

# Anatomy of male reproductive organs

## Male reproductive tracts

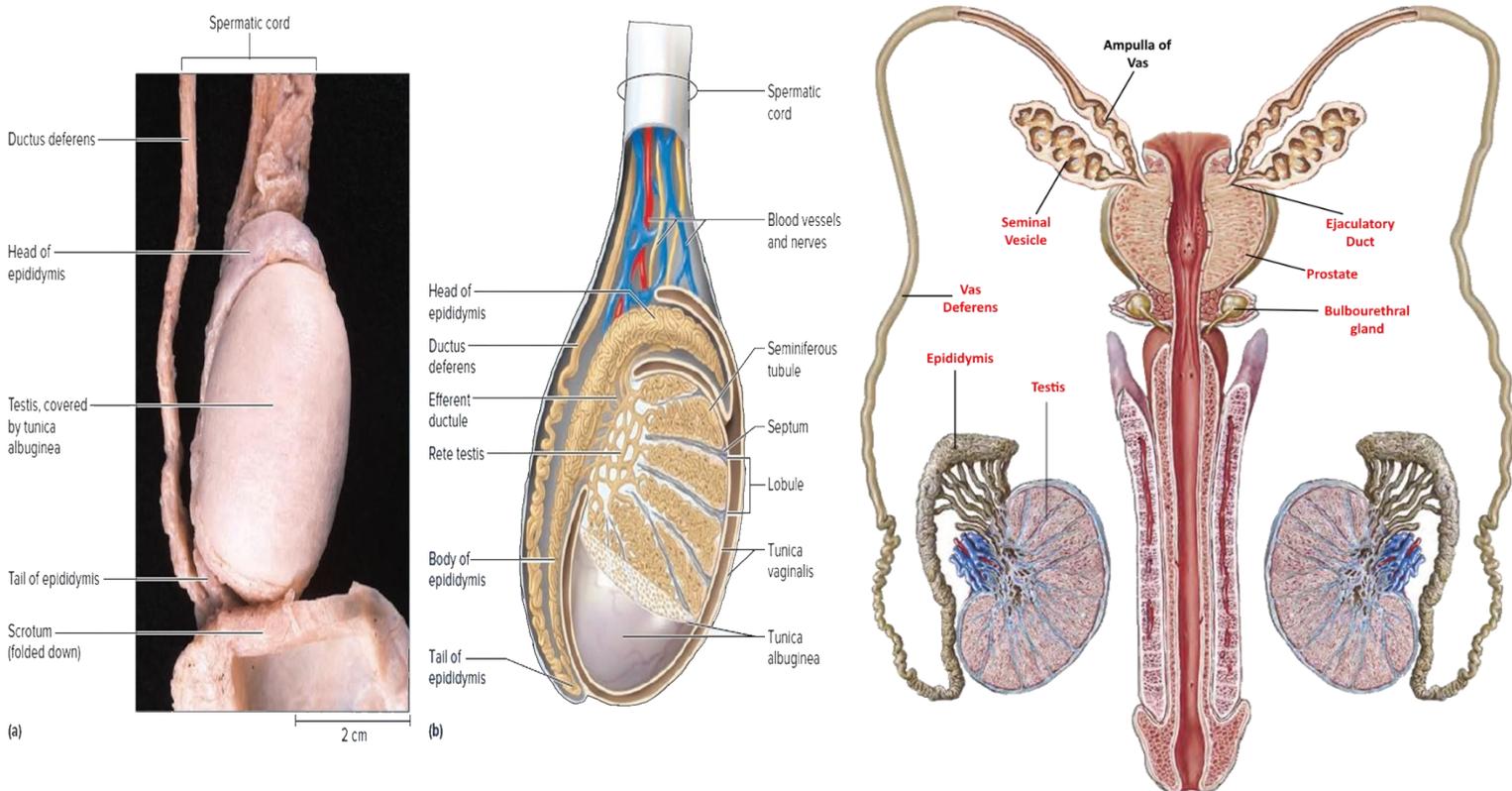
Primary sex organs	Accessory sex organs		External Genitalia
- Testis	Duct system	Genital gland	- Penis - Scrotum
	- Epididymis - Ejaculatory duct	- Vas deferens - Urethra - Prostate - Seminal Vesicle - Bulbourethral gland	

