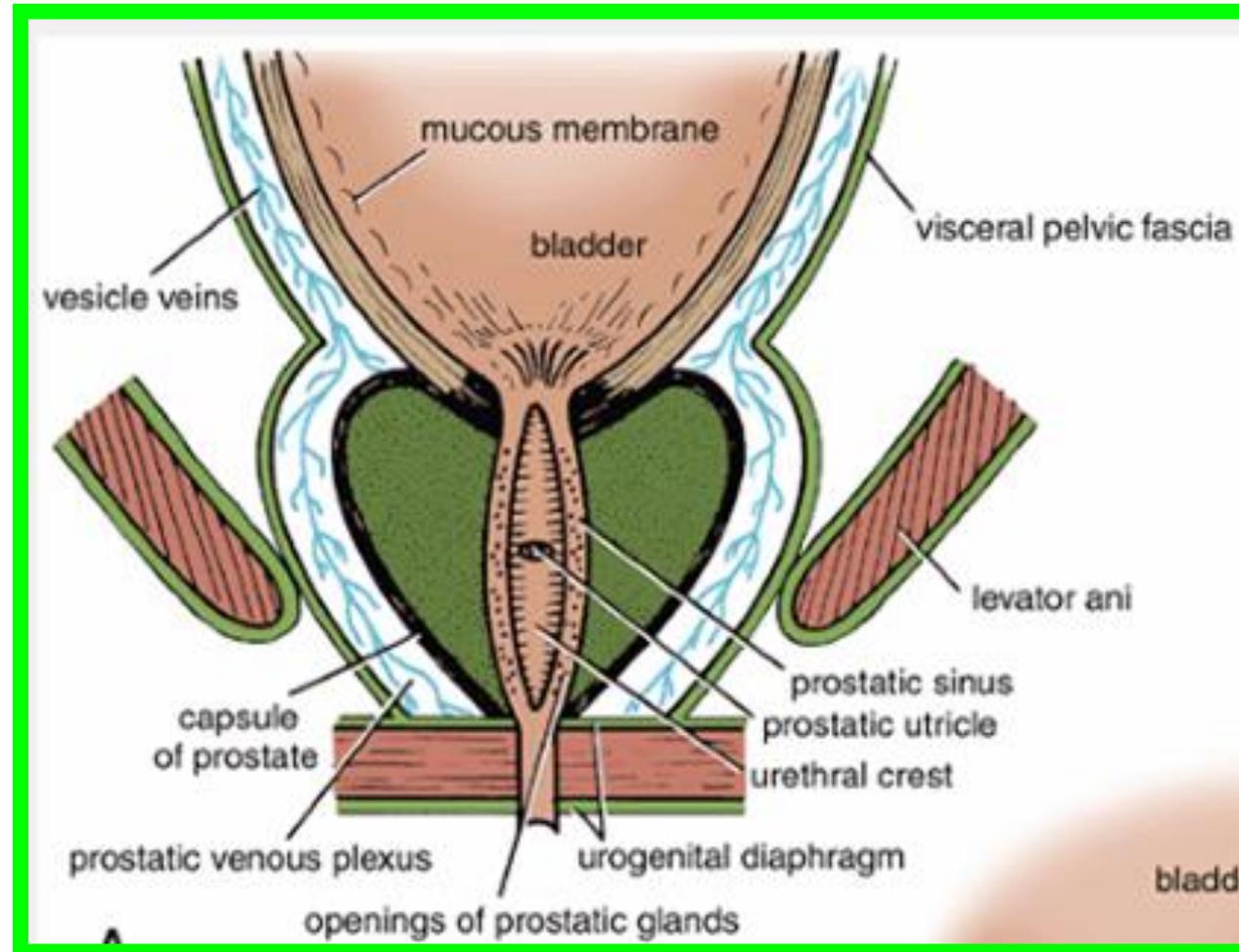
This septum is formed in fetal life by the fusion of the walls of the lower end of the Rectovesical pouch of peritoneum, which originally extended down to **the perineal body**

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Prostate

- ❖ **Laterally:** The prostate is embraced by the anterior fibers of the **levator ani** as they run posteriorly from the pubis



** Structures of the Prostate:

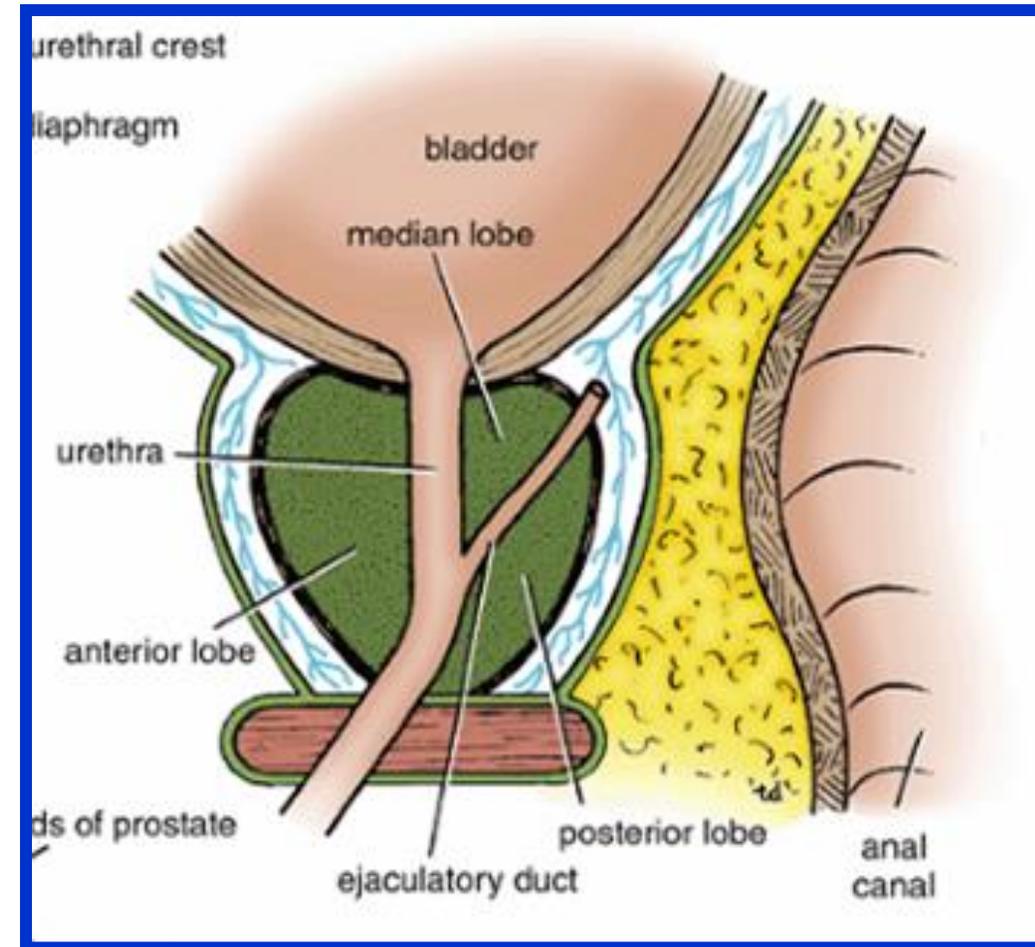
1- **Glandular tissues** are formed of glands. Their ducts open into the prostatic sinus.

2- **Muscular tissue** are arranged into 3 layers:

A. Peripheral, immediately beneath the fibrous capsule.

B. Central, around the urethra

C. Intermediate layer form meshes in which the glandular structure embedded.



Prostate

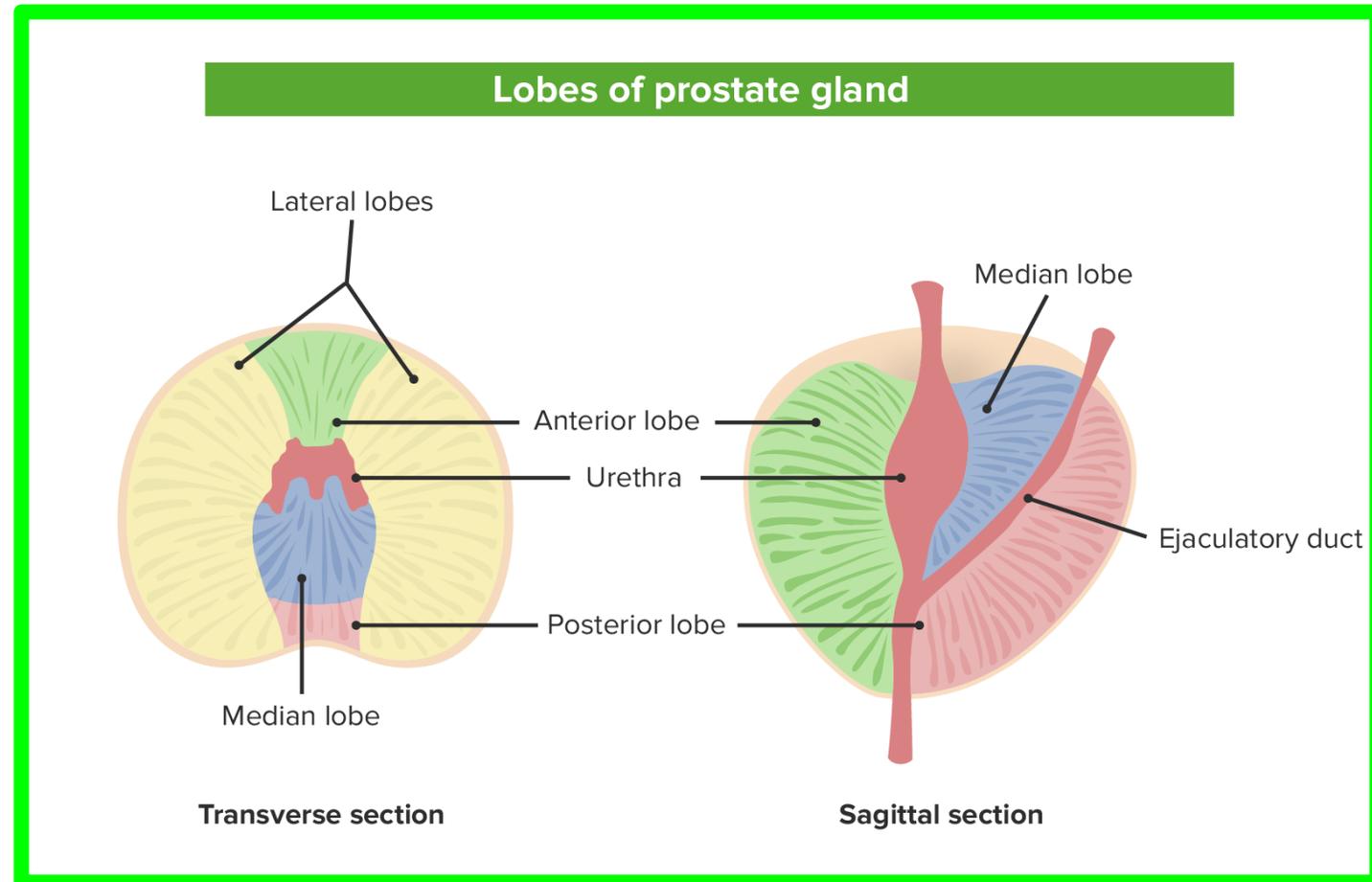
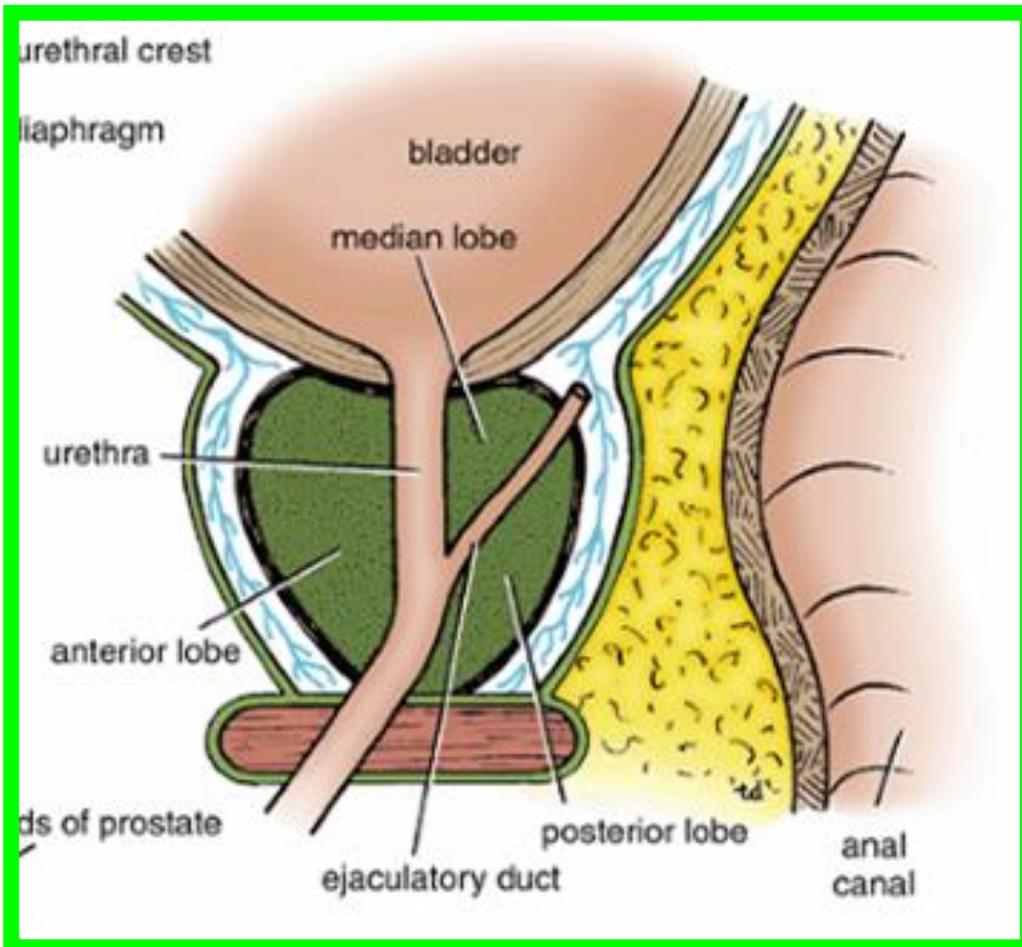
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❖ The prostate is incompletely divided into five lobes.

