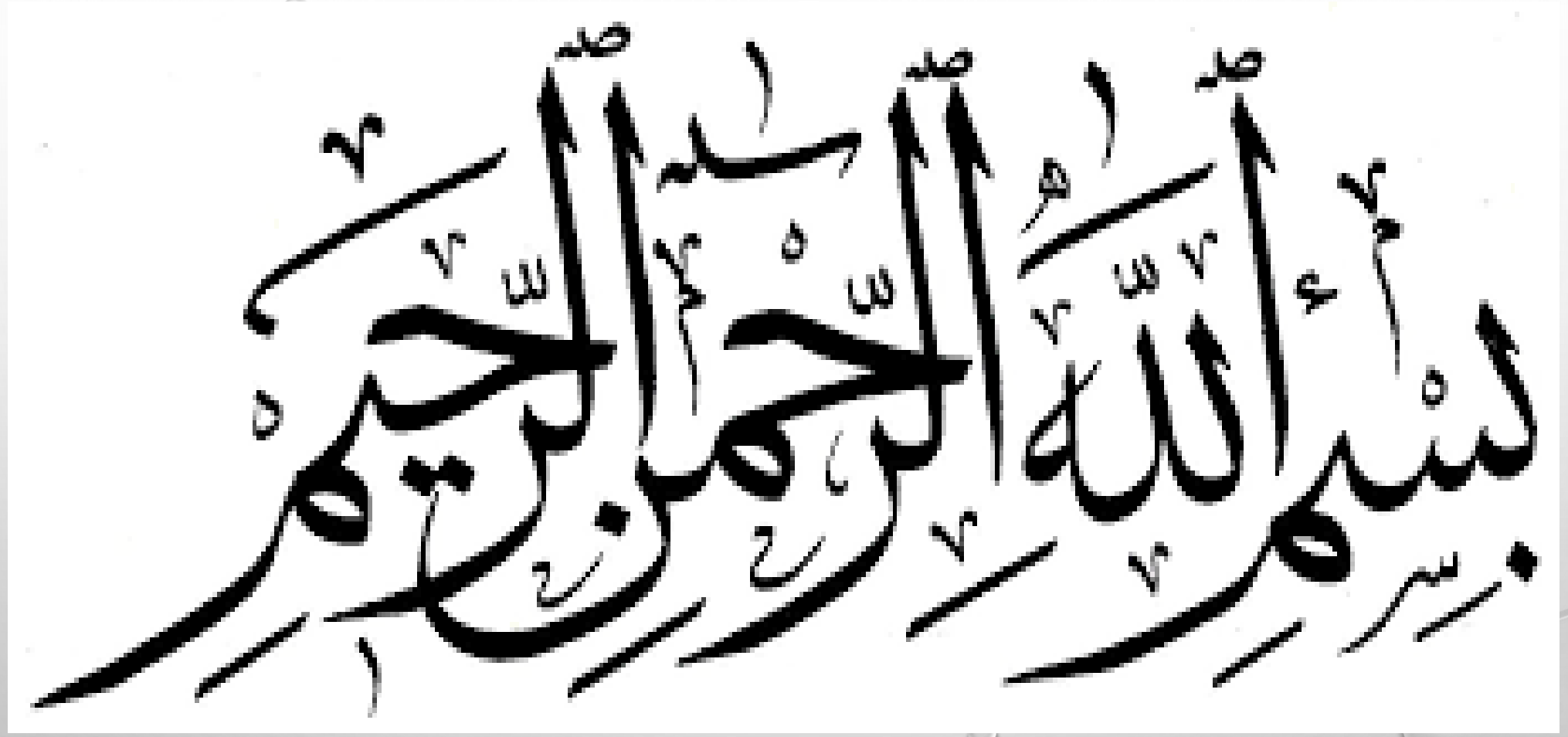

بسم الله الرحمن الرحيم

# MALE GENITAL SYSTEM

***DR EMAN SAEED***

# Excretory tubules OF THE TESTIS

❖ **INTRA TESTICULAR:**

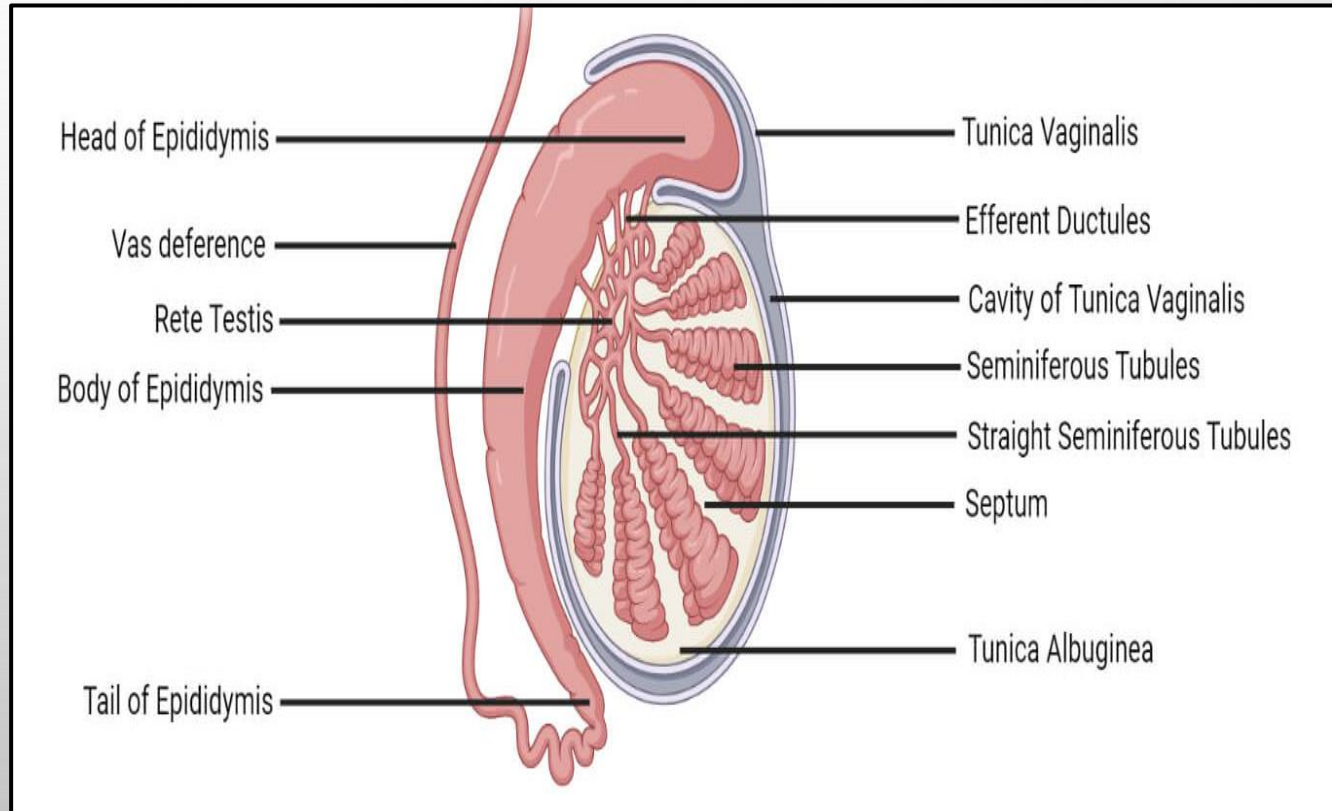
- **1-TUBULI RECTI:**

— THESE ARE SHORT STRAIGHT TUBULES WHICH RECEIVE THE SPERMS FROM THE SEMINIFEROUS TUBULE.

— THEY ARE LINED WITH TALL COLUMNAR SERTOLI LIKE CELLS AND SUPPORTED BY A THIN C.T. SHEATH.