### 1) The Testis

- **Definition:**
  - It is the male **primary sex organ**.
- **Function:**

Exocrine function	Endocrine function
Production of <b>Spermatozoa</b>	Production of <b>Testosterone</b>

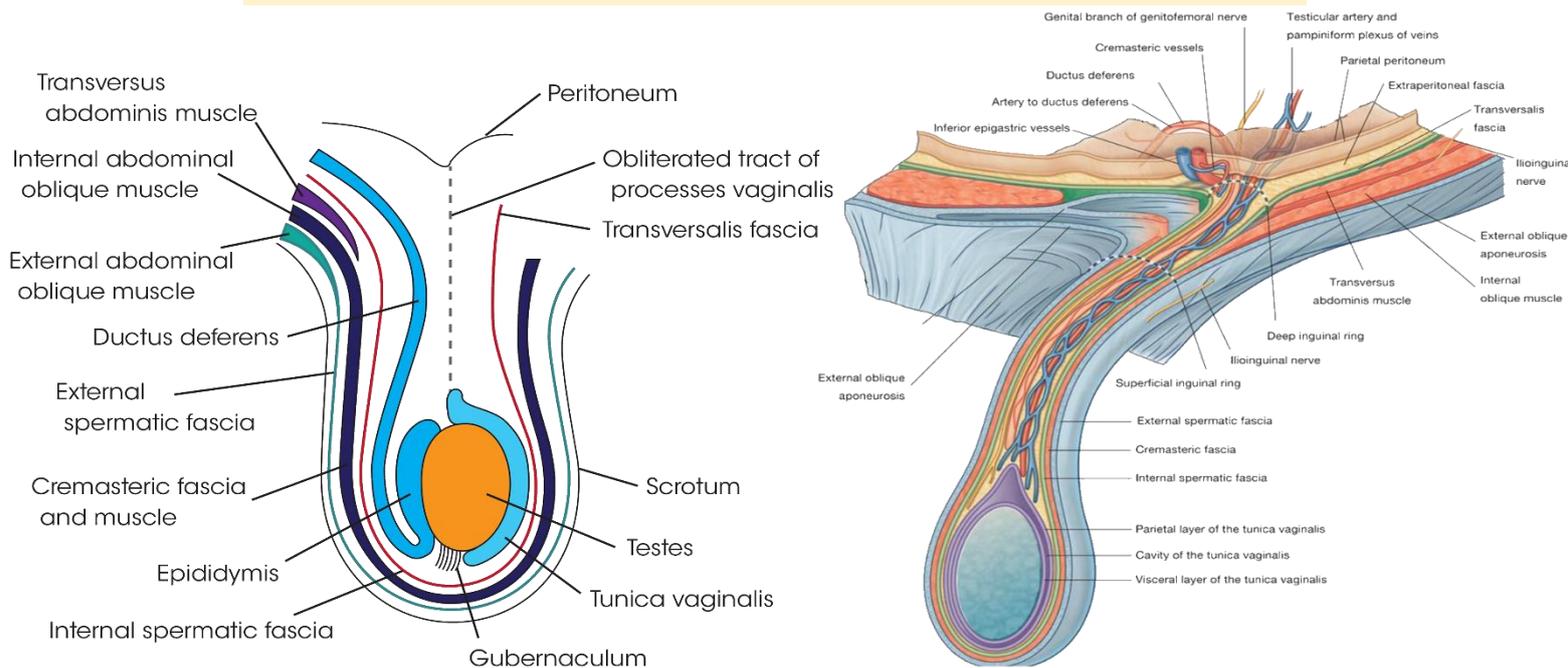
- **Location:**
  - In the **scrotum** suspended by spermatic cord.



## Coverings of the Testis

<b>3 Capsules</b>	<i>Tunica Vasculosa</i>	<ul style="list-style-type: none"> <li>• The inner-most.</li> <li>• It consists of a <b>vascular plexus</b> and loose CT.</li> </ul>
	<i>Tunica Albuginea</i>	<ul style="list-style-type: none"> <li>• <b>Fibrous layer.</b></li> <li>• Thickened posteriorly → forms mediastinum testis.</li> </ul>
	<i>Tunica Vaginalis</i>	<ul style="list-style-type: none"> <li>• <b>Serous layer.</b></li> <li>• Has visceral &amp; parietal layers.</li> </ul>
<b>3 Coats</b>	<i>Internal spermatic fascia</i>	• Derived from the <b>fascia transversalis.</b>
	<i>Cremasteric ms &amp; fascia</i>	• Derived from the <b>internal oblique muscle.</b>
	<i>External spermatic fascia</i>	• Derived from the <b>external oblique aponeurosis.</b>

