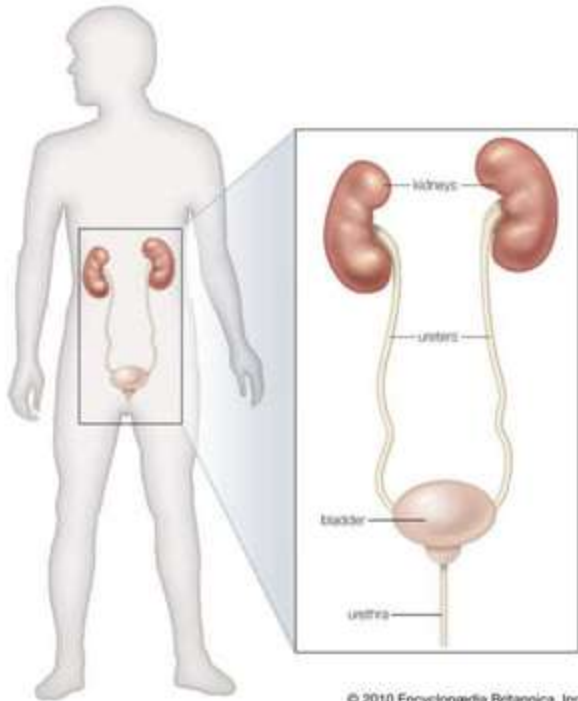


# URETHRA

**Dr.V.JAY SOURYA, M.B.B.S**

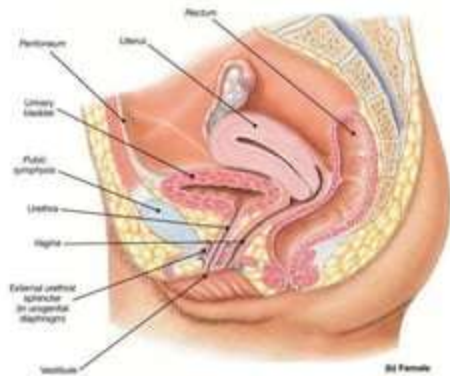
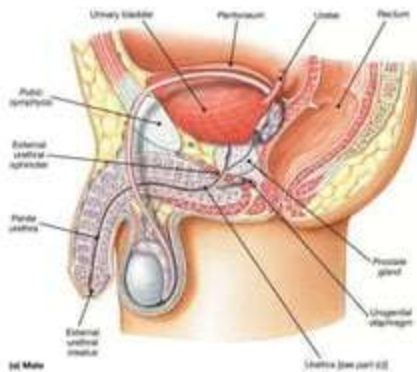
# URINARY SYSTEM

- ❑ **Kidney**– formation of urine
- ❑ **Ureter**– carrying of urine from kidney to bladder
- ❑ **Urinary bladder**– storage of urine
- ❑ **Urethra**– voiding /elimination of urine



## General Features Of Urethra

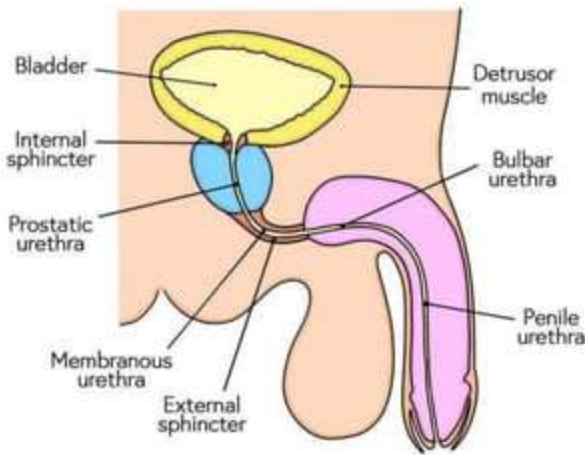
- A tubular structure emerging from **the neck of bladder** and opens to the exterior
- **FUNCTION** - It is outlet of bladder & eliminates urine to outside
- Present in both male & female but there are some differences b/w the two