## 2- Rete testis:

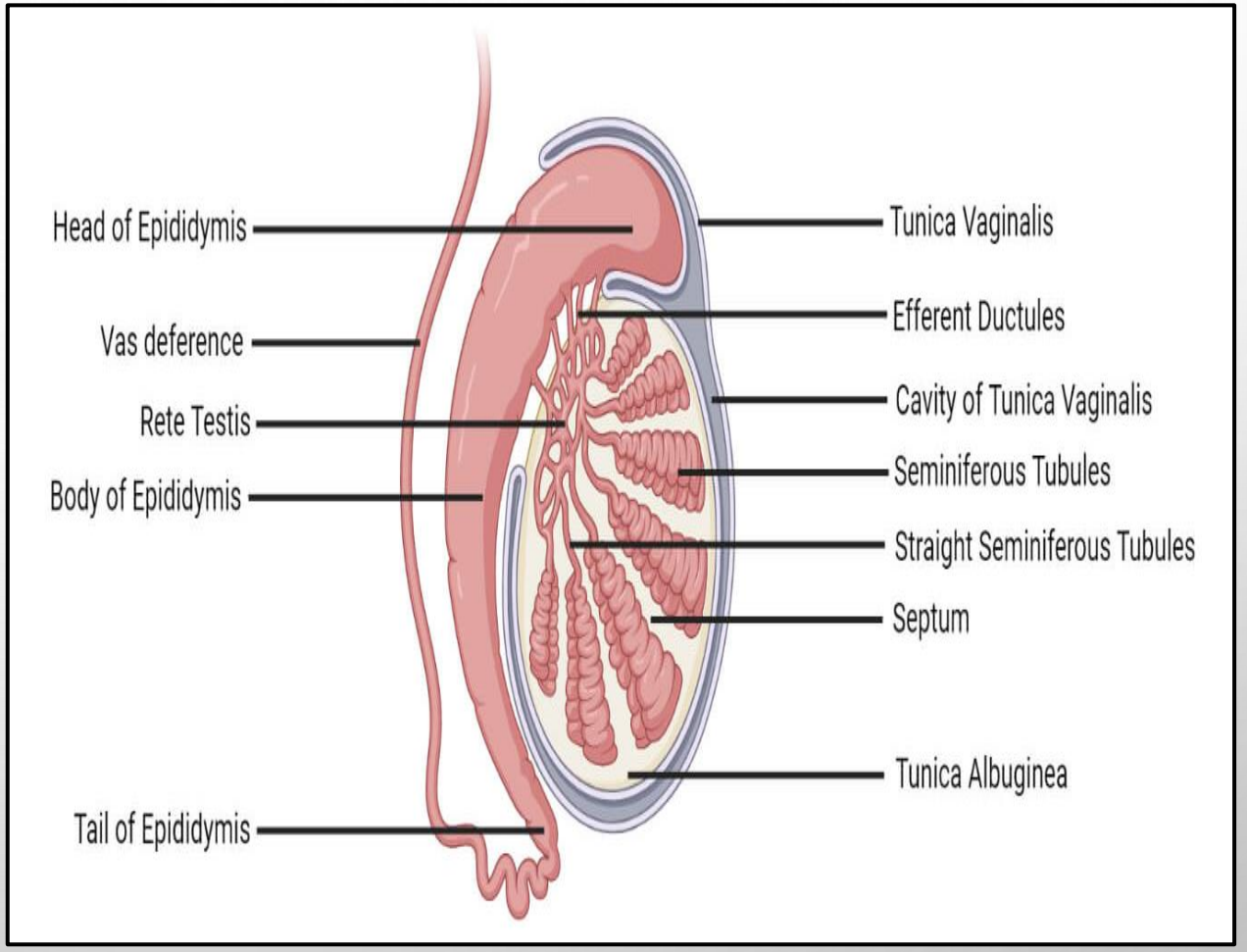
— These are narrow tubules which branch and anastomosis to form a reticulum. They are lined with low cubical epithelium which rest on a prominent basal lamina and covered by lamina propria of vascular C.T.



# Excretory tubules OF THE TESTIS

- **EXTRA TESTICULAR**

1. **VASA EFFERENTIA.**
2. **EPIDIDYMIS.**
3. **VAS DEFERENS.**
4. **EJACULATORY DUCT**
5. **URETHRA.**



# 1-VASA EFFERENTIA

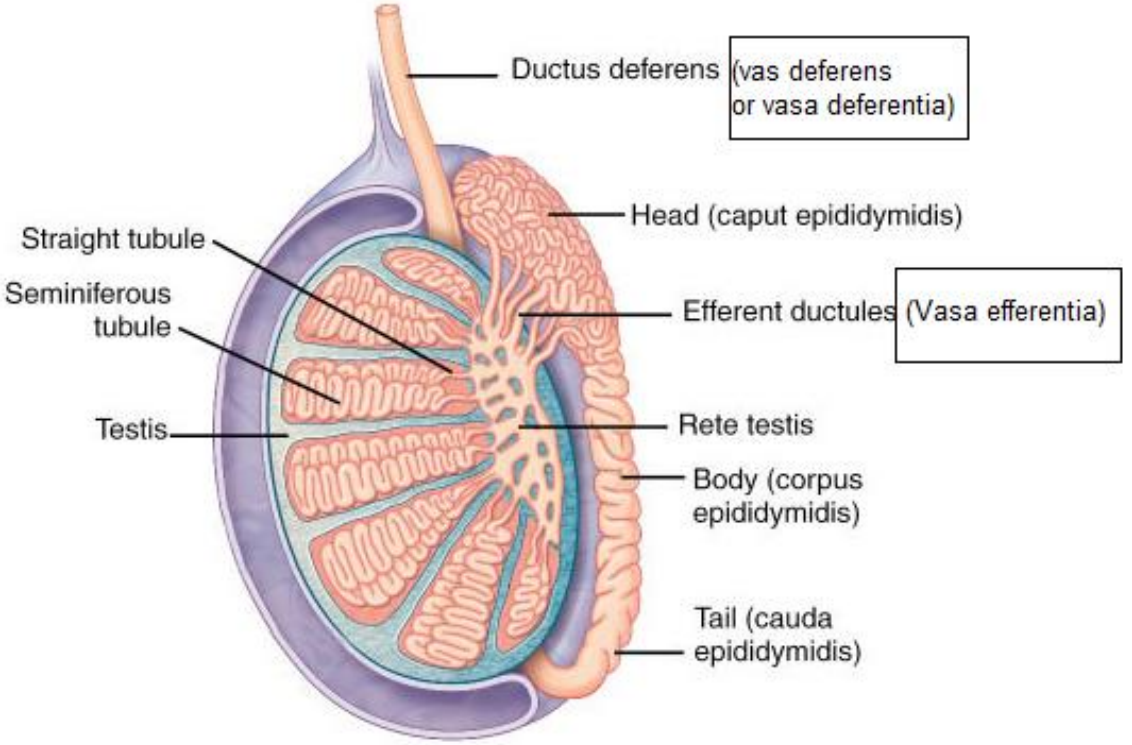
- **DEFINITION:**

**THEY ARE SMALL TUBULES ATTACHED WITH EACH OTHER BY VASCULAR C.T.**

**THEY BECOME CONVOLUTED TO FORM THE HEAD OF THE EPIDIDYMIS.**

**Lining: (festooned epithelium)**

- **High columnar ciliated (for the movement of non-motile sperm) alternating with low columnar non-ciliated (for absorption of some testicular fluid).**
- **Rest on basement membrane.**
- **Surrounded by C.T. (elastic fibers + smooth muscle fibers).**



# Epididymis

- **DEFINITION:**

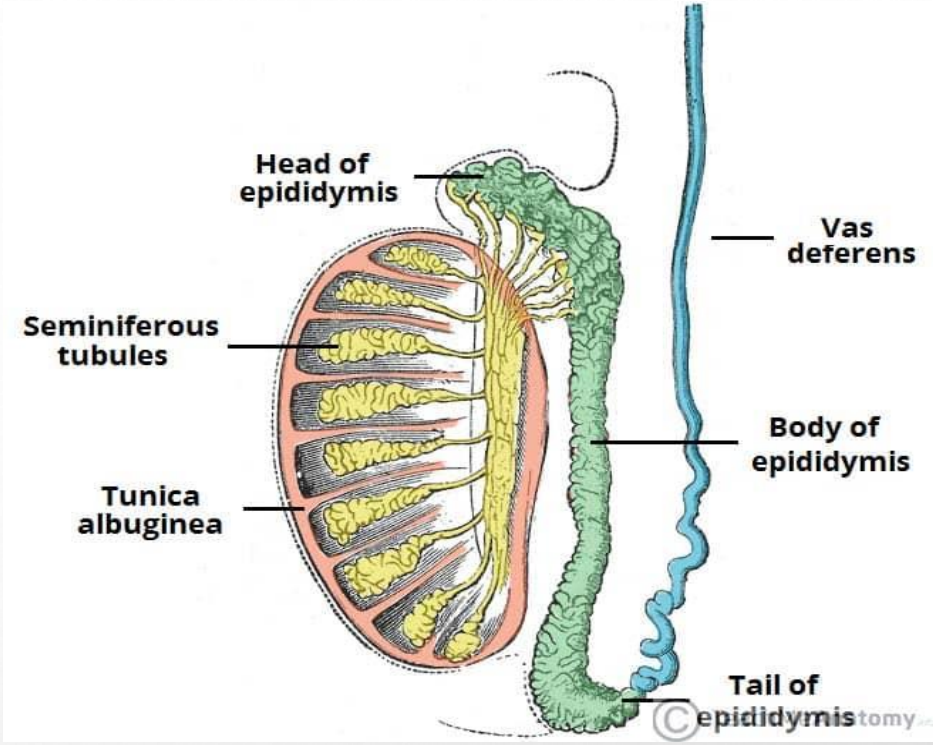
**LONG, HIGHLY TORTUOUS TUBULE (6 METERS).**

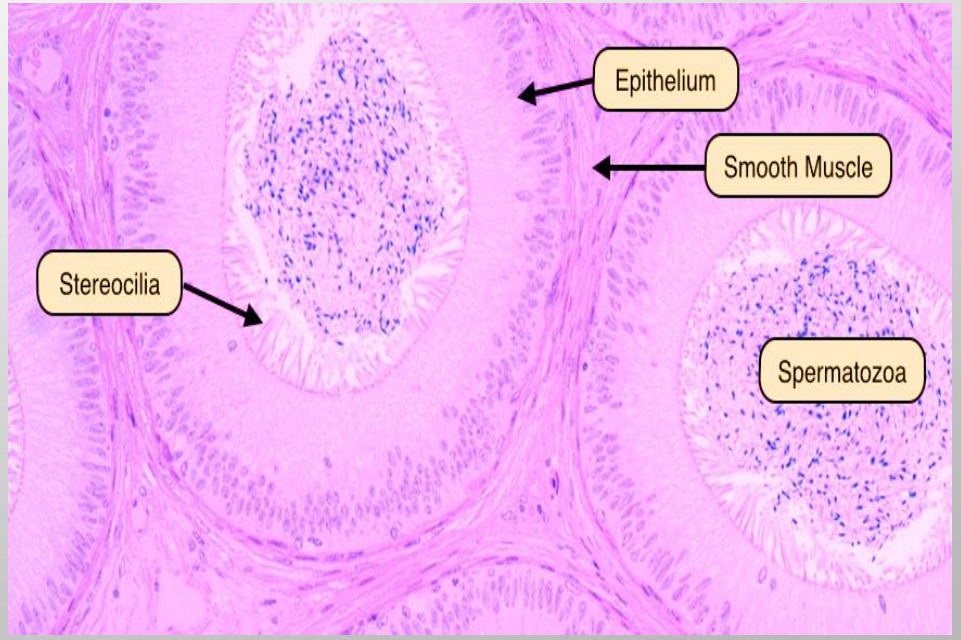
- **LINING EPITHELIUM:** **LINED WITH PSEUDO STRATIFIED COLUMNAR EPITHELIUM WITH STEREO CILIA**