**N.B.** The coats are derived from the **anterior abdominal wall**

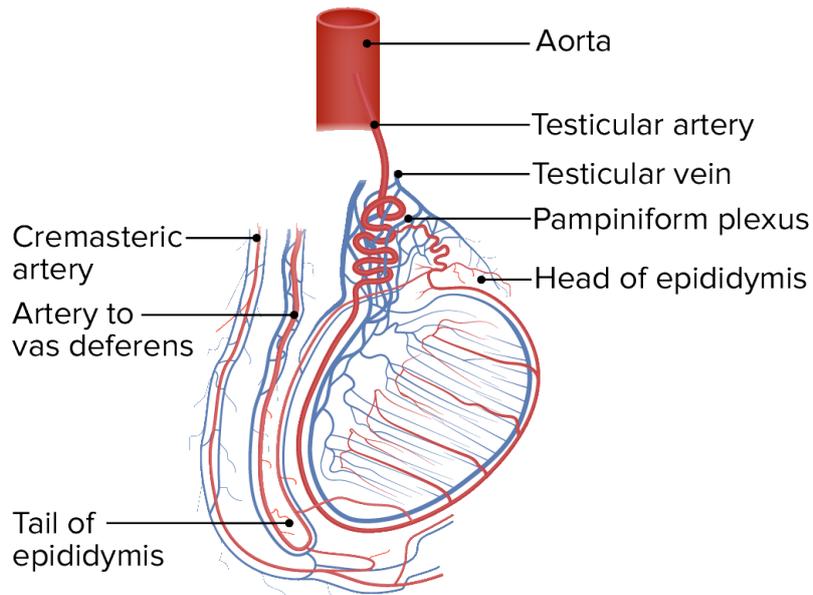


### ▪ Arrangement of the coverings of the testis (From outside inwards):

- **Skin of the scrotum** → **Dartos muscle** → **Colle's fascia** → **External spermatic fascia** → **Cremasteric muscle & fascia** → **Internal spermatic fascia** → **Tunica vaginalis: 2 layers (parietal & visceral layers)** → **Tunica albuginea (fibrous capsule)** → **Tunica vasculosa.**

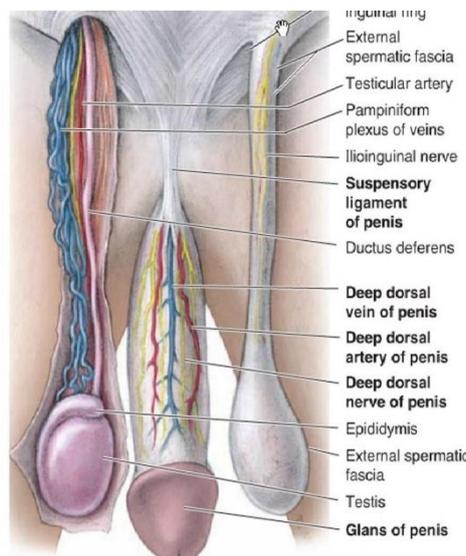
▪ Blood supply & Lymphatic drainage:

Arterial supply	<b>Testicular artery:</b> branch from abdominal aorta at the <b>level of L2.</b>		
Venous drainage	Pampiniform plexus of veins which end in a testicular vein that terminates in:	Right	IVC
		Left	Lt. Renal Vein
Lymphatic drainage	Lumbar or paraaortic lymph nodes at the level of L1.		