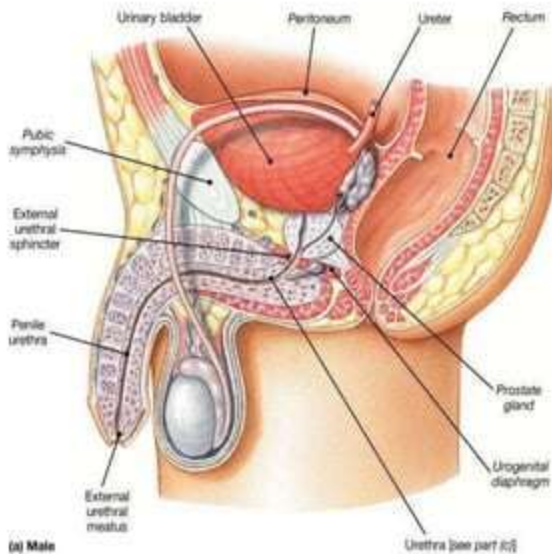
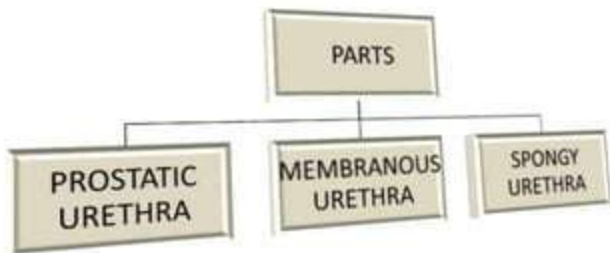
## MALE URETHRA

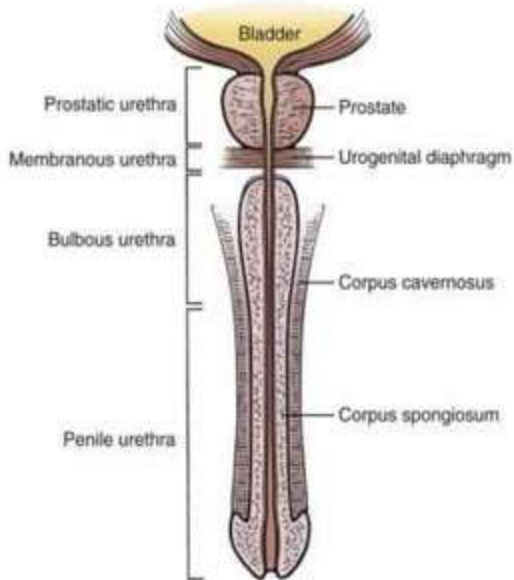
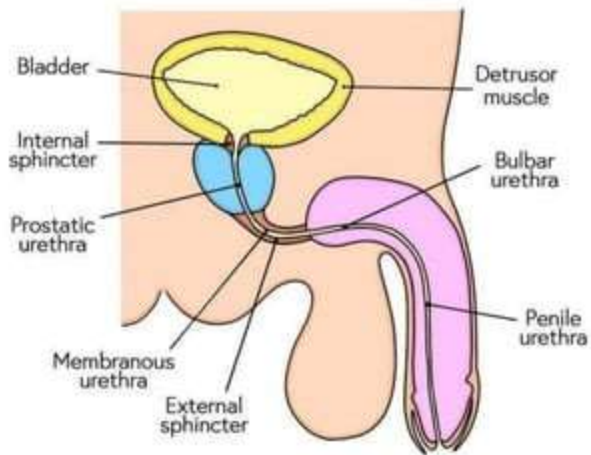
## MALE URETHRA

- The male urethra is about **18–20 cm** long.
- It extends from the **internal urethral orifice** at the neck of the urinary bladder to the **external urethral orifice (EUO)** at the tip of the glans penis.
- In **flaccid** state of the penis, the long axis of the urethra presents two curvatures and is therefore **S-shaped**.
- In **erect** state of the penis, the distal curvature disappears and as a result it becomes '**J-shaped**'.