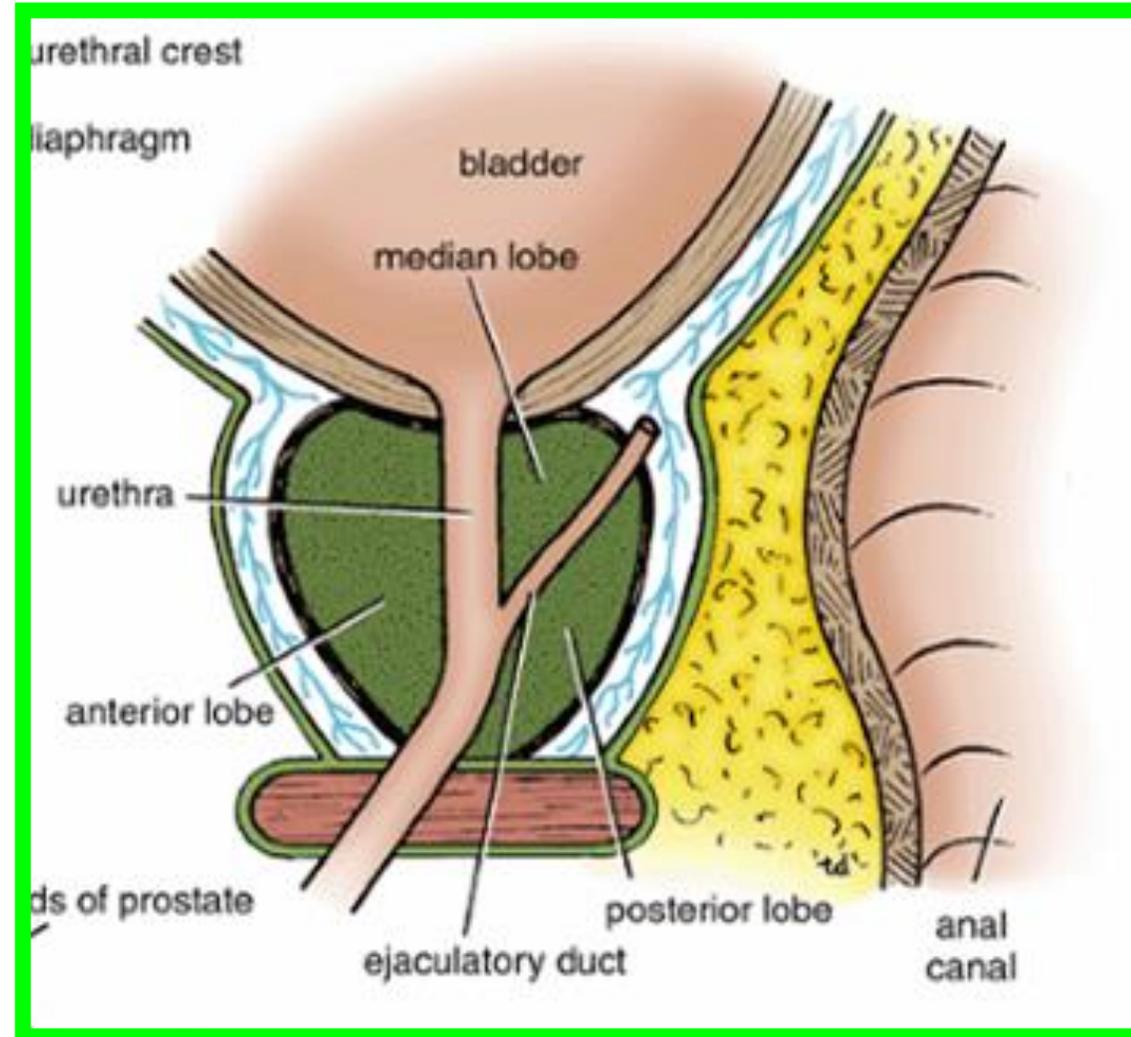
❖ The **anterior lobe** lies in front of **the urethra** and is devoid of glandular tissue..



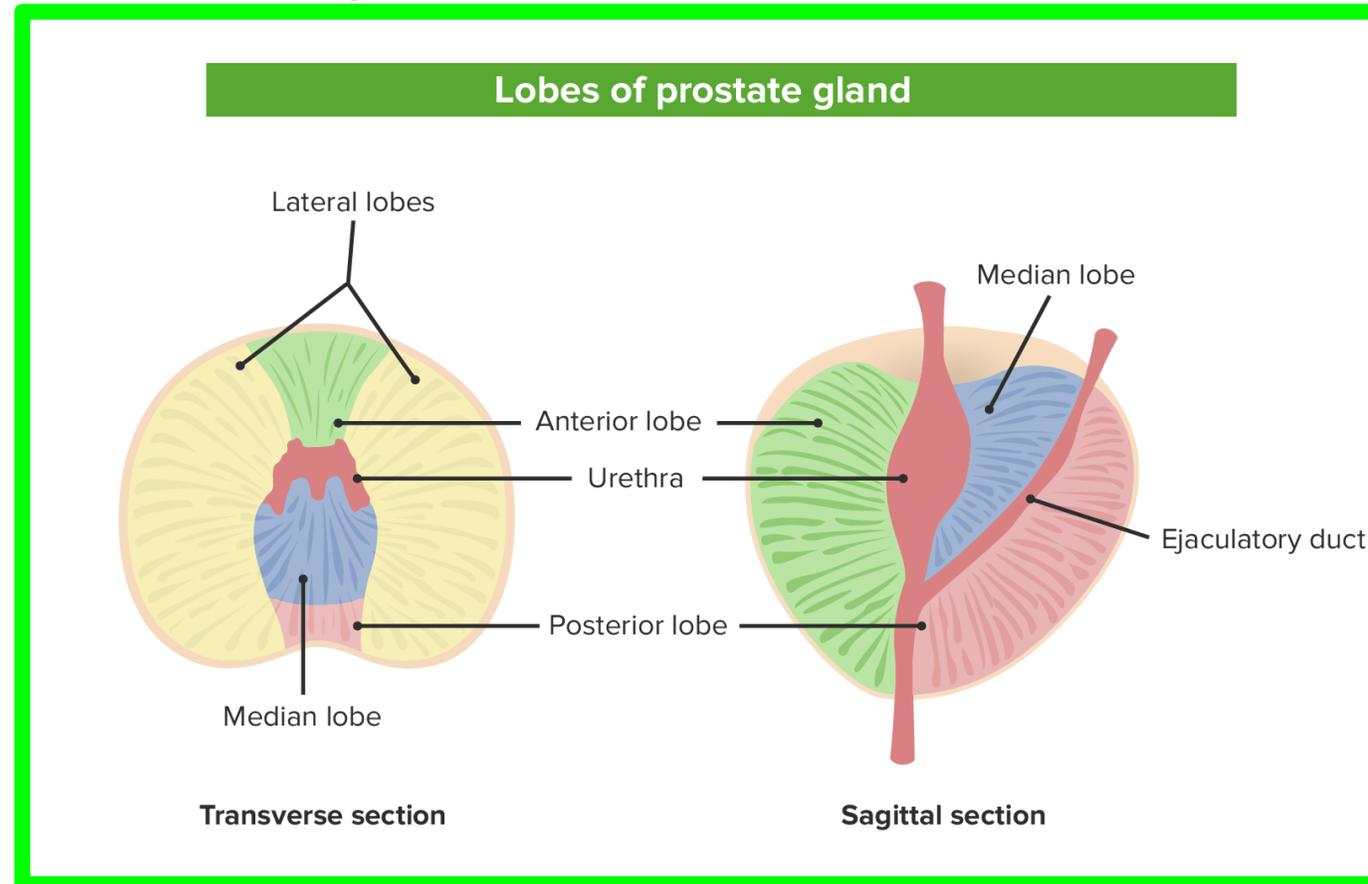
Prostate

❖ **The median, or middle lobe** is the wedge of gland situated between **the urethra** and **the ejaculatory ducts**. Its upper surface is related to the trigone of the bladder; it is rich in glands.

❖ **The posterior lobe** is situated behind **the urethra** and below the **ejaculatory ducts** and also contains glandular tissue. (is readily palpable by digital rectal examination).