**IT IS CONSIDERED AS LONG MICROVILLI TO:**

**FACILITATE THE PROCESS OF TRANSPORTATION OF THE SECRETION TO LUMEN AND FACILITATE THE PROCESS OF ABSORPTION OF CYTOPLASMIC FRAGMENTS FROM THE PROCESS OF SPERMIOGENESIS.**

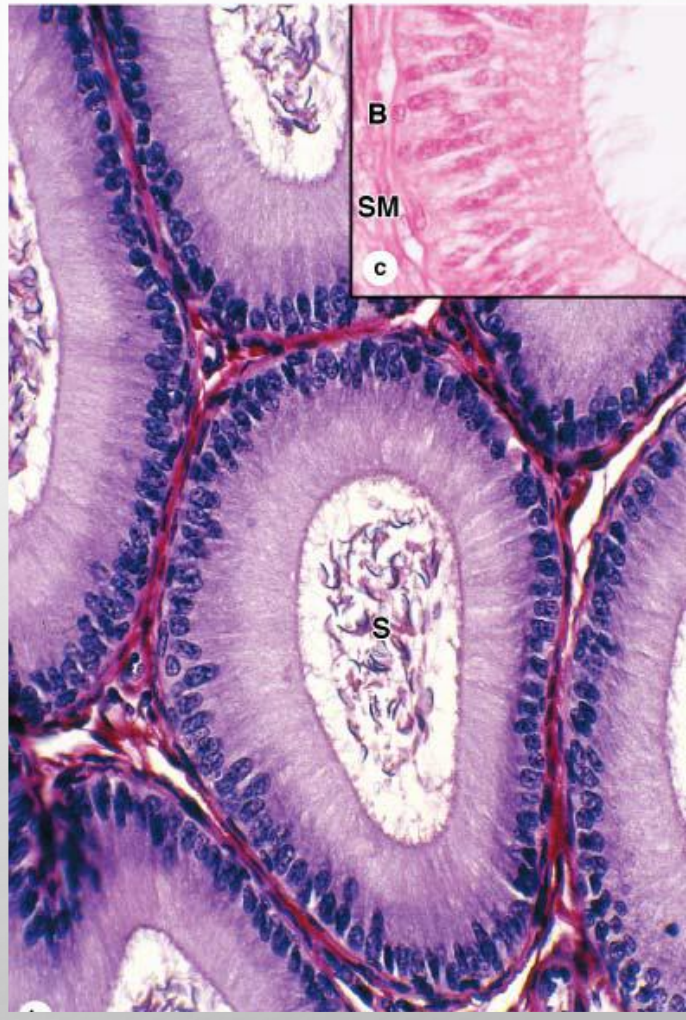
**OUTSIDE THE BASEMENT MEMBRANE THERE IS A VASCULAR LAYER OF C.T. AND SMOOTH MUSCLE FIBERS.**



# CAPACITATION:

- IT IS A SERIES OF BIOCHEMICAL CHANGES WHICH OCCUR IN THE SPERM TO HAVE THE FULL CAPACITY OF FERTILIZATION.
- BEGIN IN THE LUMEN OF EPIDIDYMIS.
- COMPLETE IN THE UTERUS AND FALLOPIAN TUBE.
- **FUNCTION OF EPIDIDYMIS:**
  1. SECRETION OF GLYCEROL-PHOSPHO-CHOLINE AND GLYCOPROTEIN NECESSARY FOR SPERMATOZOA MATURATION.
  2. PHAGOCYTOSIS OF RESIDUAL BODIES.
  3. STORAGE OF SPERMATOZOA.
  4. THE MUSCLE FIBERS IN THE TAIL ARE THICK. IT DEPENDS ON SYMPATHETIC STIMULATION TO VIGOROUSLY DISCHARGE THE SPERM INTO THE VAS DEFERENS, IN RESPONSE TO THE EJACULATORY REFLEX.



# VAS DEFERENS

- **STRUCTURE:**
- **1-MUCOSA:**

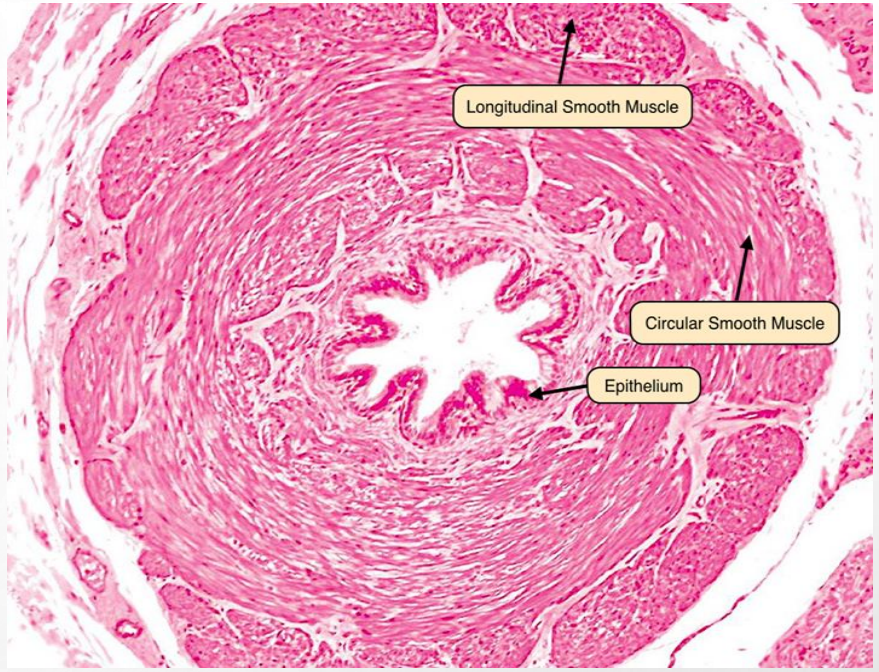
a. **EPITHELIUM: PSEUDOSTRATIFIED COLUMNAR WITH STEREO CILIA.**

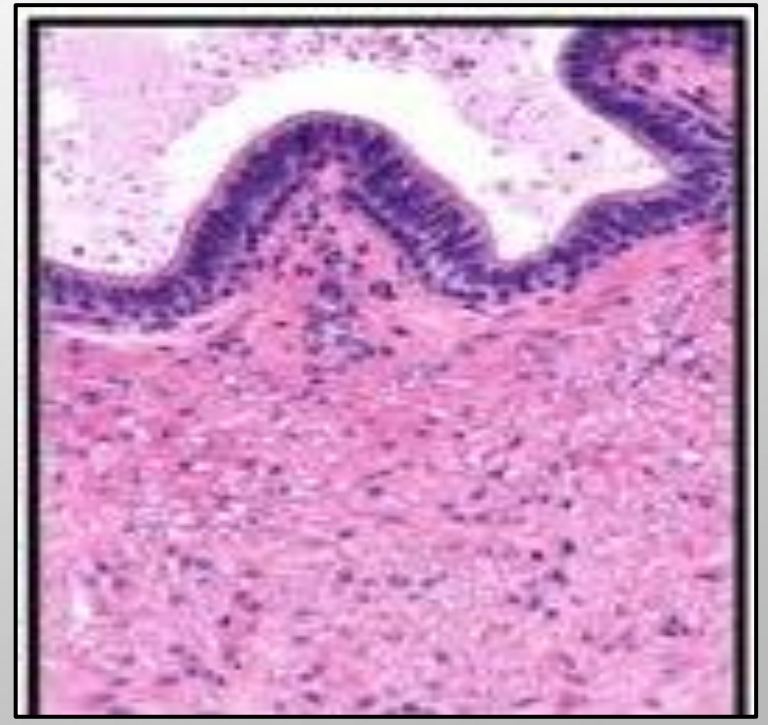
b. **CORIUM: LOOSE CONNECTIVE TISSUE BLOOD VESSELS, NERVES, LYMPHATIC AND ELASTIC FIBERS.**

- **2-MUSCULOSA:**

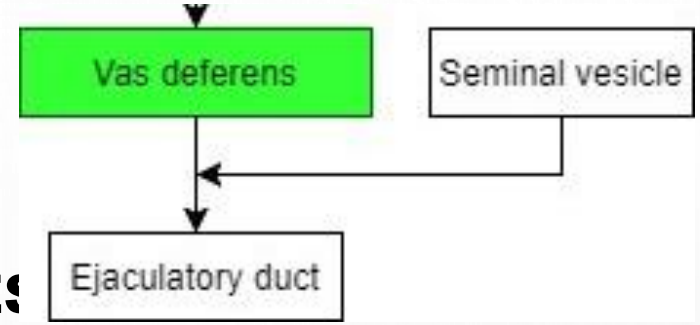
**BOTH CONTAIN INNER LONGITUDINAL, THICK MIDDLE CIRCULAR AND OUTER LONGITUDINAL LAYERS OF SMOOTH MUSCLE FIBERS.**