# MALE URETHRA

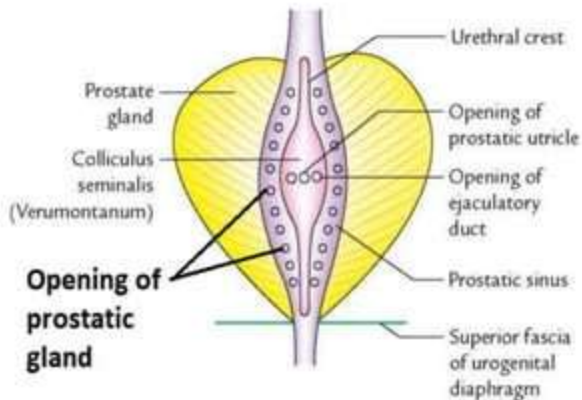






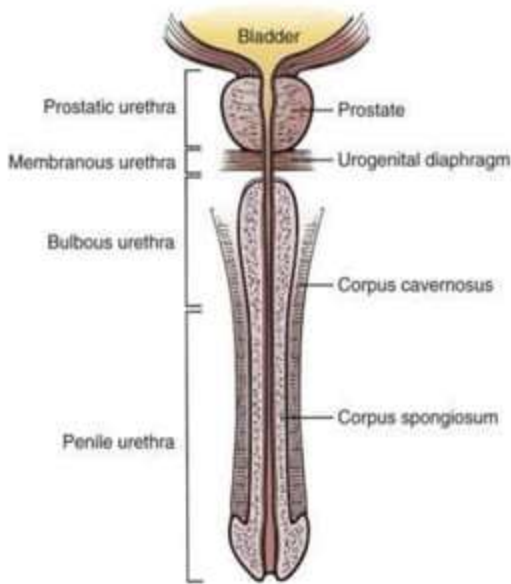
# PROSTATIC URETHRA

- It is the **widest and most dilatable part** of the male urethra.
- It is **fusiform** in the coronal section
- **Urethral crest**, a median longitudinal ridge of the mucous membrane.
- *Colliculus seminalis* (**verumontanum**) , an elevation on the middle of the urethral crest.
- The **prostatic utricle** opens on its summit by a slit-like orifice.
- **Ejaculatory duct** – open on either side of prostatic utricle.



# MEMBRANOUS URETHRA

- It is the **narrowest and least dilatable part** of the urethra
- It is surrounded by the **sphincter urethrae muscle**, which serves as the voluntary **external sphincter** of the bladder.
- Numerous mucous glands are often found in it.
- In cross section, its lumen is **star-shaped**.



# SPONGY URETHRA

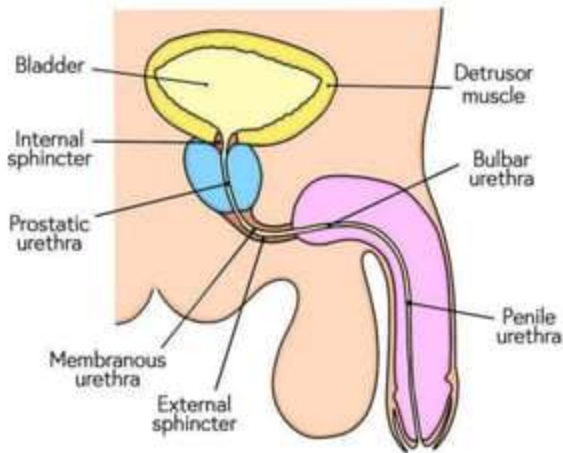
- It extends from **membranous urethra** to **external urethral orifice**.
- It can be divided into **bulbar & penile urethra**.