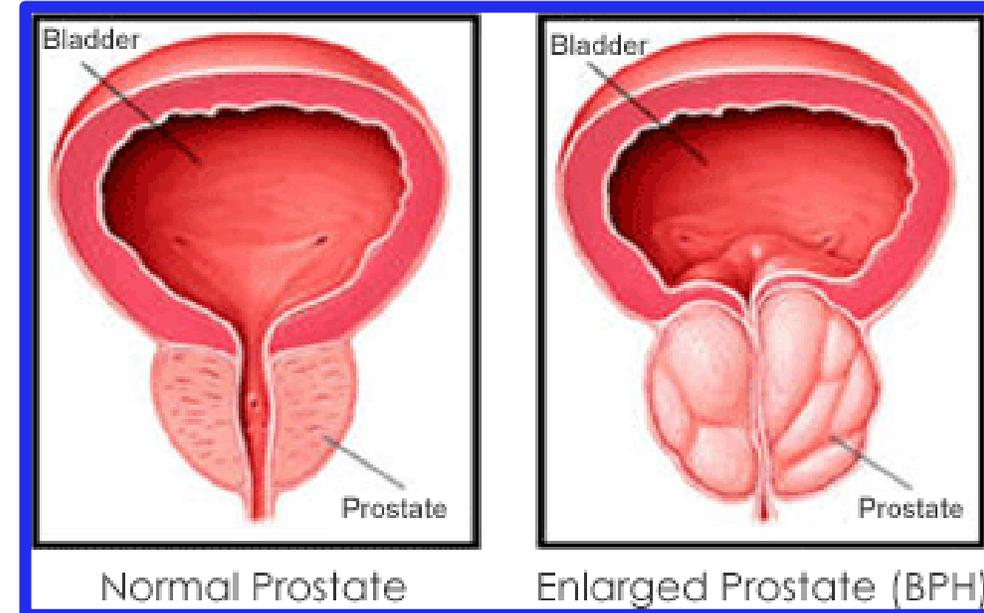
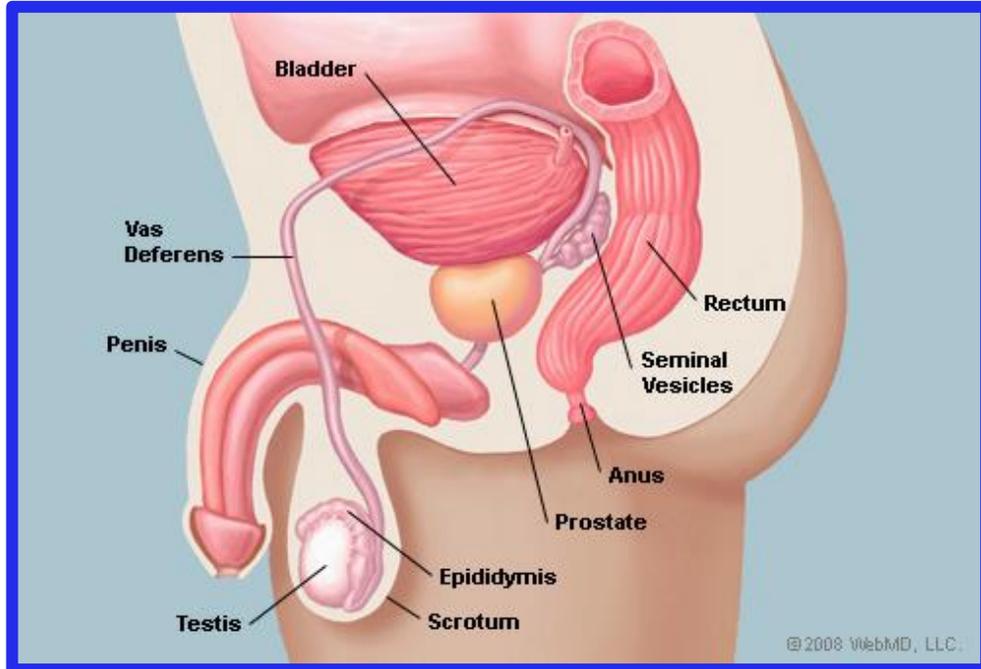
- ❖ **The right and left lateral lobes** lie on either side of the urethra and are separated from one another by a **shallow vertical groove** on the posterior surface of the prostate.
- ❖ The lateral lobes **contain many glands**.



Male Genital Organs

Function of the Prostate

- ✓ The prostate produces a thin, milky fluid containing citric acid and acid phosphatase that is added to the seminal fluid **at the time of ejaculation**.
- ✓ The smooth muscle, which surrounds the glands, **squeezes the secretion into the prostatic urethra**.
- ✓ The prostatic secretion is alkaline and helps **neutralize the acidity in the vagina**.
- ✓ Prostatic fluid provides **about 15–30%** of the volume of semen.

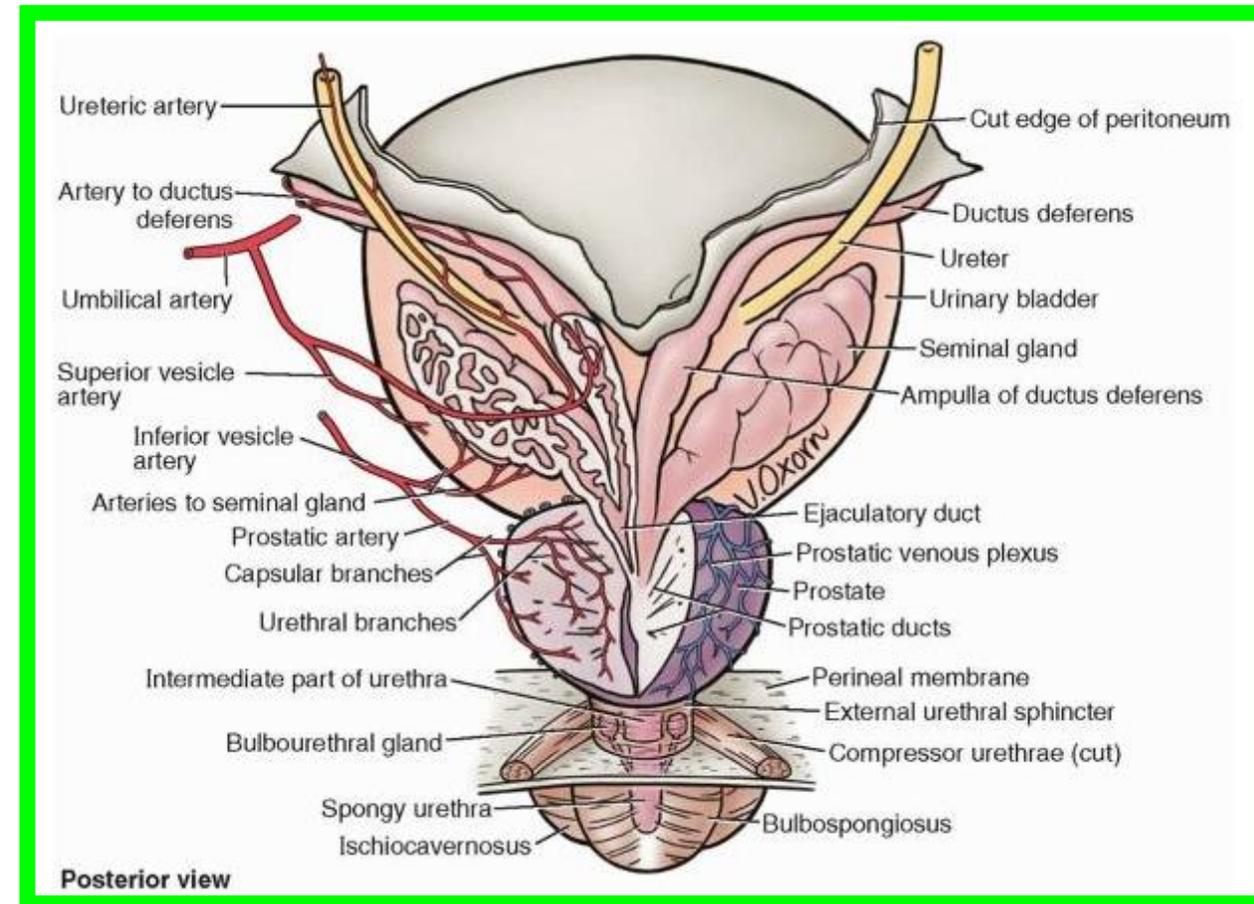


Prostate

** Arterial supply

The prostatic arteries are mainly branches of the internal iliac artery especially:

- ❖ the inferior vesical arteries and also
- ❖ the internal pudendal
- ❖ the middle rectal arteries.



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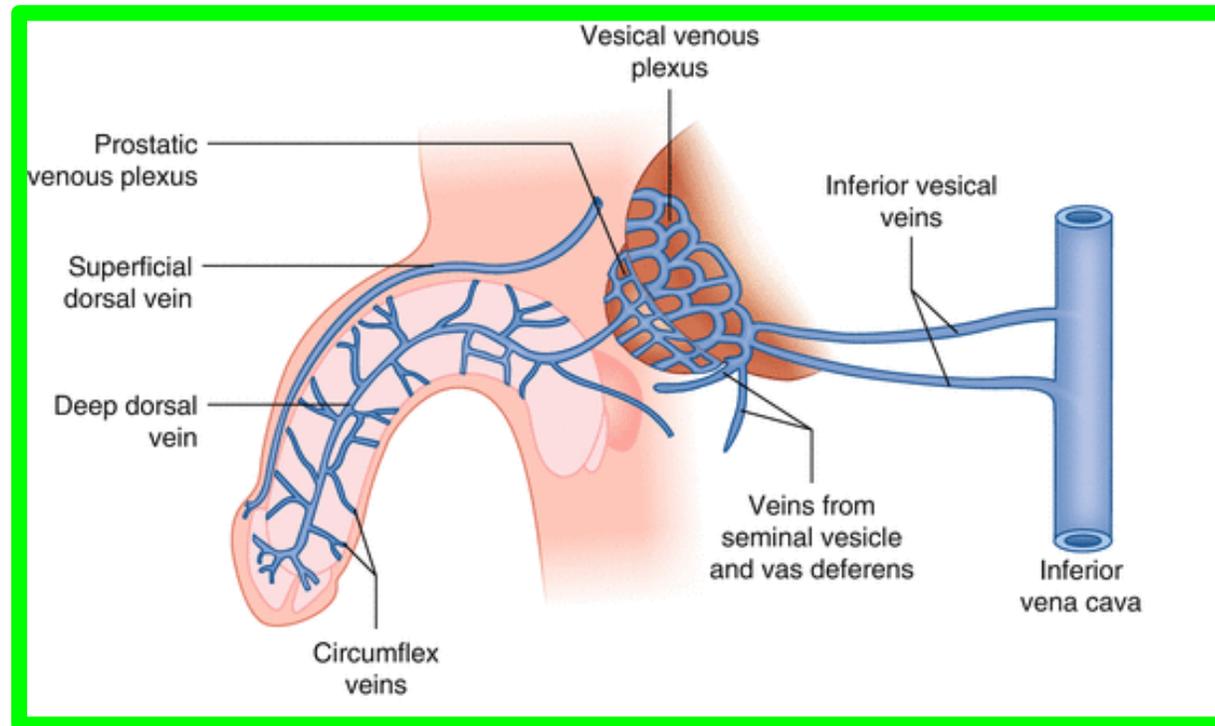
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Prostate

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**** Venous drainage:** The veins form the **prostatic venous plexus**, between the fibrous capsule of the prostate and the prostatic sheath

The **prostatic plexus** receives the **deep dorsal vein of the penis** and numerous vesical veins and drains into the **internal iliac veins**.