- **3-ADEVENTIA: LOOSE CONNECTIVE TISSUE**



# Ejaculatory Duct

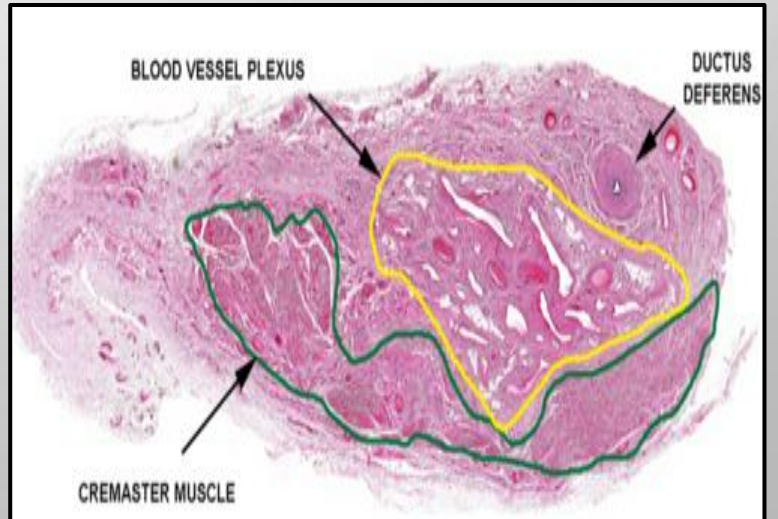



- **FORMATION:**
- AMPULLA OF VAS DEFERENS AND SEMINAL VESICLES
- IT PENETRATES THE PROSTATE AND OPEN INTO PROSTATIC URETHRA.
- **LINING:**
- SIMPLE COLUMNAR OR PSEUDOSTRATIFIED COLUMNAR EPITHELIUM.

# SPERMATIC CORD

- IT ARISES FROM THE SCROTUM AND ENTERS THE INGUINAL CANAL.
- **CONTENTS:**

1. VAS DEFERENS.
2. PAMPINIFORM PLEXUS OF VEINS.
3. CREMASTERIC STRIATED MUSCLE.
4. TESTICULAR ARTERY AND VEIN.
5. NERVE FIBERS.



# The Seminal Vesicles

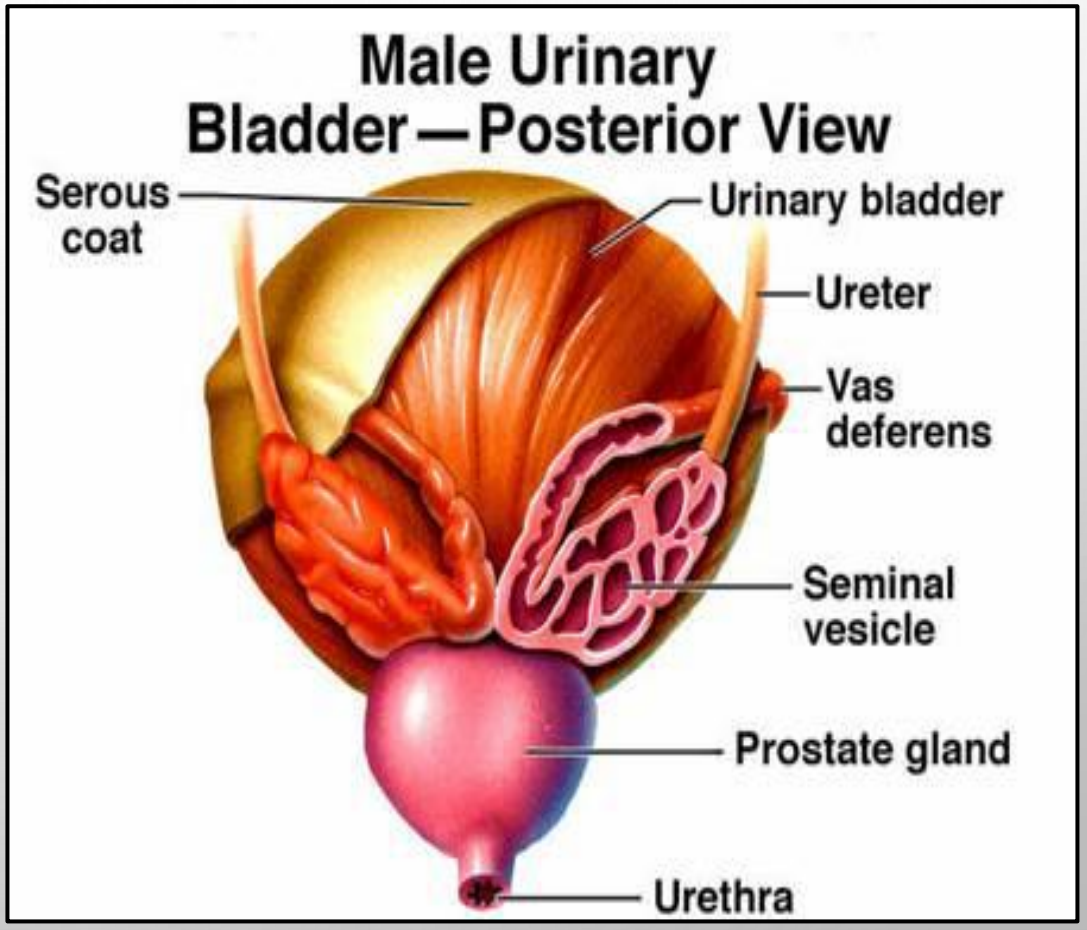
- THESE ARE PAIRED HIGHLY TORTUOUS TUBULAR GLANDS THAT LIE POSTERIOR TO THE PROSTATE.

## Function:

1- Nourishment of the sperm.

2- Secrete viscid yellowish fluid rich in:

- Fructose.
- Ascorbic acid.
- Prostaglandin.
- Protein



## Structure:

### 1- Mucosa:

- Folded.
- Wide lumen

**Epithelium:**

- Branched and anastomosing.
- Tall columnar or pseudostratified columnar.

**Corium:**

C.T. containing elastic fibers and smooth muscle fibers.

### 2- Musculosa:

- Inner circular.
- Outer longitudinal

### .3- Adventitia:

Loose C.T. containing blood vessels

# The Seminal Fluid (Semen)

- **DEFINITION:**

IT IS THE FLUID SECRETION OF THE ACCESSORY SEX GLANDS (PROSTATE, SEMINAL VESICLES AND EPIDIDYMIS).

- **CONTENTS:**

- FAT.
- SPERMS.
- FEW EPITHELIAL CELLS.
- PIGMENT GRANULES.
- SPERMATOGENIC CELLS.
- PROSTATIC CONCRETION.
- CRYSTALS OF SPERMINE PHOSPHATE.

- **VOLUME:** 2-5 C.C.
- **REACTION:** ALKALINE.
- **COUNT:** 60-100 MILLION SPERMS / CC.

IF < 20MILLION ⟹ STERILITY.

- **ABNORMAL FORMS:** LESS THAN 10%. IF > 25% ⟹ STERILITY
- **MOTILITY AND VIABILITY:** 75% MOTILE
- **LIVE FOR : 2-3** DAYS IN PROPER VAGINAL MEDIA.

# Prostate Gland

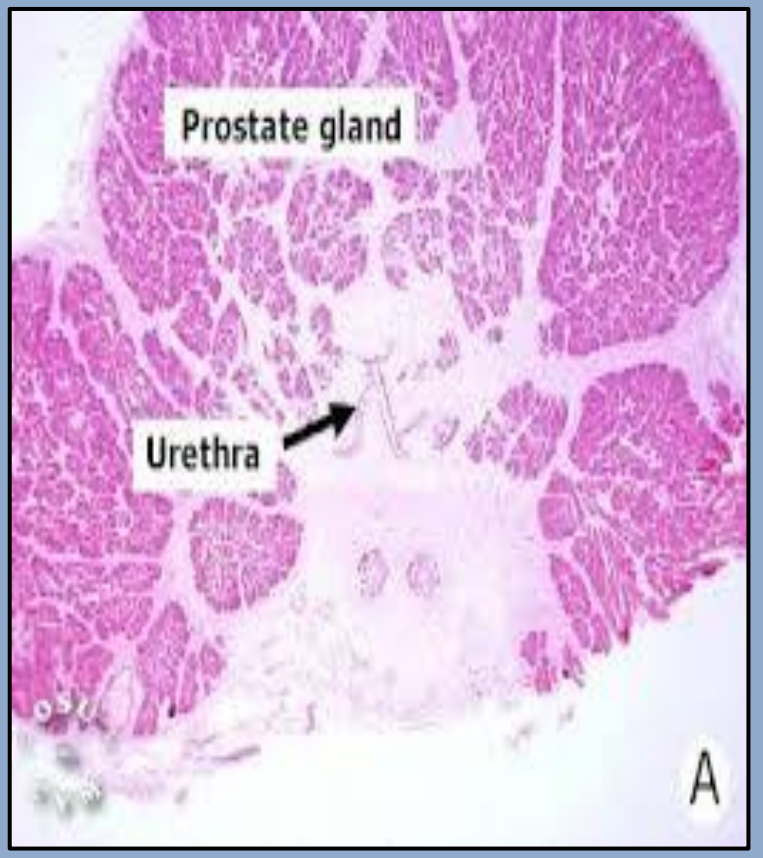
- **TYPE:**

IT IS EXOCRINE COMPOUND TUBULO-ALVEOLAR GLAND.

- **SITE:**

IT SURROUNDS THE FIRST PART OF THE MALE URETHRA WHICH IS A V-SHAPED URETHRA

- **STRUCTURE:**




## 1-Stroma

- **CAPSULE:**

- IT IS FORMED OF THICK FIBROELASTIC TISSUE RICH IN SMOOTH MUSCLE FIBERS AND BLOOD VESSELS.