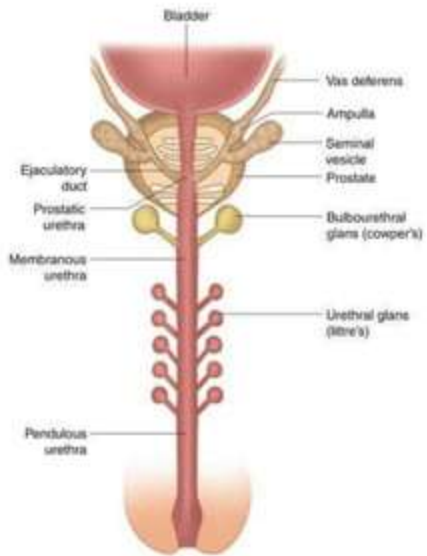
## 1) Bulbar urethra—

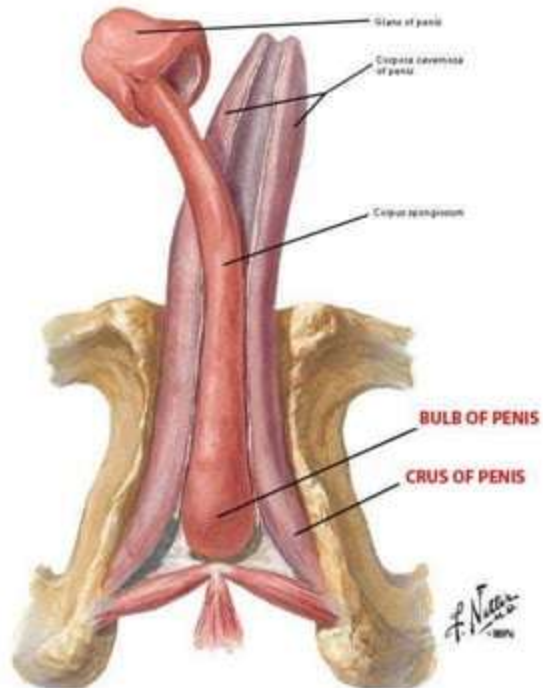
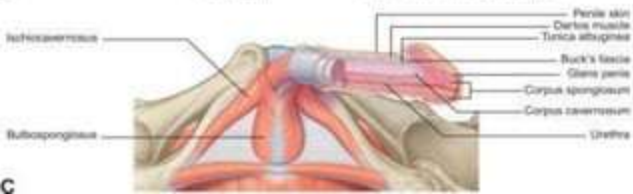
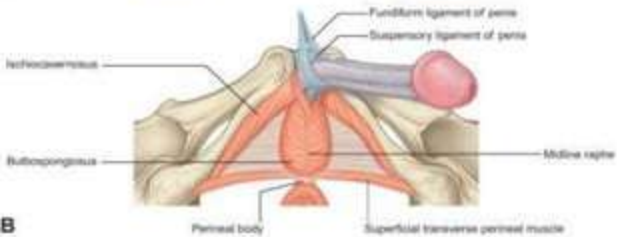
- ❖ Lies in the bulbospongiosus (of penis)
- ❖ **Bulbourethral glands of Cowper** opens here

## 2) Penile urethra-

- ❖ Lies in corpus spongiosum
- ❖ Its terminal part is dilated in glans penis — k/a navicular fossa
- ❖ Numerous **Bulbourethral glands of Littre** open in it



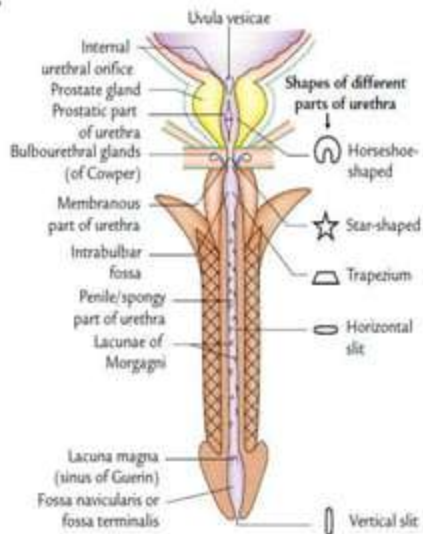




# Transverse section of different part of *urethra*

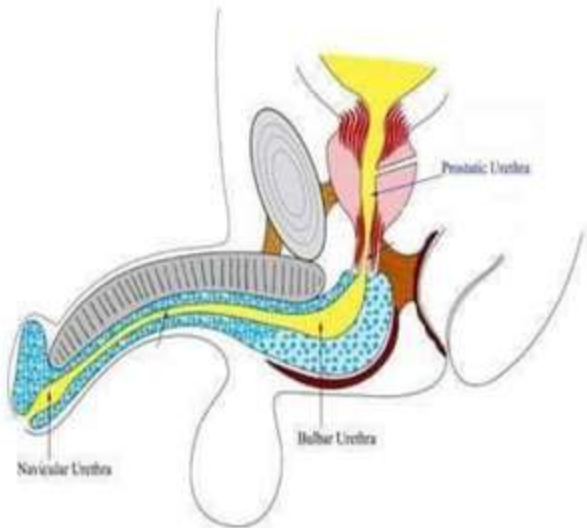
- ❑ prostatic part— **horse-shoe** or crescentic shape
- ❑ membranous part--- **star shape**
- ❑ Bulbar part - **Trapezium**
- ❑ penile part— **horizontal slit**
- ❑ external urethral orifice— **vertical slit**