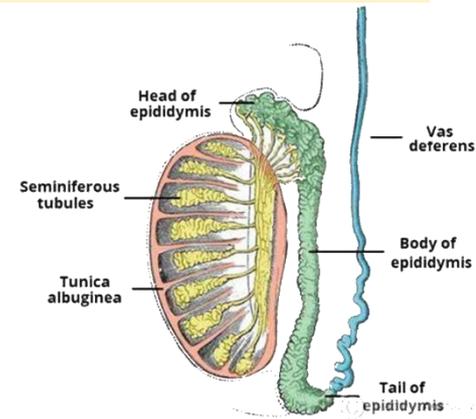
### The spermatic cord

Definition	Collection of structures that pass through the inguinal canal <b>to and from the testis.</b>	
Coverings	<b>3 concentric layers of fascia</b> derived from layers of the anterior abdominal wall	
Structures	1. Vas (ductus) deferens 3. Testicular vein (pampiniform plexus) 5. Testicular lymph vessels	2. Testicular artery 4. Testicular nerve (autonomic) 6. Remains of processus vaginalis



## 2a) Genital ducts

- Act as:
  - **Passage & Storage** for the sperms.
- They include (in order):
  - Tubuli recti → Rete testis → Efferent ductules → Duct of epididymis → Vas deferens → Ejaculatory ducts → Urethra



### a) Epididymis

<b>Definition</b>	Highly coiled tube (6 meters)	
<b>Shape</b>	<b>Comma-shaped</b> structure in relation to the posterior part of testis.	
<b>Parts</b>	<b>Head</b>	<ul style="list-style-type: none"> <li>• Upper part</li> <li>• Forms a cap around the upper pole of the testis.</li> </ul>
	<b>Body</b>	<ul style="list-style-type: none"> <li>• Middle part</li> <li>• Behind the testis</li> </ul>
	<b>Tail</b>	<ul style="list-style-type: none"> <li>• Lower part</li> <li>• Continuous with the vas deferens</li> </ul>

### b) Vas deferens

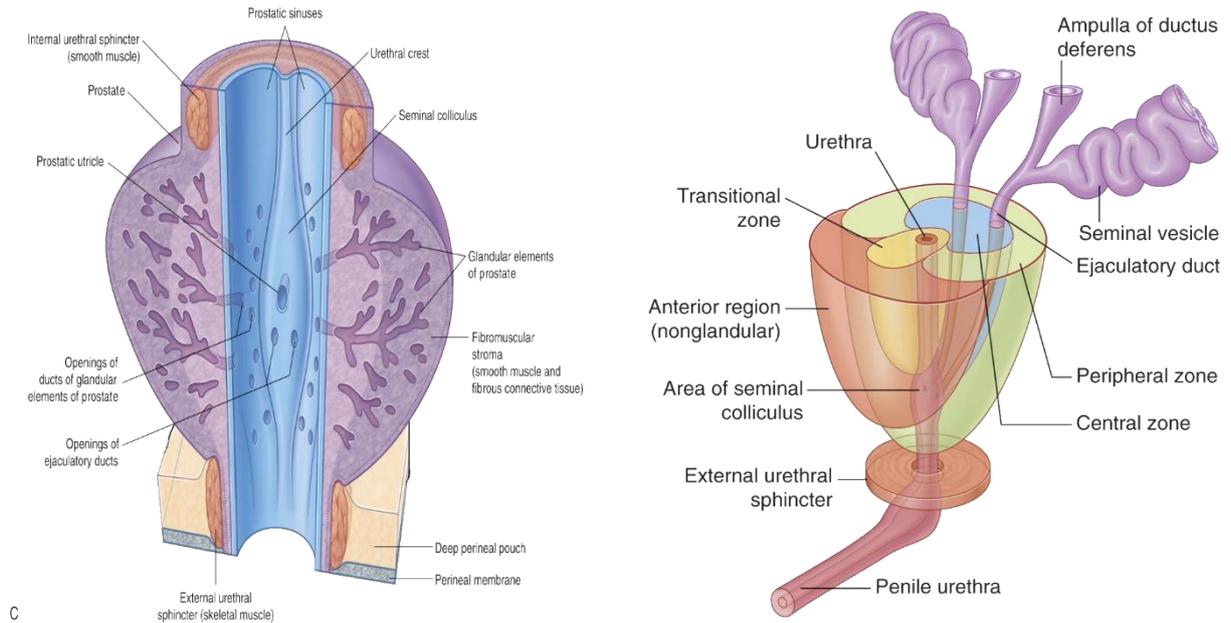
<b>Definition</b>	<b>Cord-like</b> structure (45 cm) with thick muscular wall.					
<b>Shape</b>	Begins in the <b>scrotum</b> (continuation of the tail of the epididymis) behind the testis.					
<b>Course</b>	<ul style="list-style-type: none"> <li>• It ascends in the <b>spermatic cord</b> to enter the <b>inguinal canal</b></li> <li>• At the <b>deep inguinal ring</b>, it hooks around the <b>lateral side</b> of the inferior epigastric artery to enter the <b>pelvis</b>.</li> <li>• Then, it passes on <b>the side wall</b> of pelvis crossing the following from above down: <table border="1" style="width: 100%; text-align: center;"> <tr> <td>External iliac vessels</td> <td>Umbilical artery</td> <td>Obturator nerve &amp; Vessels</td> </tr> </table> </li> </ul>			External iliac vessels	Umbilical artery	Obturator nerve & Vessels
	External iliac vessels	Umbilical artery	Obturator nerve & Vessels			
<ul style="list-style-type: none"> <li>• Then, it passes <b>medially crossing over the ureter</b> and descends behind the <b>base of urinary bladder</b> medial to <b>seminal vesicle</b> where it forms the <b>ampulla of vas</b>.</li> <li>• It ends by joining the <b>duct of seminal vesicle</b> to form ejaculatory duct.</li> </ul>						