- **TRABECULAE:**

- THESE ARE THICK C.T. SEPTA ARISING FROM THE CAPSULE.
- THEY DIVIDE THE GLAND INTO LOBULES
- THEY ARE RICH IN SMOOTH MUSCLE FIBERS WHICH CONDENSE AROUND THE URETHRA TO FORM THE INTERNAL URETHRAL SPHINCTER.

- **RETICULAR FIBERS:-** IT IS A NETWORK OF RETICULAR FIBERS TO SUPPORT PARENCHYMA.

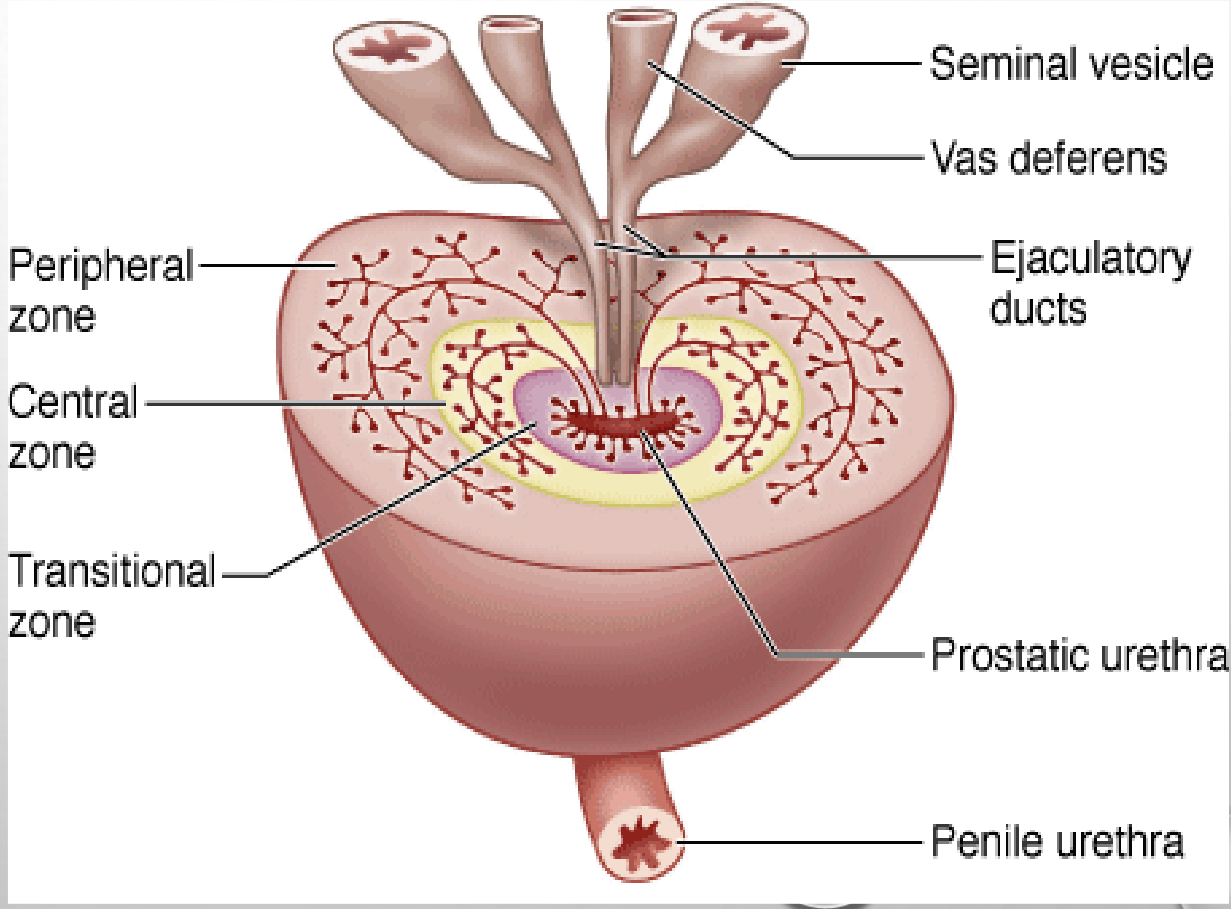
# 2-Parenchyma

- The ejaculatory duct divides the gland into lobes.
- Each lobe is subdivided into lobules.
- Each lobules contains 3 types of acini which are:

**A: mucosal acini**

**B: submucosal acini**

**C: Main acini**



## a. Mucosal acini:

- The smallest type.
- Lie in periurethral tissue.
- Open by small ducts in the prostatic urethra.
- In old age, they enlarge 0□ obstruction (prostatic adenoma).

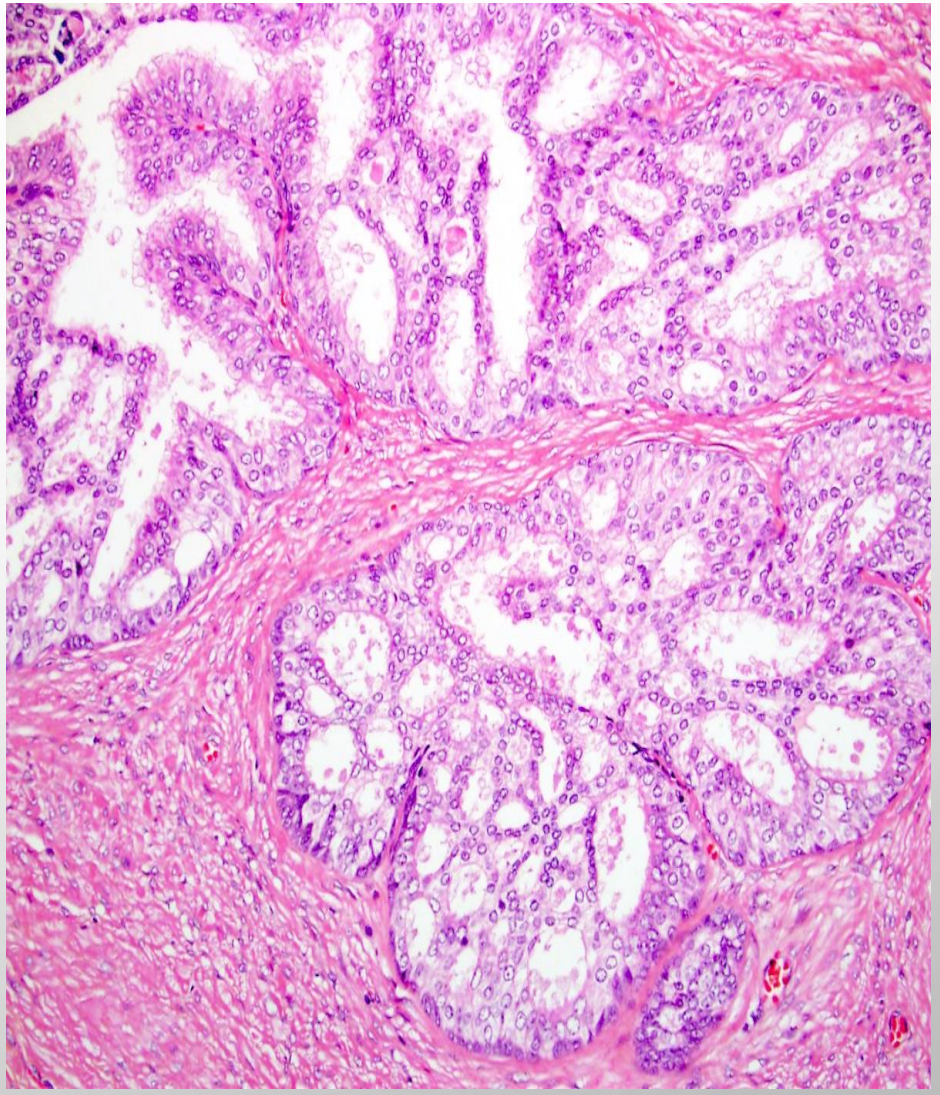
## b. Submucosal acini:

- They lie outer to the mucosal acini
- They are larger in size than the mucosal acini.

## C. Main acini:

The largest type.
Lie in the outer part of prostate gland

- Some prostatic acini are lined with pseudo stratified columnar epithelium, others are lined columnar or even cubical cells depending on the activity of the gland.



- IN OLD AGE, THE PROSTATIC SECRETION MAY BE DRIED AND CLACIFIED IN THE LUMEN OF THE ACINI TO FORM PROSTATIC CONCRETION CALLED

**CORPORA AMYLACEA.**


- **PROSTATIC SECRETION:**

MILKY ALKALINE, RICH IN FRUCTOSE, ACID PHOSPHATASE AND CITRIC ACID

WHICH:

- NEUTRALIZE THE ACIDITY OF THE VAGINA.
- NOURISH THE SPERM.