❖ The plexus is continuous superiorly with the **vesical venous plexus** and communicates posteriorly with the **internal vertebral venous plexus**

Prostate

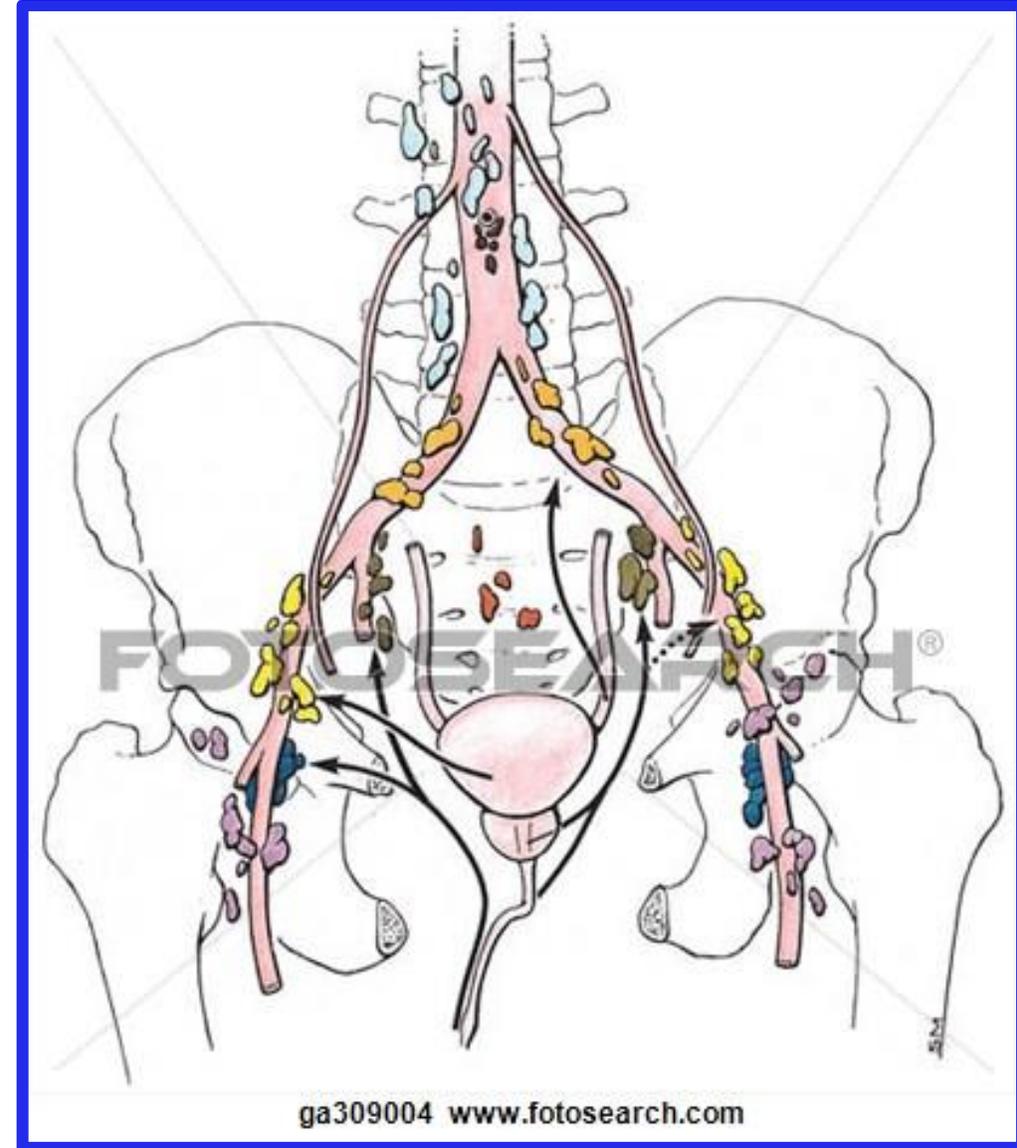
Lymph Drainage

Drain chiefly into the **internal iliac nodes**, but some pass to the **sacral lymph nodes**

Nerve Supply

Inferior hypogastric plexuses.

The sympathetic nerves stimulate the smooth muscle of the prostate during ejaculation



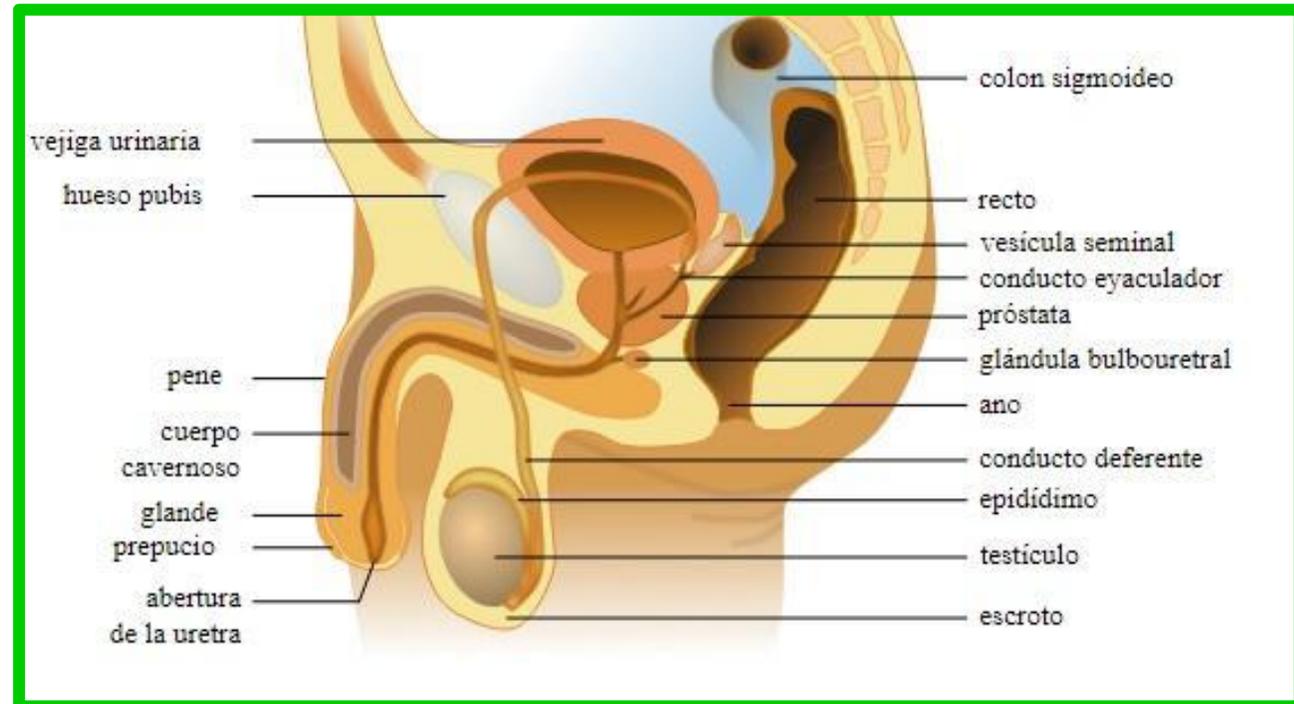
BULBO-URETHRAL GLANDS

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The two pea-size **bulbo-urethral glands** (**Cowper glands**) lie posterolateral to the **Membranous part of the urethra**, largely embedded within the external urethral sphincter.

The ducts of the bulbo-urethral glands pass through **the perineal membrane** adjacent to the intermediate urethra and open through minute apertures into **the proximal part of the spongy urethra** in **the bulb of the penis**.

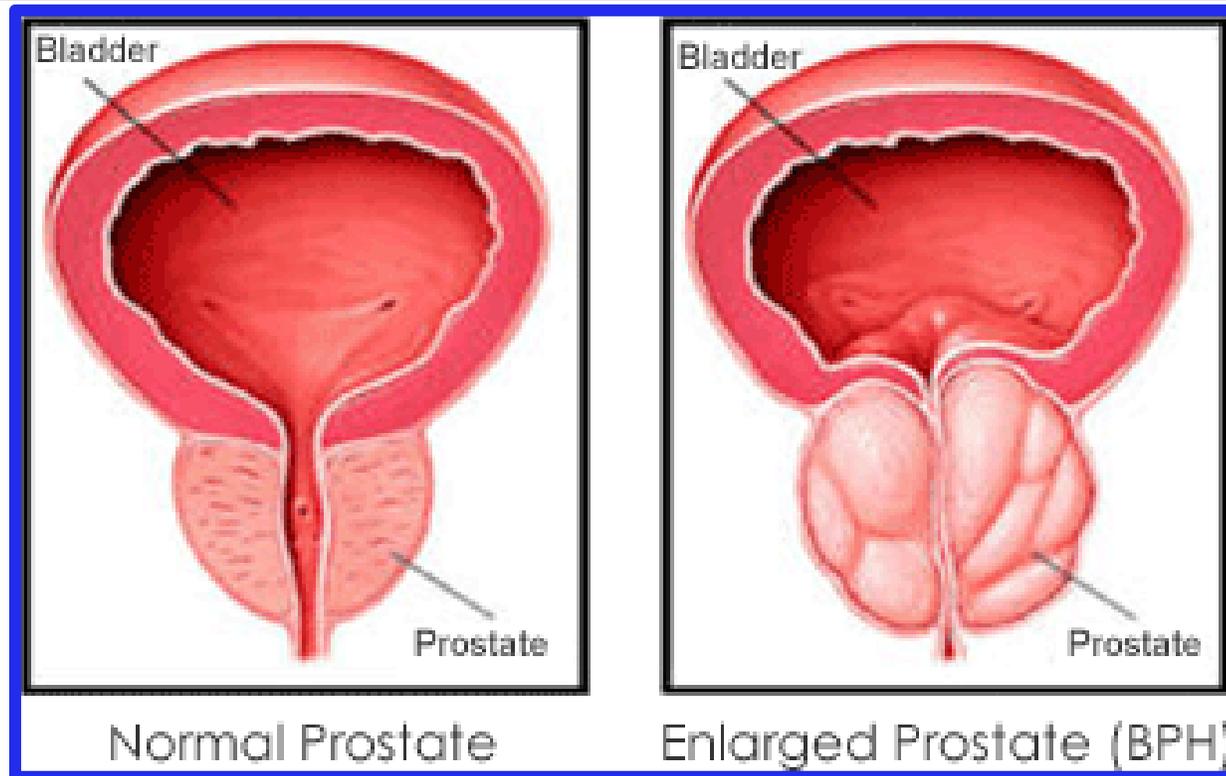
❖ Their mucus-like secretion enters the urethra during sexual arousal, contributing less than **1% of semen**.



Prostatic Enlargement

The prostate is of medical interest because benign enlargement or **benign hypertrophy of the prostate (BHP)** is common after middle age.