## c) Ejaculatory duct

- **Fromation:**
  - Union of the ampulla of the vas deferens with the duct of the seminal vesicle.
- **Opens in:**
  - Prostatic urethra

## d) Urethra

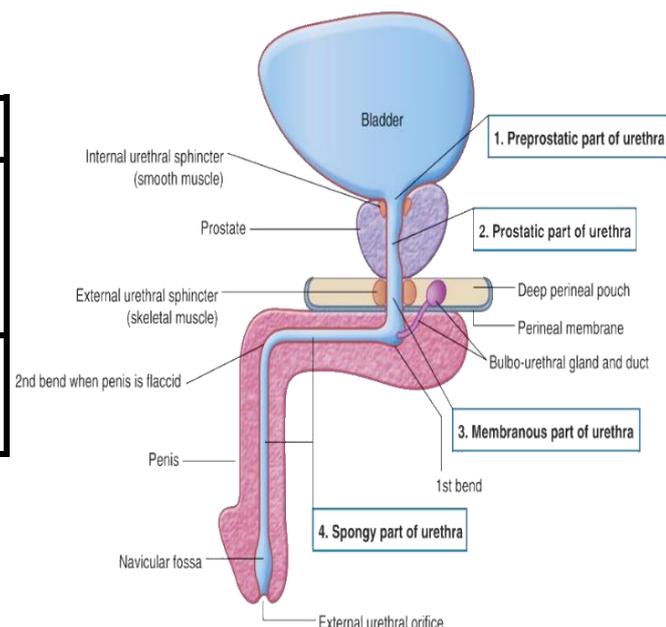
- Common pathway for **Urine & Semen**



## 2b) Accessory Glands

### a) Seminal vesicles

<b>Def &amp; Size</b>	<b>2 sacculated glands (5 cm long).</b>
<b>Site</b>	<ul style="list-style-type: none"> <li>• Behind the urinary bladder</li> <li>• <b>Lateral to</b> the ampulla of vas</li> <li>• <b>Anterior to</b> the rectum.</li> </ul>
<b>Course</b>	<b>Its duct joins the vas deferens to form ejaculatory duct.</b>



## b) Prostate Gland

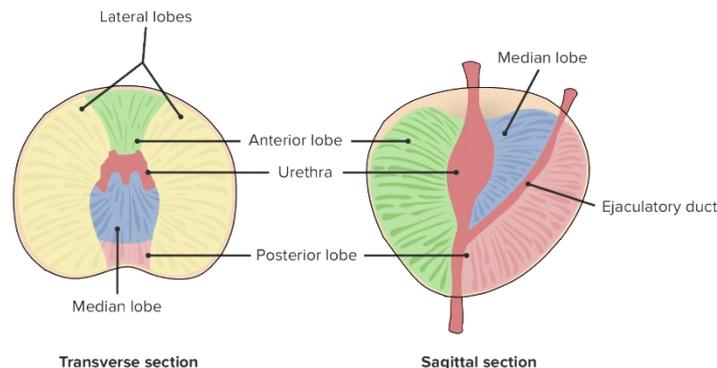
<b>Size</b>	Single gland (2x3x4 cm)	
<b>Site</b>	<ul style="list-style-type: none"> <li>Lies <b>below the neck</b> of urinary bladder <b>behind</b> lower border of <b>symphysis pubis</b></li> <li>It surrounds the upper part of the urethra (<b>prostatic urethra</b>).</li> </ul>	
<b>Shape</b>	<b>Inverted pyramid</b>	
<b>Parts</b>	<b>Apex</b>	Directed <b>downwards</b>
	<b>Base</b>	<ul style="list-style-type: none"> <li>Directed upwards to <b>surround the neck</b> of the urinary bladder.</li> <li>It is <b>pierced by the urethra</b>.</li> </ul>
	<b>Post. Surface</b>	<ul style="list-style-type: none"> <li>Related to <b>ampulla of the rectum</b>.</li> <li>It is <b>pierced</b> by 2 ejaculatory ducts.</li> </ul>
	<b>Ant. Surface</b>	Lies behind the lower border of the <b>symphysis pubis</b> .