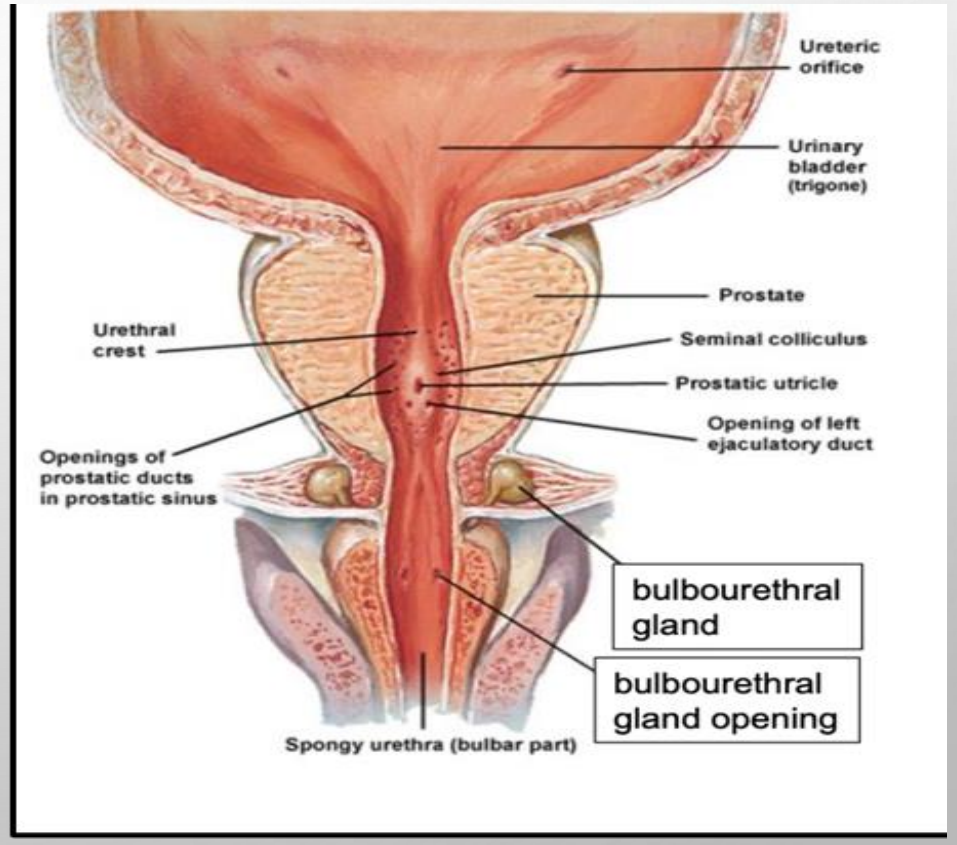
# The Bulbo-Urethral Gland (Cowper's Gland)

- **THESE ARE PAIRED SMALL TUBULO-ALVEOLAR GLANDS.**
- **THEY ARE PRESENT UNDER THE MEMBRANOUS URETHRA AND THE FIRST PART OF THE PENILE URETHRA.**
- **THEIR DUCTS OPEN INTO THE PENILE URETHRA.**