An enlarged prostate projects into the urinary bladder and impedes urination by distorting the prostatic urethra. **The median lobe usually enlarges the most and obstructs the internal urethral orifice.**

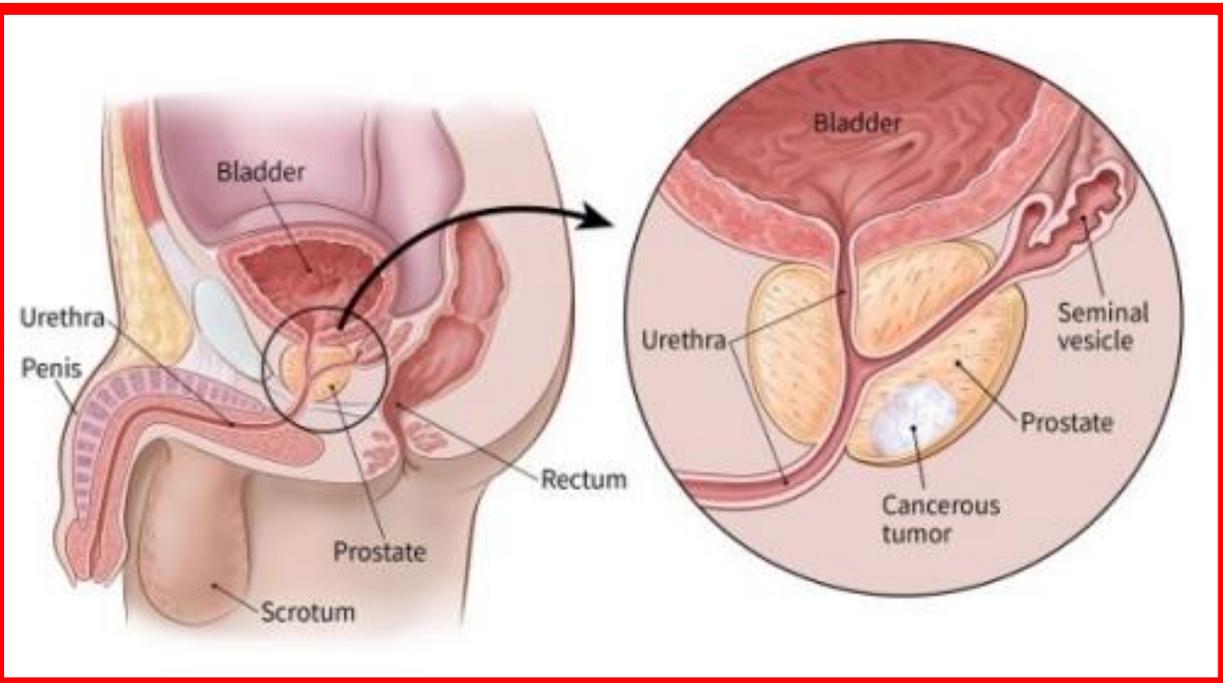


Normal Prostate

Enlarged Prostate (BPH)

Prostatic Cancer

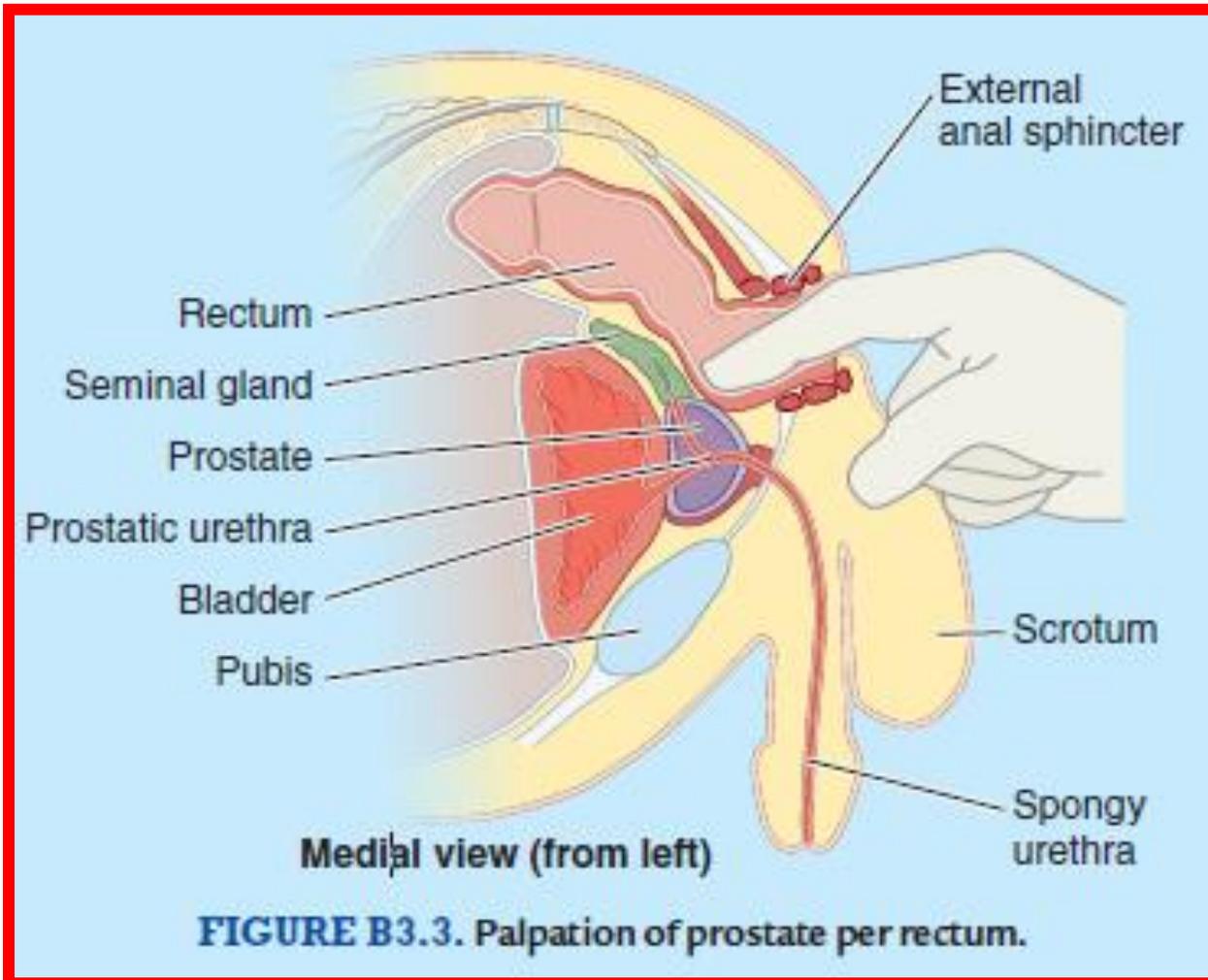
□ Prostatic cancer is common in men **older than 55 years** of age. In most cases, the cancer develops in the posterolateral region. This may be palpated during a digital rectal examination. A malignant prostate feels hard and often irregular. In advanced stages, cancer cells metastasize (spread) to the **iliac and sacral lymph nodes** and later to distant nodes and bone. **The prostatic plexus**, closely associated with the prostatic sheath, gives passage to parasympathetic fibers, which give rise to the cavernous nerves that convey the fibers that cause penile erection



Prostatectomy

❑ A major concern regarding **prostatectomy** is that **impotency** may be a consequence.

❑ All or part of the prostate, or just the hypertrophied part, is removed (transurethral resection of the prostate **[TURP]**).



Vas (Ductus) Deferens

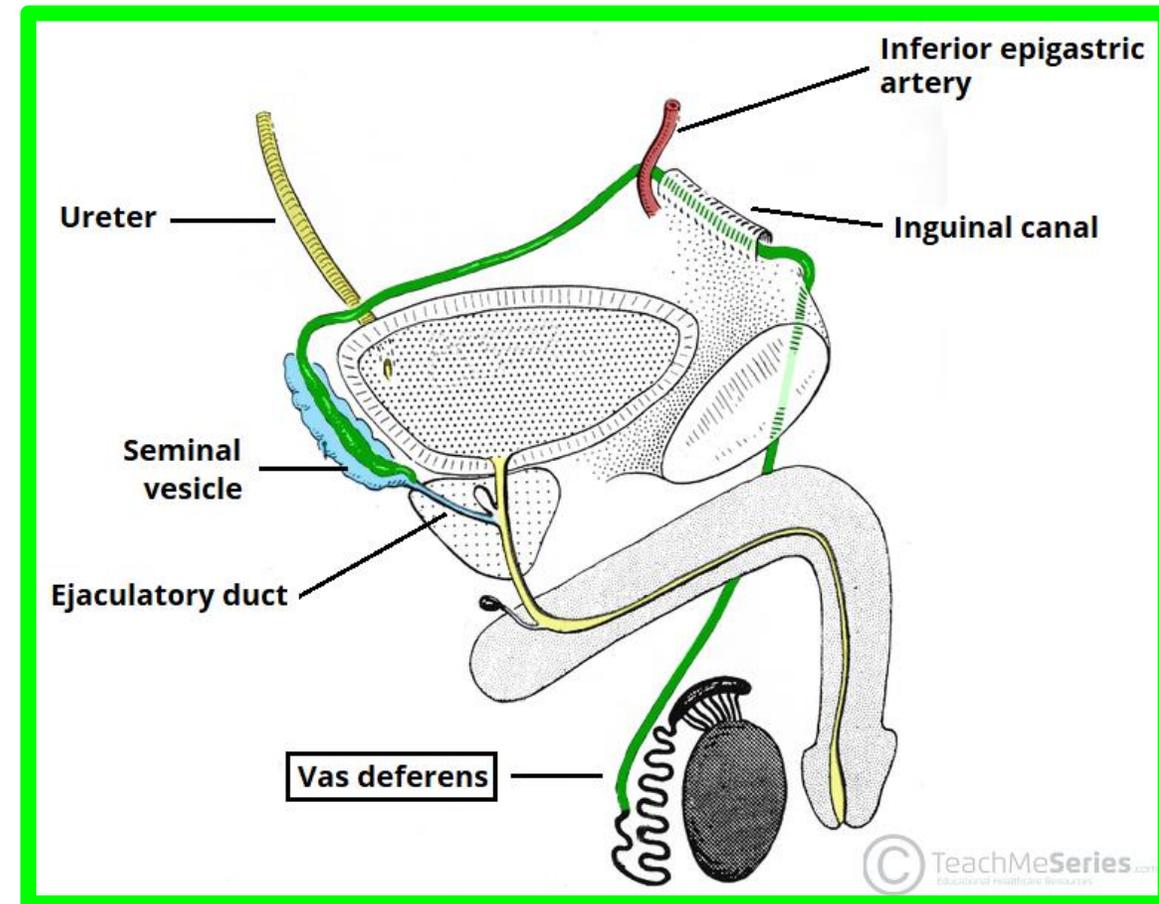
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- ✓ It is a thick cord-like tube, about **45 cm long**.
- ✓ It carries and stores the sperms.
- ✓ It begins from **the tail of the epididymis**.

** Course and relations:

- 1- Scrotal part:** ascends on the back of the testis and medial to the epididymis.
- 2- Inguinal part:** runs in the inguinal canal **through the spermatic cord**.
- 3- Pelvic part:** curves around the inferior epigastric artery.