- The urethra & 2 ejaculatory ducts traverse the prostate: dividing it into 5 lobes:

- o Median lobe:

- It lies between the urethra and the 2 ejaculatory ducts.
- It projects inside the urinary bladder forming "**uvula vesicae**" just behind the **Internal Urethral Meatus**.
- It contains much glandular tissue (**common site of enlargement and adenomas**).

- o Anterior lobe
- o Posterior lobe
- o Right lobe
- o Left lobe



## c) Bulbourethral (Cowper's) glands

- **Size:**

- o They are **small gland** that lie on either side of **membranous urethra**.

- **Course:**

- o They open in the **penile urethra**.

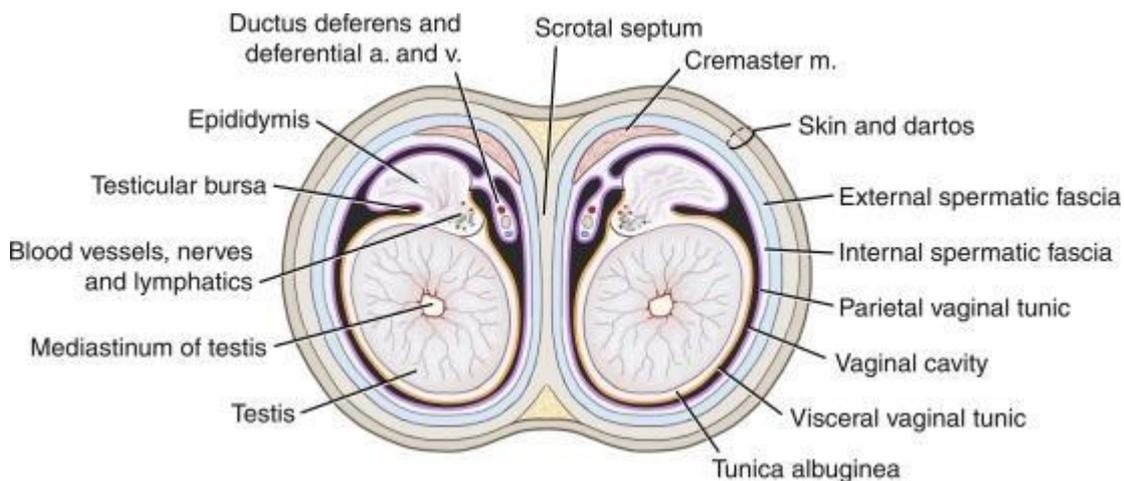
### 3) External Genitalia

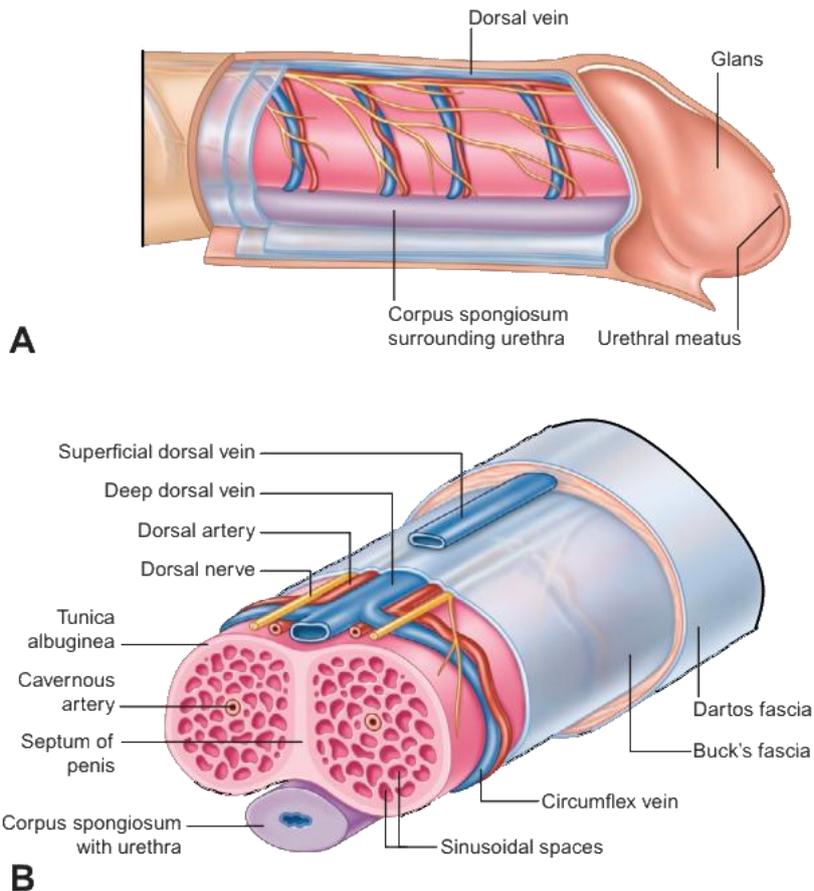
#### a) Penis

<b>Definition</b>	<ul style="list-style-type: none"> <li>The <b>copulatory organ</b> in man that passes urine &amp; semen.</li> <li>It is a <b>highly vascular</b> cylindrical organ</li> </ul>		
<b>Structure</b>	<b>External</b>	<b>Root</b>	Attaches penis to <b>perineum</b>
		<b>Body (Shaft)</b>	-
		<b>Glans penis</b>	Enlarged <b>end of the body</b>
		<b>Prepuce (foreskin)</b>	<ul style="list-style-type: none"> <li>Partially covers glans and surrounds external urethral meatus</li> <li>May be <b>removed</b> in circumcision</li> </ul>
	<b>Internal</b>	<b>3 masses of erectile tissue</b>	<ul style="list-style-type: none"> <li><u>Two corpora cavernosa</u></li> <li><u>One corpus spongiosum</u>: is traversed by the urethra &amp; its posterior end expand to form the <b>bulb of the penis</b>.</li> </ul>

#### b) Scrotum

<b>Definition</b>	It is a sac of <b>dark &amp; wrinkled skin</b> .		