**THEY ARE LINED WITH COLUMNAR, CUBICAL OR FLAT CELLS.**

**Function:**

**they secrete a clear viscid (mucous) fluid into the penile part of urethra → lubricant to urethra.**

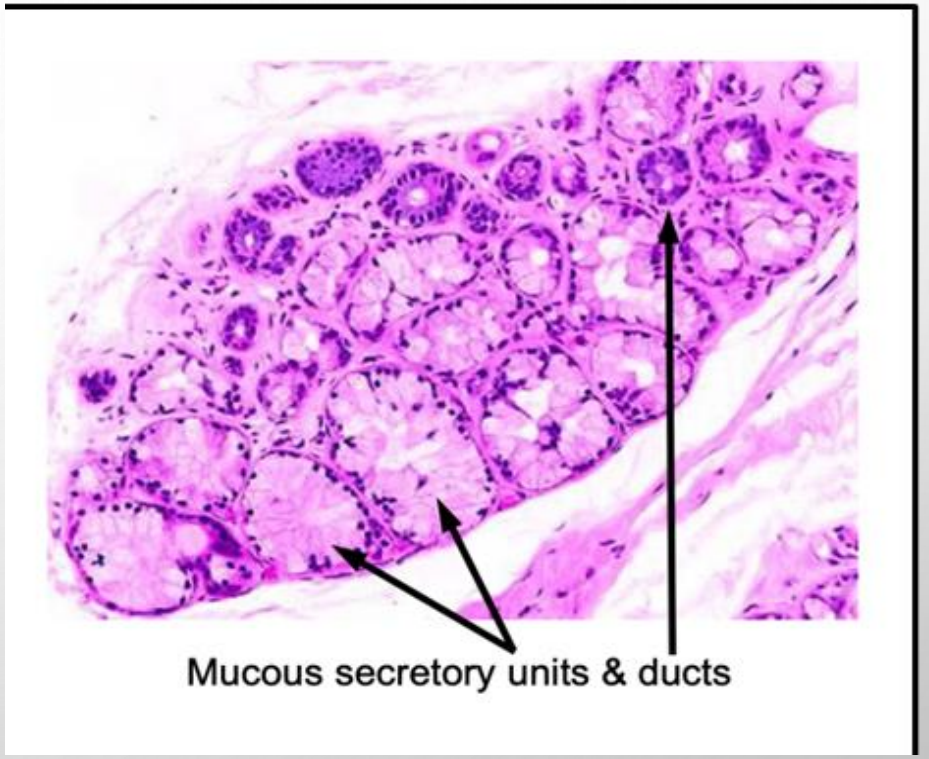


# The Bulbo-Urethral Gland (Cowper's Gland)

**Structure:**

**1- Stroma:**
**Each gland has a limited C.T. capsule with septa that divide the gland into irregular lobules.**

**2- Parenchyma:**
**The acini are lined with simple cubical, columnar or squamous epithelium.**



# Glands of Littre

**Types:**

**1-Extra mucosal:**

- **Outside the epithelium.**
- **Open by short ducts.**

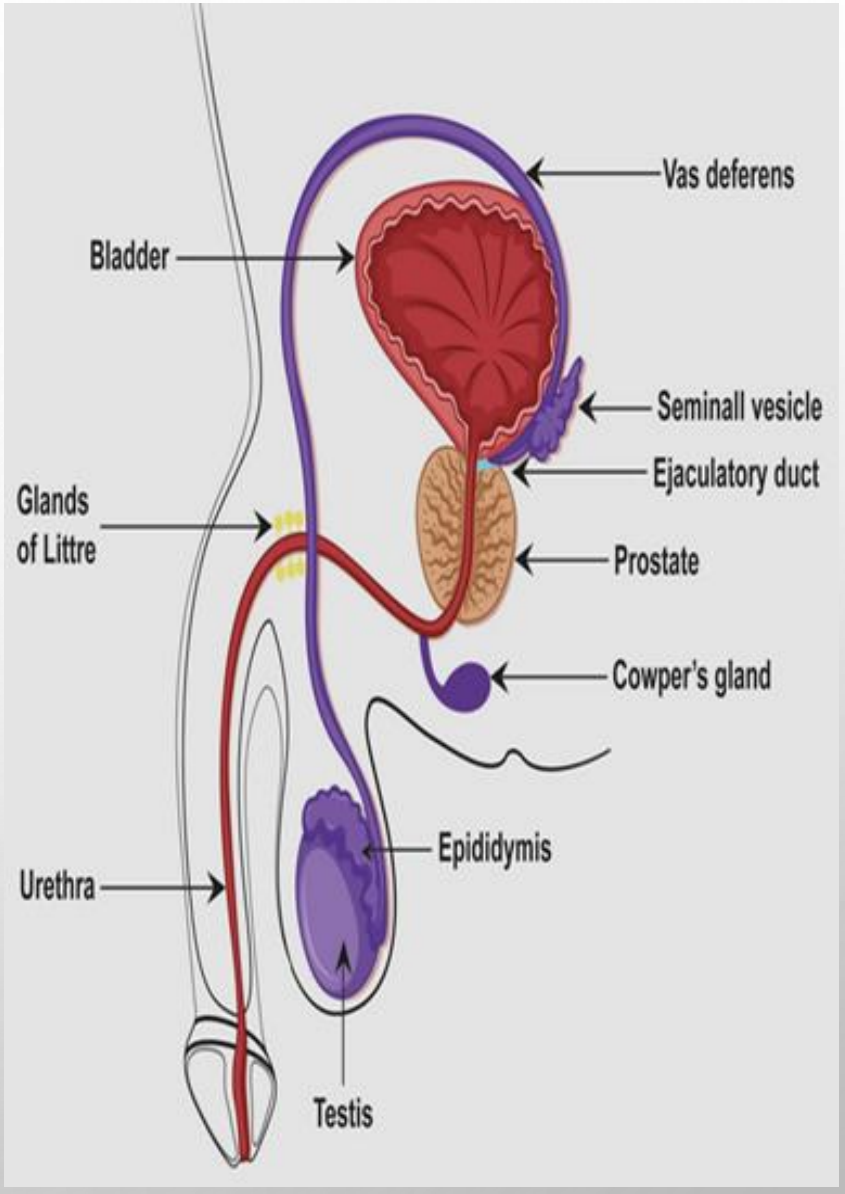
**2-Intra mucosal:**

**In C.T. of penis close to the epithelium.**

- **The 2 types open into penile urethra.**

**Function:**

**They secrete mucous secretion for lubrication of the urethra**



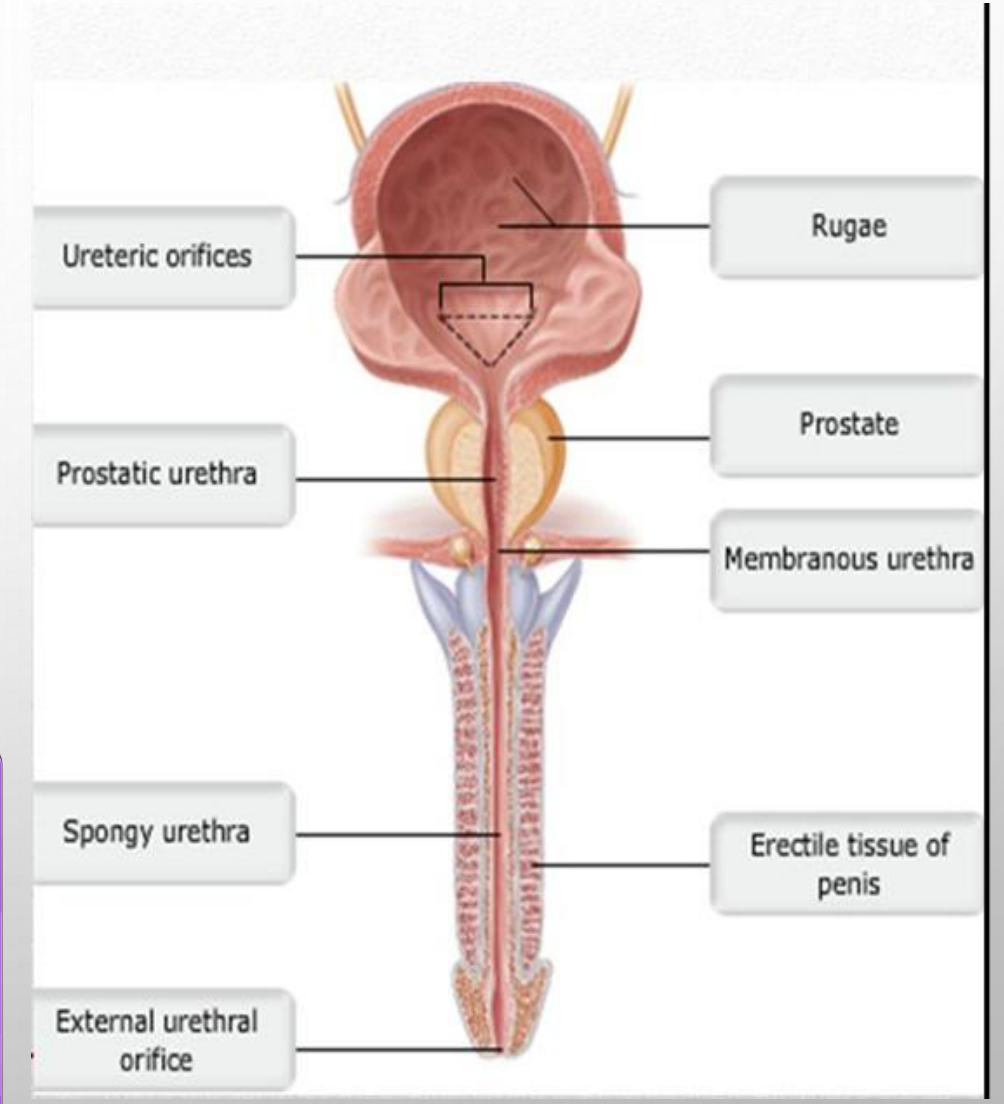
# Male urethra

- THE MALE URETHRA IS LONG (20CM) TWISTED TUBE, THAT CONDUCTS URINE FROM BLADDER (AND SEMINAL FLUID FROM MALE GENITALIA) TO THE OUTSIDE OF THE BODY.
- MANY GLANDS OPEN IN THE COURSE OF THE URETHRA: (PROSTATIC GLAND, GLANDS OF LITTRE AND BULBO-URETHRAL GLAND).

**Prostatic urethra**

**Membranous urethra**

**Penile urethra**

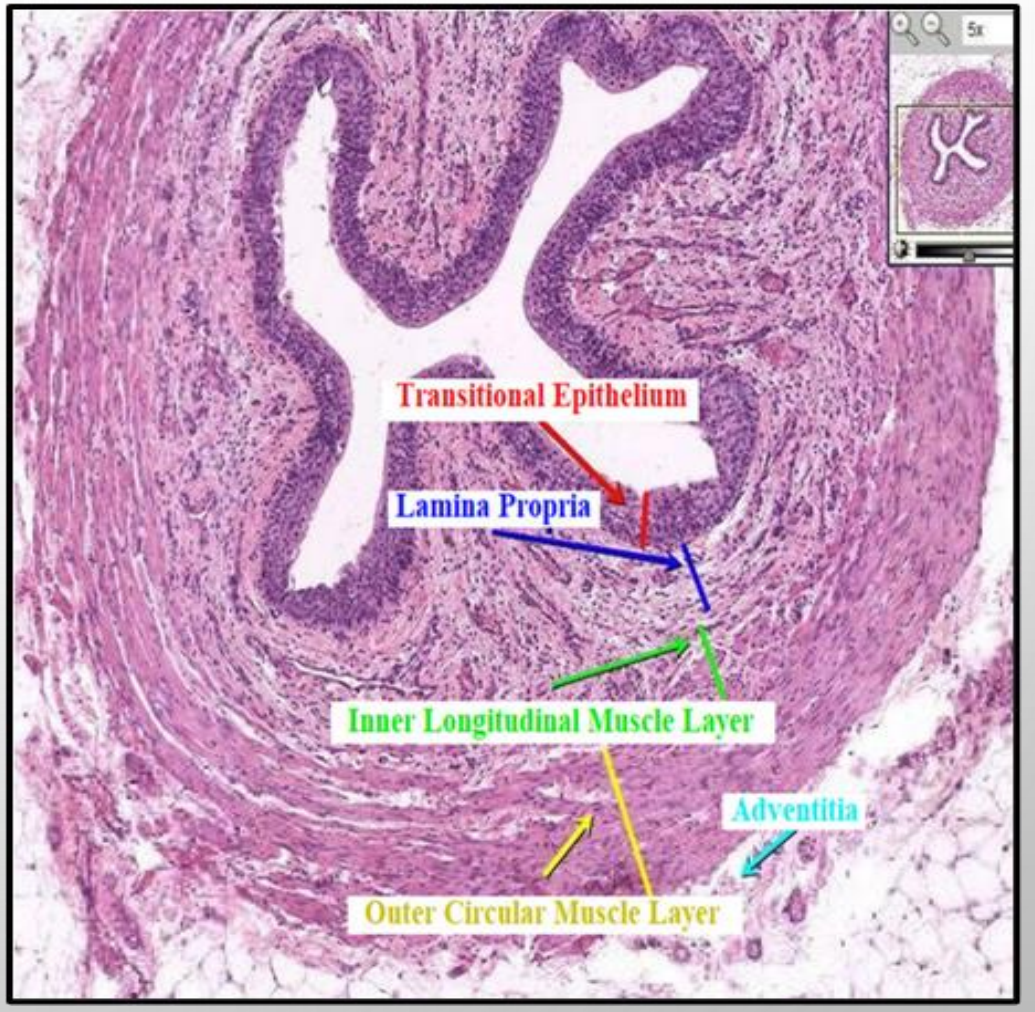


# 1-PROSTATIC:

- ARISE FROM THE NECK OF THE BLADDER AND PASSES THROUGH THE PROSTATE.
- IT HAS A V- SHAPED IN CROSS SECTION.
- THE EJACULATORY DUCTS AND PROSTATIC DUCTS OPEN INTO IT.
- **EPITHELIUM:**
- IT IS LINED WITH:
  - TRANSITIONAL EPITHELIUM (PROXIMALLY)
  - PSEUDOSTRATIFIED COLUMNAR (DISTALLY)
- **IT IS SURROUNDED BY:**

-INNER LONGITUDINAL SMOOTH MUSCLE FIBERS.

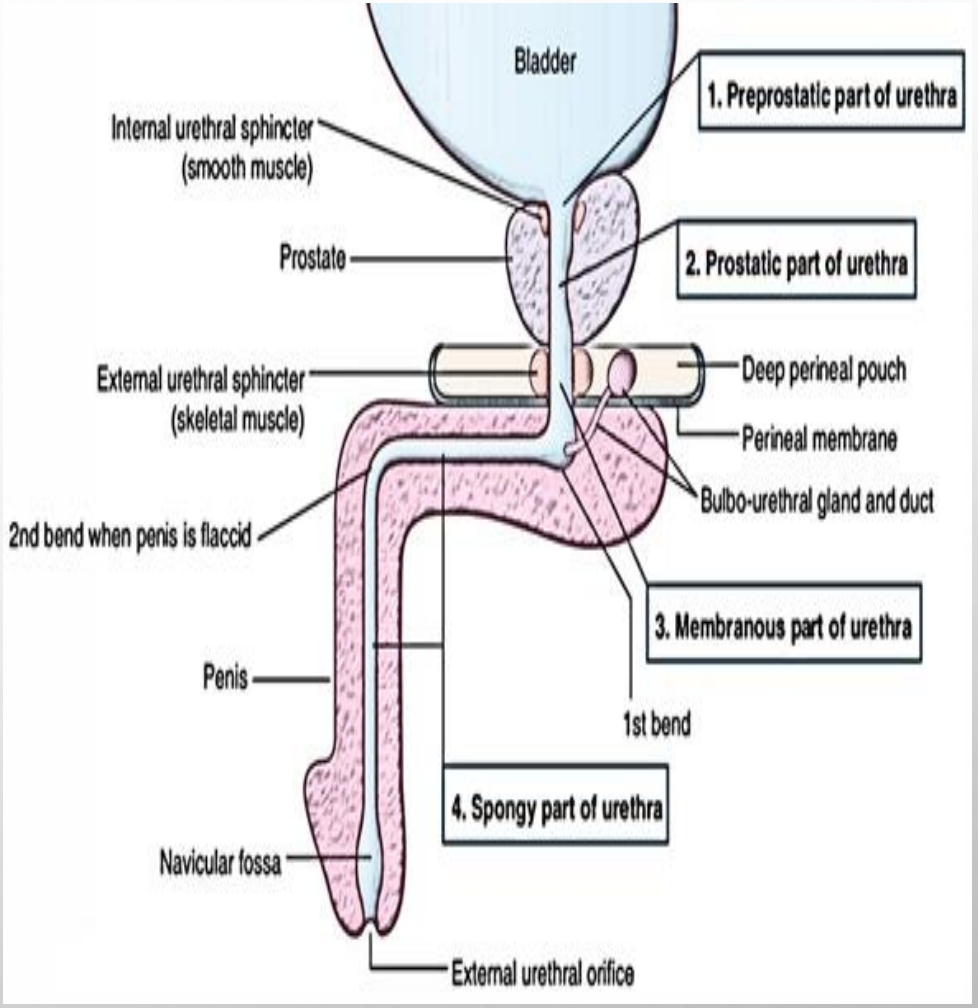
-OUTER CIRCULAR LAYER OF SMOOTH MUSCLE FIBERS WHICH CONDENSE TO FORM ( INTERNAL URETHRAL SPHINCTER )



## 2-Membranous:

- It is very short (1cm).
- It lies within the urogenital diaphragm.
- It is lined with stratified columnar epithelium.
- It is surrounded by:

- Striated muscle which form the external urethral Sphincter.
- Cowper's glands are present outside its wall.