- \*\*Significance of different shape is to maintain the continuous stream of urine flow  
(projectile stream)

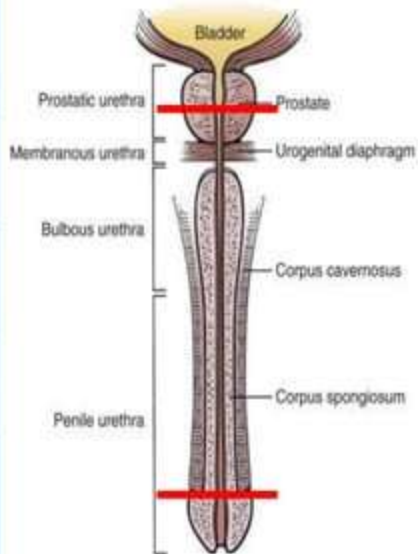


There are 3 dilatation in the urethra

- Prostatic Urethra
- Bulbar Urethra
- Navicular Urethra



Region	Epithelium
Prostatic urethra above the seminal colliculus	Transitional
Prostatic urethra below the seminal colliculus	Stratified columnar
Membranous urethra	Stratified columnar
Spongy urethra up to navicular fossa	Stratified columnar
Navicular fossa and external urethral orifice	Stratified squamous



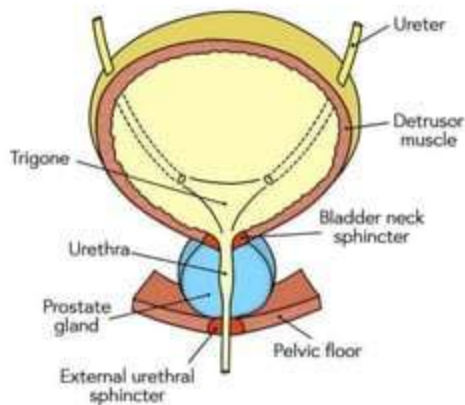


### Internal urethral sphincter

- Surrounds the internal urethral orifice
- Derived from the bladder musculature of trigonal region
- Innervated by the sympathetic fibres (T11-L2 segments)
- Involuntary

### External urethral sphincter

- Surrounds the membranous part of urethra
- Derived from the sphincter urethrae muscle
- Innervated by the somatic fibres (S2, S3, S4 segments)  
**Pudendal nerve**
- Voluntary



- **ARETERIAL SUPPLY** – Dorsal artery of penis (branch of internal pudendal artery)
- **VENOUS SUPPLY** – Prostatic venous plexus which drain into Internal iliac vein.
- **LYMPHATIC DRAINAGE -**
  - i) prostatic urethra---- internal iliac LN
  - ii) membranous urethra---- internal iliac LN
  - iii) anterior urethra--&glans ---deep inguinal LN

## APPLIED ASPECTS

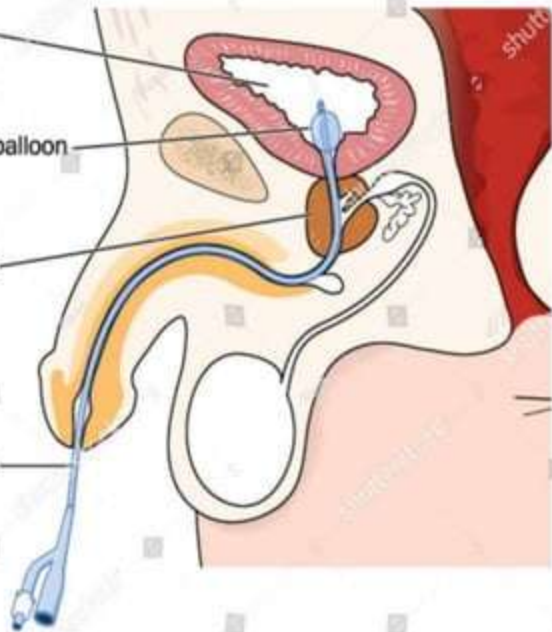
- Catheterization
- Urethritis— infection & inflammation of urethra.
- Rupture of urethra— due to injury by a fall.
- Hypospadias—urethra opens at under surface(ventral)of penis.
- Epispadias— urethra opens on the dorsum of penis.