Vas (Ductus) Deferens

❖ Then, it descends downwards and backwards on the following structures;

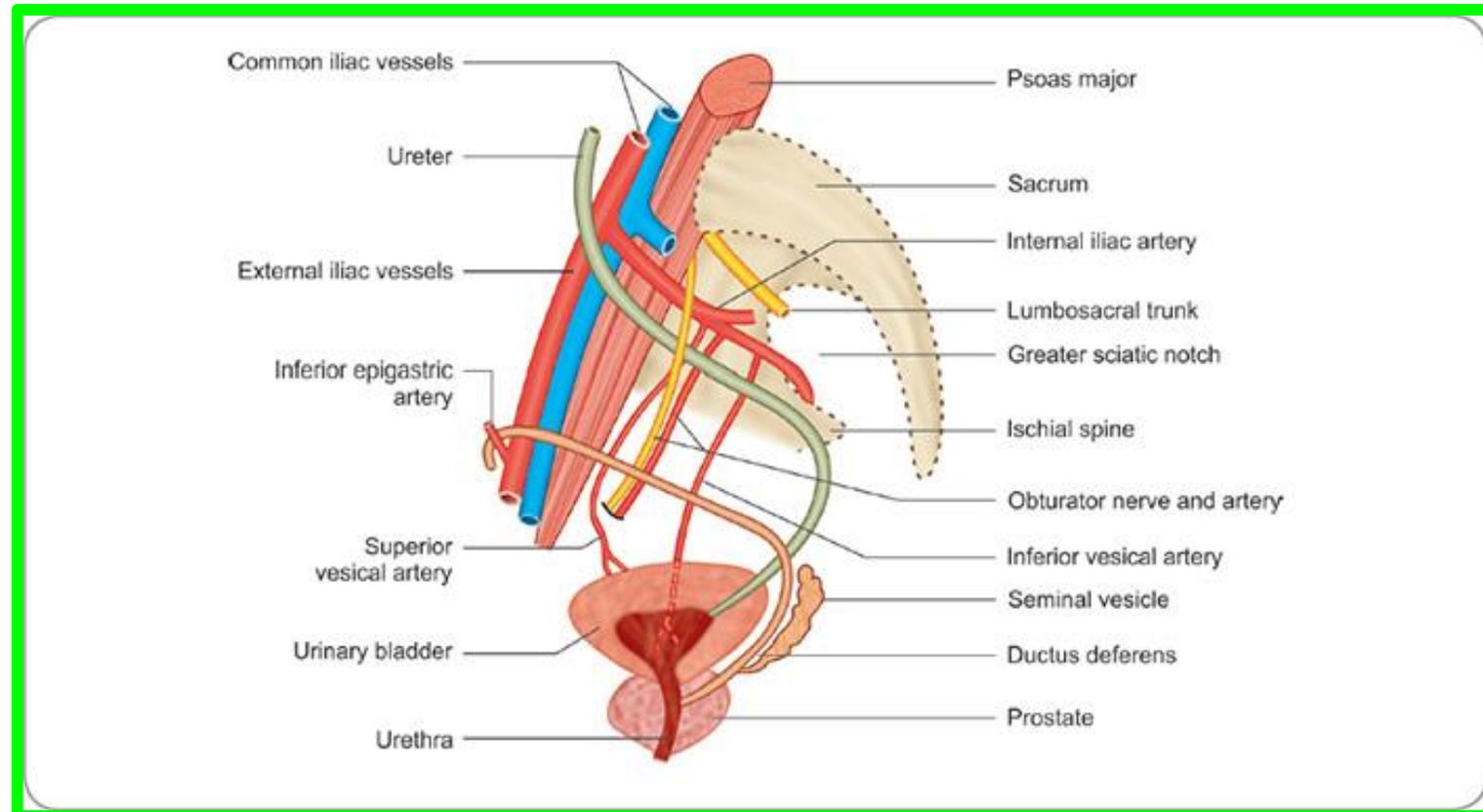
1- External iliac vessels.

2- Superior vesical (obliterated umbilical) artery

3- Obturator nerve.

4- Obturator vessels.

Then, It curves medially crossing above the ureter then behind the base of the urinary bladder.



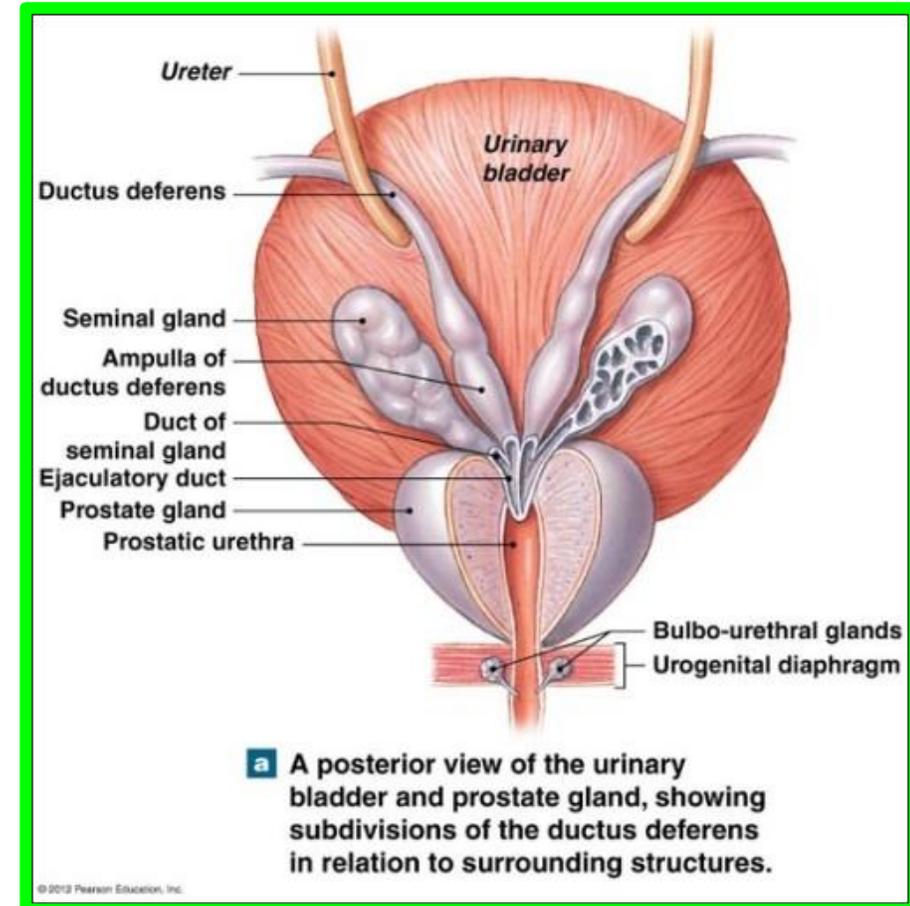
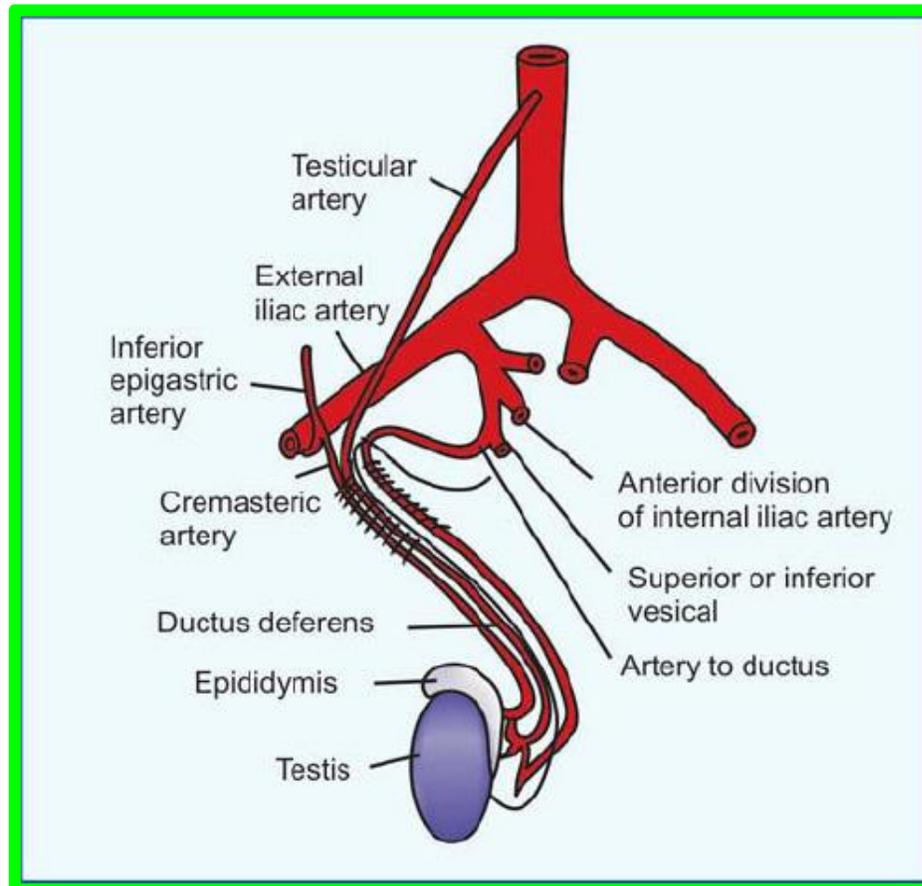
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Vas (Ductus) Deferens

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**** Termination:** it ends by forming the ampulla which join the seminal vesicle to form **the ejaculatory duct**.