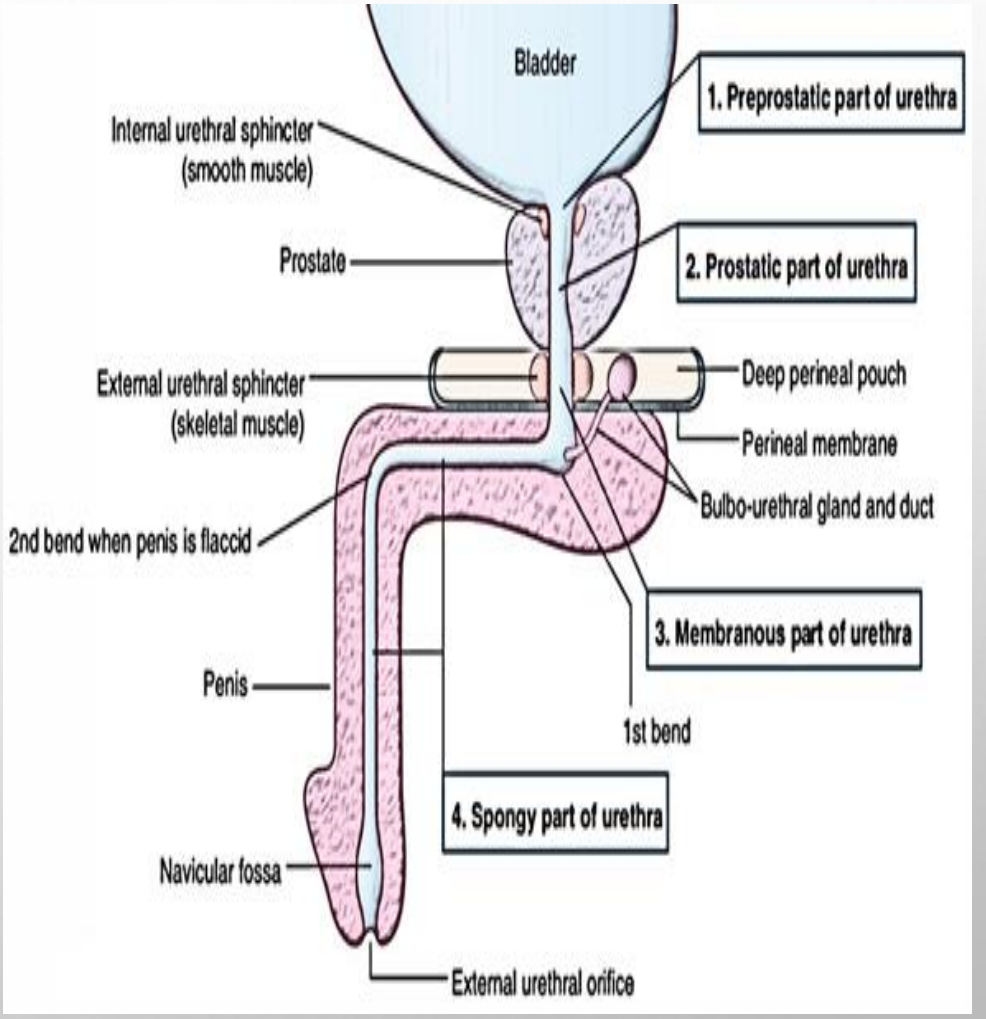


# 3-Penile Urethra:

- It is the longest part.
- Within the penis.
- Its proximal part is dilated to form the bulb of urethra.
- Its distal part is dilated to form the fossa navicularis.
- It is lined with:

- Stratified columnar epithelium proximally
- Stratified squamous distally.

- It is surrounded by vascular C.T., smooth muscle fibers and glands of Littre.

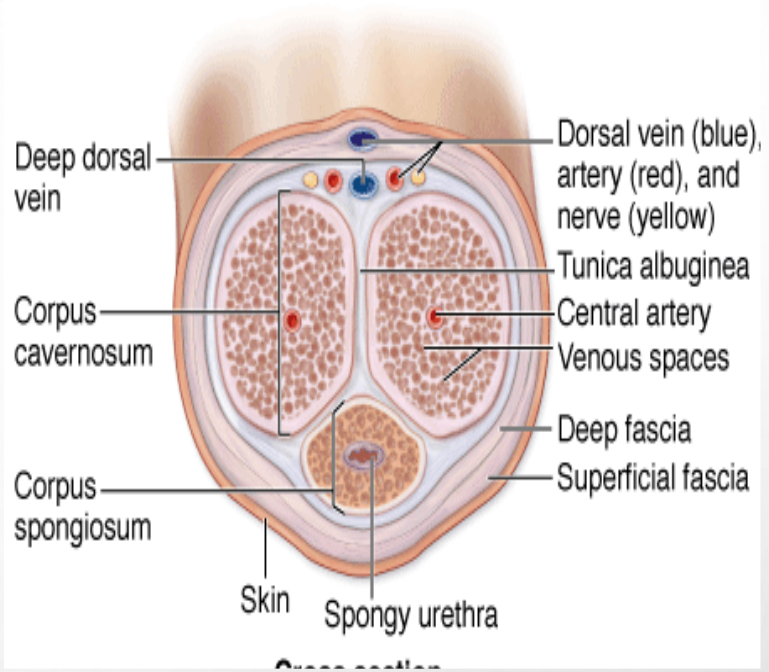


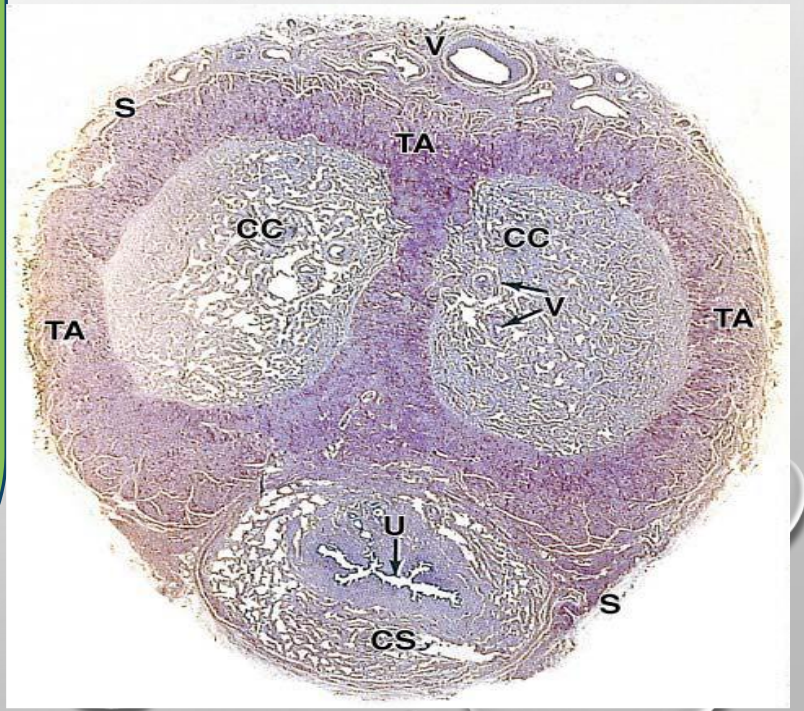
# The Male Urethra

| | Epithelium | Surrounded Gland |
|---|---|---|
| 1-Prostatic urethra | Transitional epithelium proximally.<br>Pseudostratified columnar distally.<br><br>Internal urethral sphincter | Prostate |
| 2-Membranous urethra | Stratified columnar epithelium.<br><br>External urethral sphincter | Cowper's gl. |
| 3-Penile Urethra | Stratified columnar epithelium proximally.<br>Stratified squamous distally. | Glands of Littre |

# PENIS

- The main components of the penis are three cylindrical masses of erectile tissue, plus the penile urethra, surrounded by skin.
- Two of these cylinders—the corpora cavernosa—are placed dorsally.
- The other—the corpus spongiosum—is ventral and surrounds the urethra.
- At its end the corpus spongiosum expands, forming the glans.




Thank
you!

# REFERENCES


- JUNQUEIRA LC, CARNEIRO J: JUNQUEIRA'S BASIC HISTOLOGY. TEXT AND ATLAS, FOURTEENTH EDITION, COPYRIGHT © 2016 BY MCGRAW-HILL EDUCATION.
- STUDENT MEDICAL HISTOLOGY BOOK, MANSOURA UNIVERSITY.