Bladder

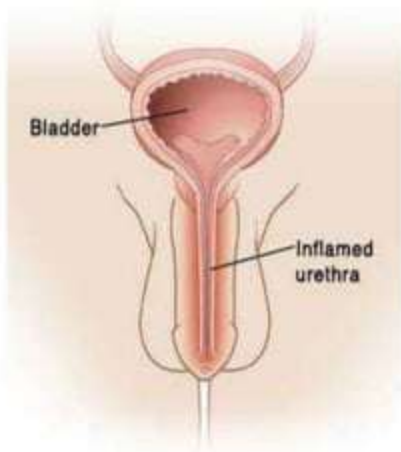
Inflated balloon

Prostate

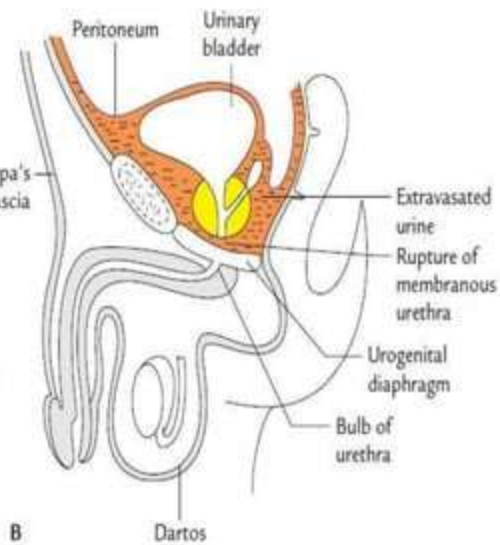
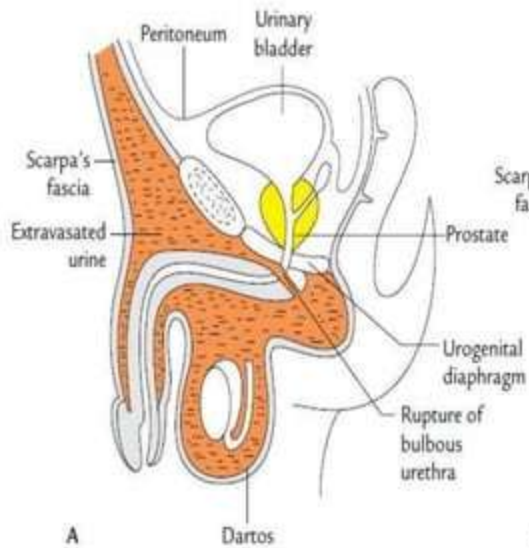
Catheter

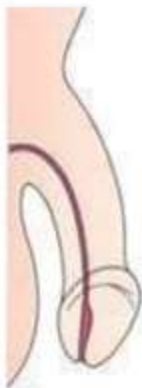


# URETHRITIS

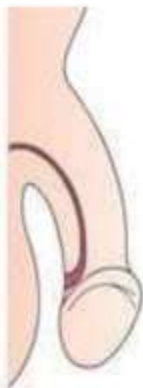


An inflamed urethra can cause pain during urination.