**** Arterial supply:** artery of the vas deferens.



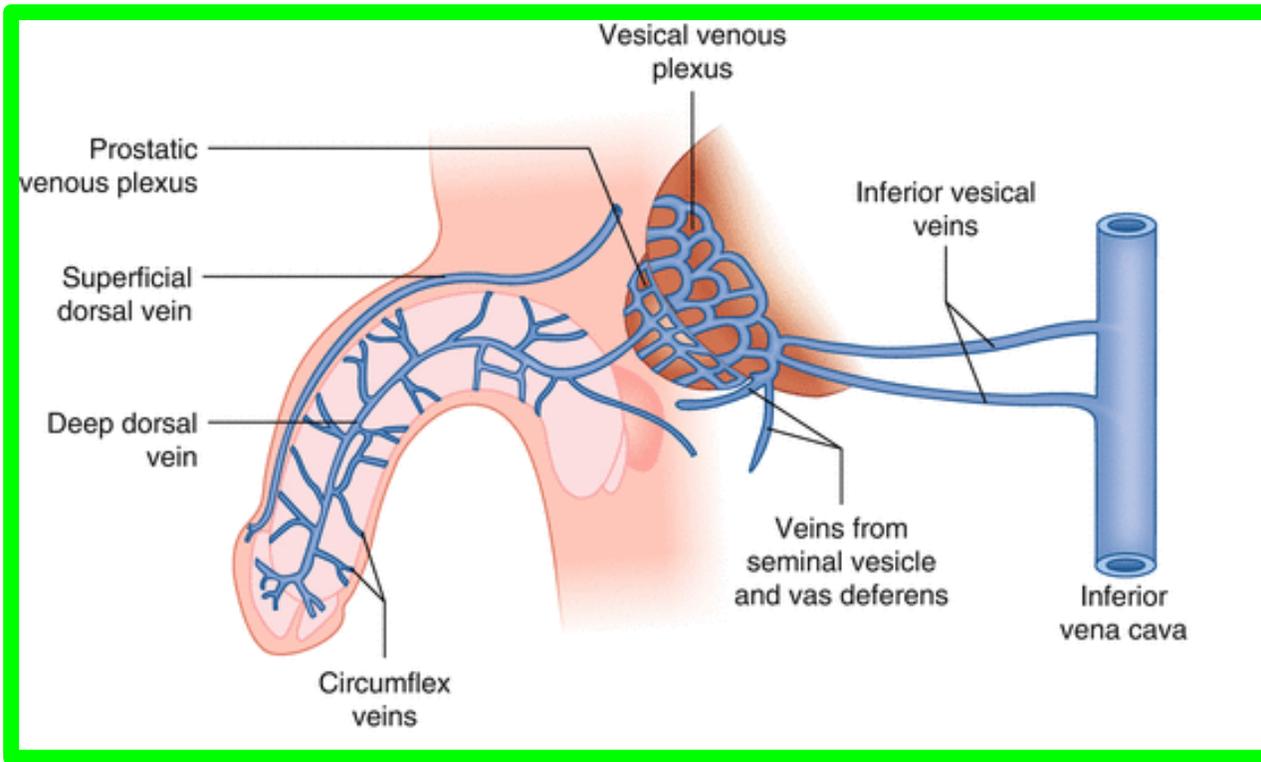
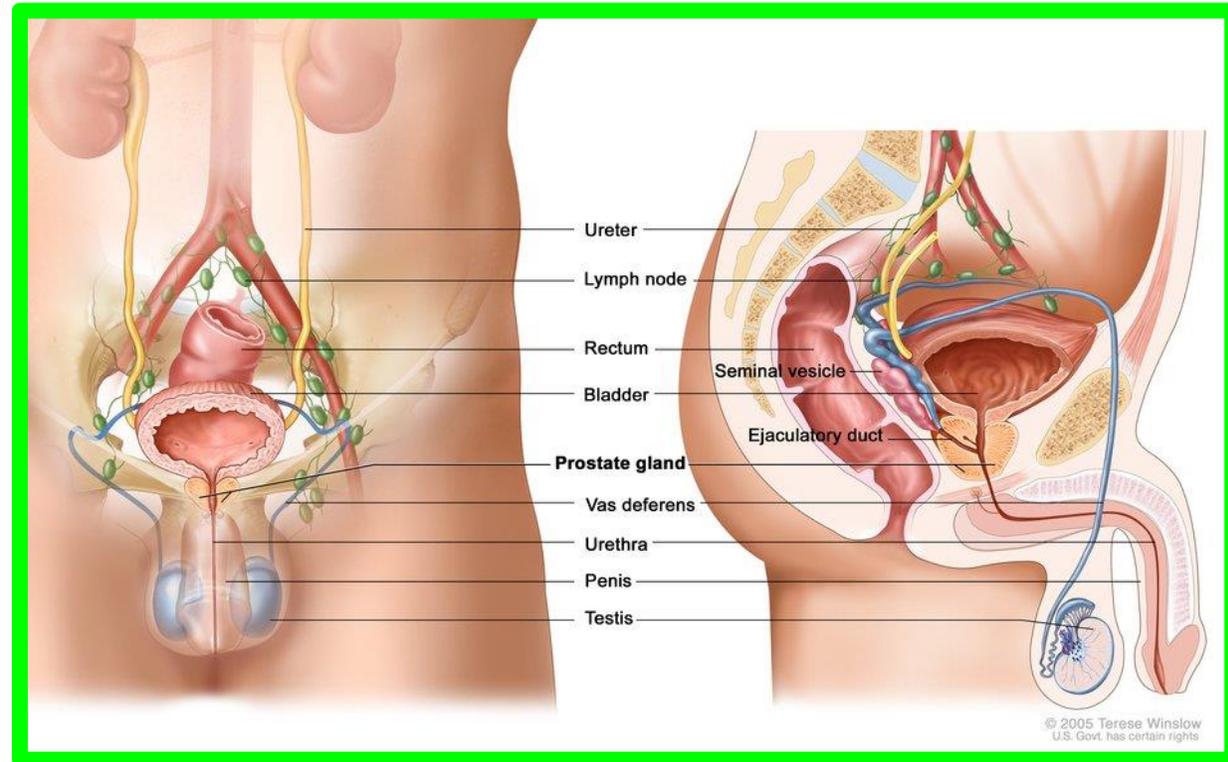
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Vas (Ductus) Deferens

** Venous drainage: vesical plexus of veins.

** Nerve supply: vesical plexus of nerves.

** Lymphatic drainage: into the external iliac lymph nodes.

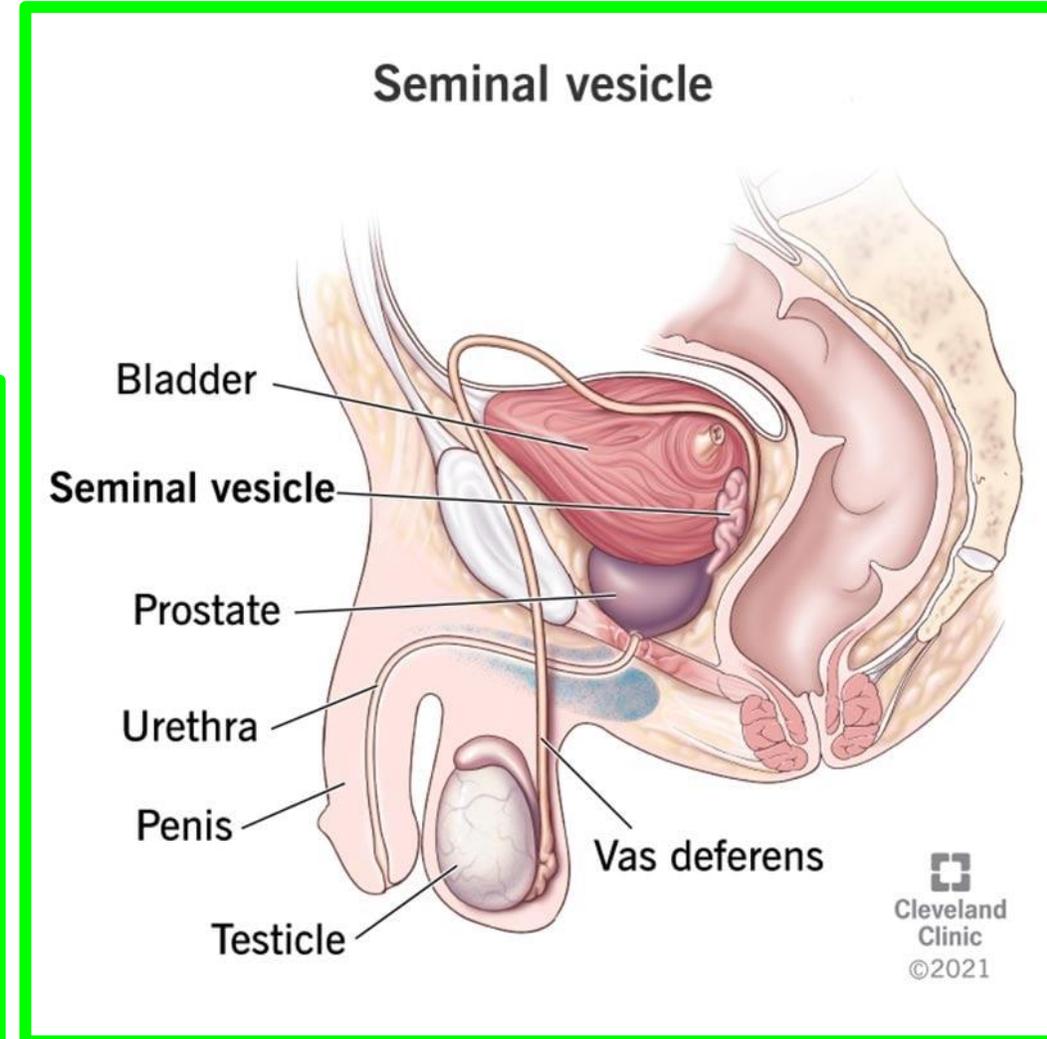
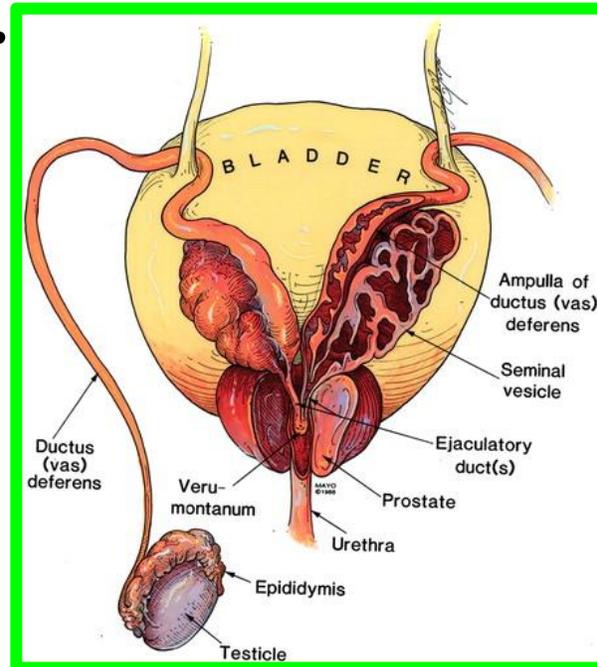


Seminal Vesicles

- ❖ One on each side
- ❖ It is a **sacculated and coiled pouch** which is nearly **5 cm** in length.

** Relations:

- a- **Anteriorly:** base of the urinary bladder
- b- **Posteriorly:** the rectum.
- c- **Medially:** ampulla of the vas deferens.
- d- **Laterally:** levator ani.



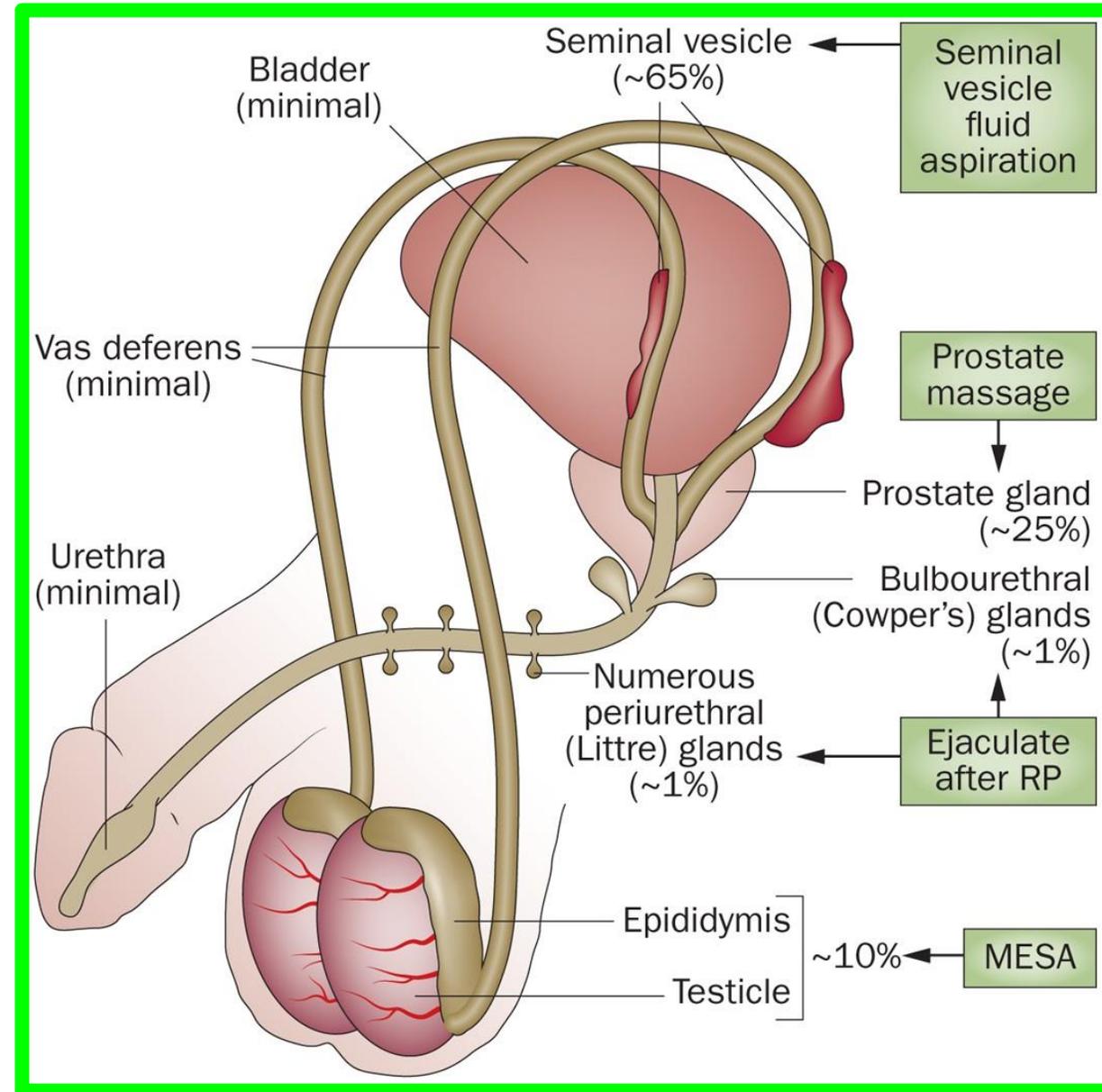
Seminal Vesicles

**** Ends:** It unites with ampullae of the vas deferens to form ejaculatory duct.

**** Function:** the seminal vesicles are glands which contract during ejaculation.

❖ Their secretions constitute the greater amount of the seminal fluid.