<b>Shape</b>	It is <b>divided by a septum</b> into right & left compartments, each of which enclose:		
	<b>A testis</b>	<b>Epididymis</b>	<b>Lower end of spermatic cord</b>
<b>Layers of wall (In order)</b>	Skin → dartos muscle → Colles' fascia → external spermatic fascia → cremasteric muscle & fascia → internal spermatic fascia → tunica vaginalis.		
<b>Dartos muscle</b>	<ul style="list-style-type: none"> <li>Innervated by <b>sympathetic nerve</b></li> <li>Contraction of dartos muscle → <b>wrinkles</b> the scrotum &amp; <b>reduces heat loss</b></li> </ul>		
<b>Lymphatic drainage</b>	Structures of the scrotal wall structures is drained into the <b>superficial inguinal lymph nodes</b> .		





▪ Quiz:

**Q1. Which of the following best describes the testis?**

- A. It is a secondary sex organ of the male
- B. It has two capsules (tunica Vasculosa, albuginea and two coats (external and internal spermatic facias))
- C. Its lymphatic drainage into superficial inguinal lymph nodes
- D. Its Tunica vaginalis is a fibrous layer, which has visceral & parietal layers.
- E. Its Tunica vaginalis is a serous layer, which has visceral & parietal layers.

Answer: E

**Q2. Which of the following is true as regards to the prostatic gland?**

- A. it lies below the neck of urinary bladder behind the upper border of symphysis pubis
- B. Its Base is directed upwards to surround the neck of the urinary bladder and pierced by the ejaculatory duct
- C. Its median lobe lies below the urethra and the 2 ejaculatory ducts.
- D. its median lobe contains much glandular tissue (common site of enlargement and adenomas).
- E. Its Posterior surface is related to anal canal

Answer: D