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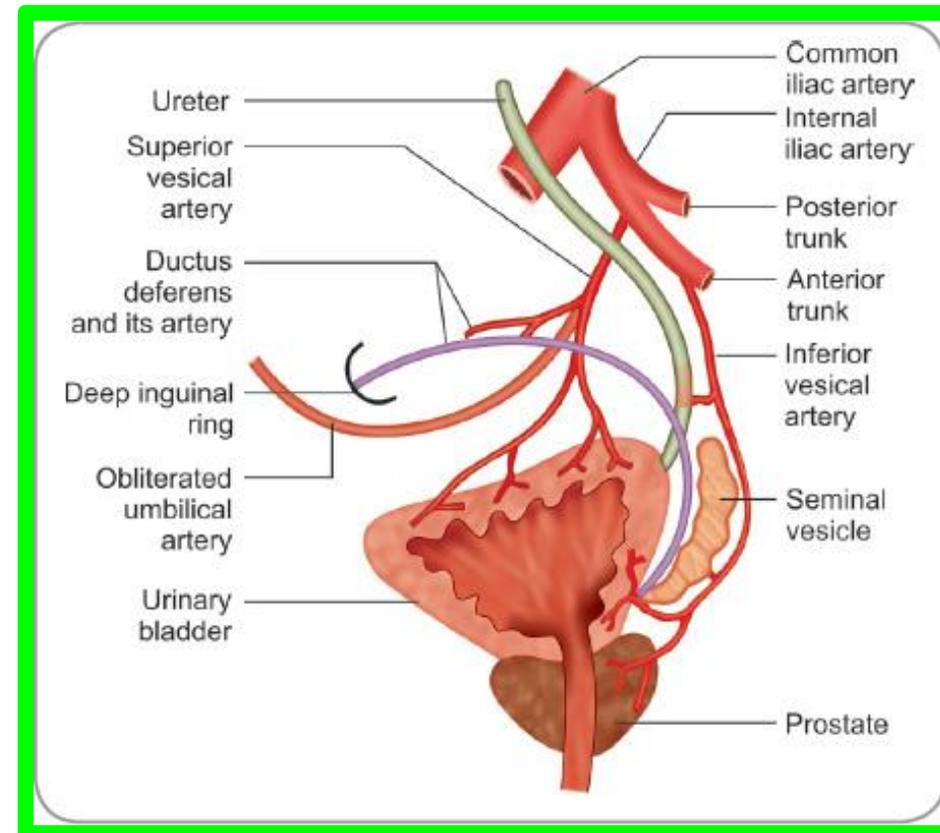
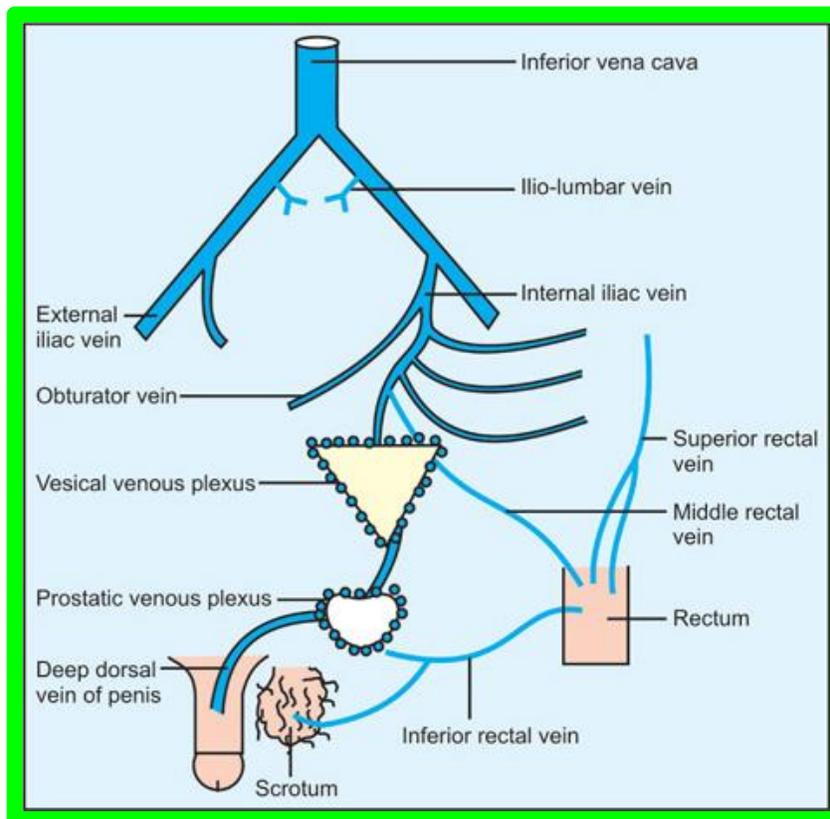


Seminal Vesicles

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- ** Arterial supply: from the inferior vesical artery.
- ** Venous drainage: into the vesical venous plexuses.
- ** Nerve supply: the vesical plexus of nerves.
- ** Lymphatic drainage; into the internal and external iliac lymph nodes.

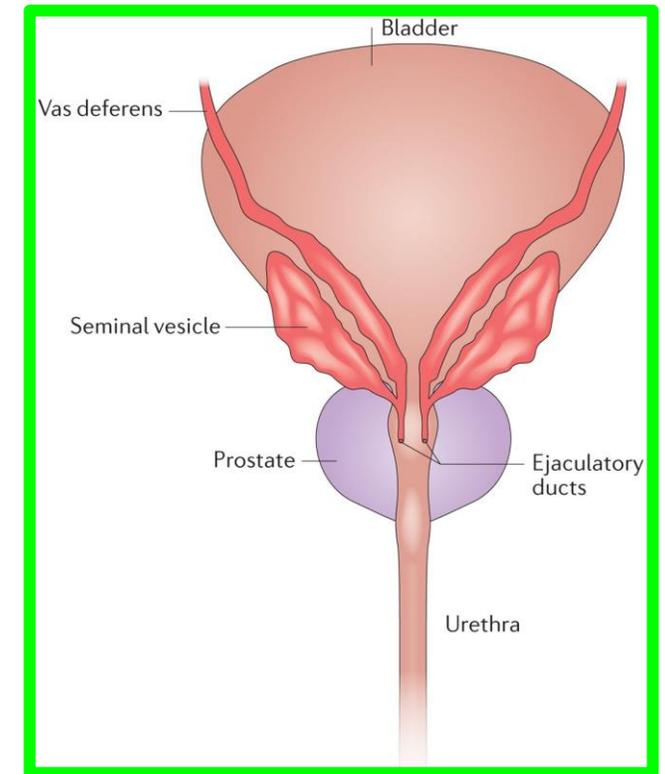
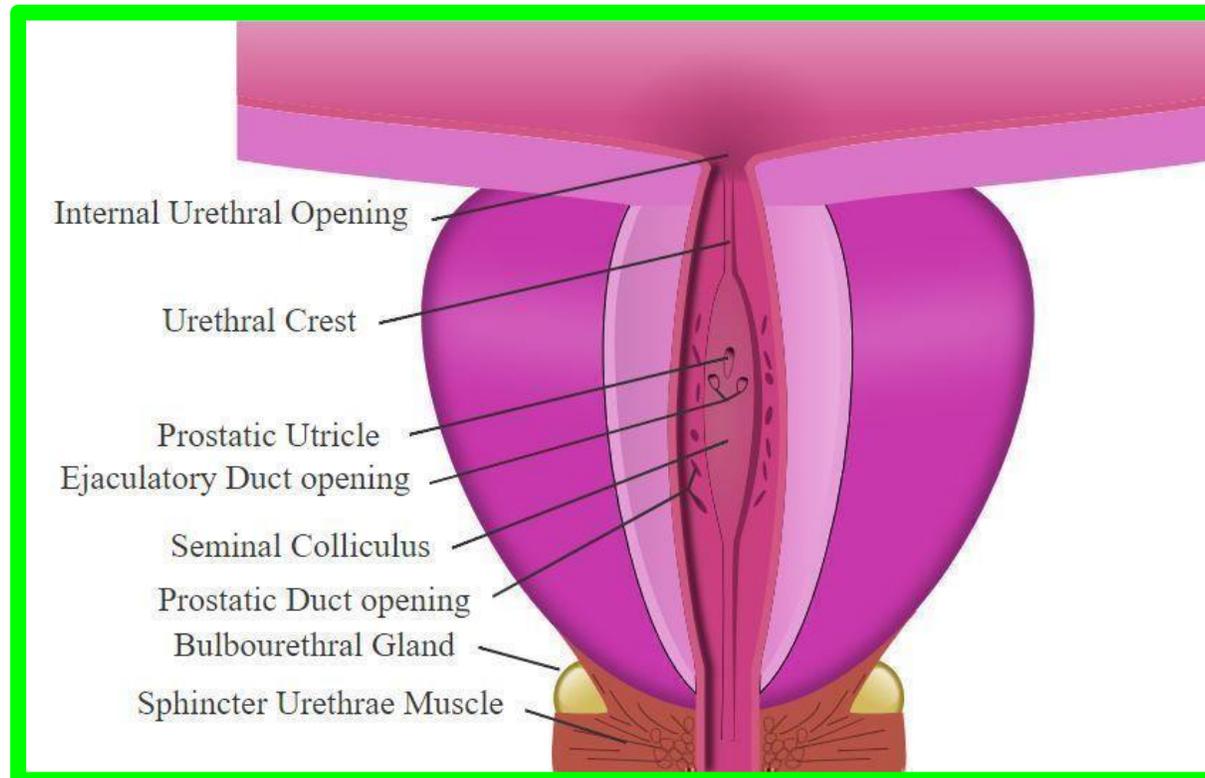


Ejaculatory Ducts

**** Formation;** it is formed by the union of the **ampulla of the vas deferens** with **the seminal vesicle** behind the neck of the urinary bladder.

❖ It is a very narrow duct, **2 cm long** which immediately passes through the base of the prostate gland.

❖ It opens into **the seminal colliculus** of **the prostatic urethra**.





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