**A. Normal**



**B. Hypospadias**



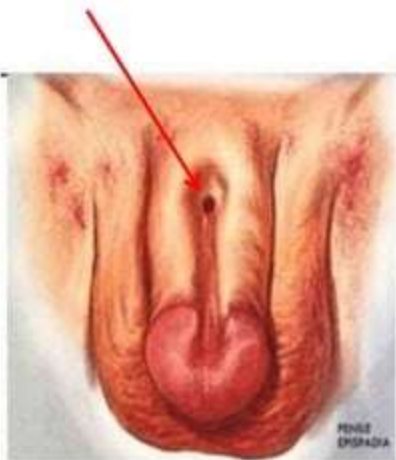
**C. Epispadias**

3 . hypospadias—urethra opens at under surface(ventral)of penis





#### 4 .epispadias– urethra opens on the dorsum of penis

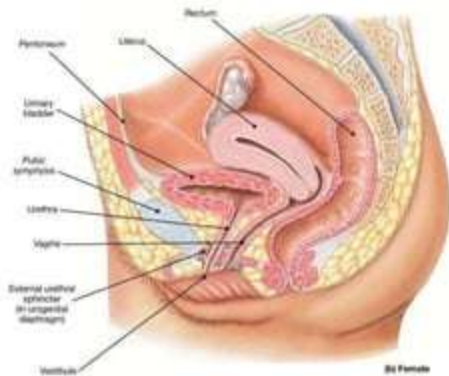


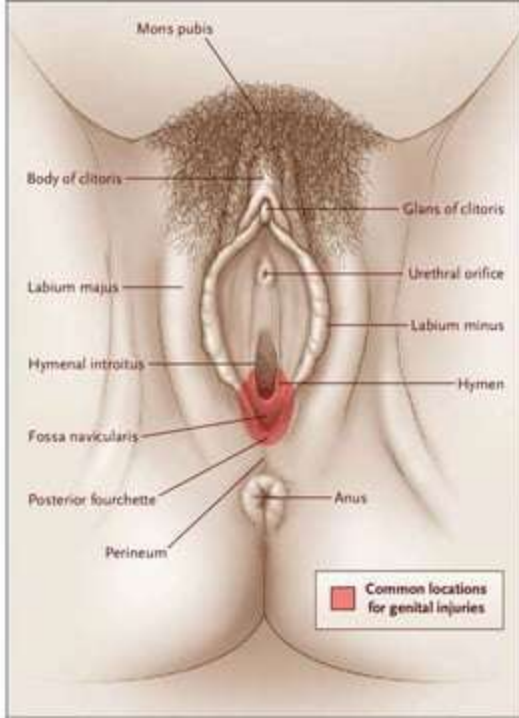
PENIL  
EPISPADIAS

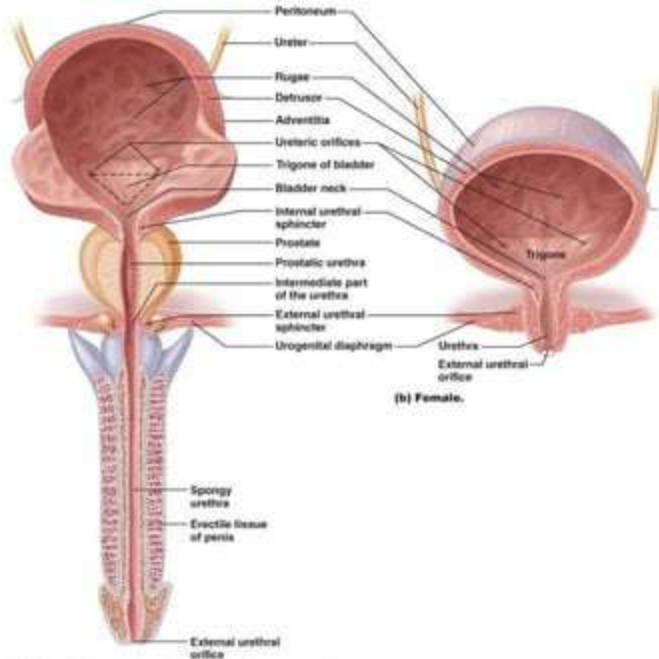
PENIL  
EPISPADIAS

## FEMALE URETHRA

- The female urethra is about **4 cm long** and **6mm in diameter**
- **EXTENT** - **internal urethral orifice** at the neck to **vestibule of vagina**.
- It lies in front of vagina.







**(a) Male.** The long male urethra has three regions: prostatic, intermediate, and spongy.

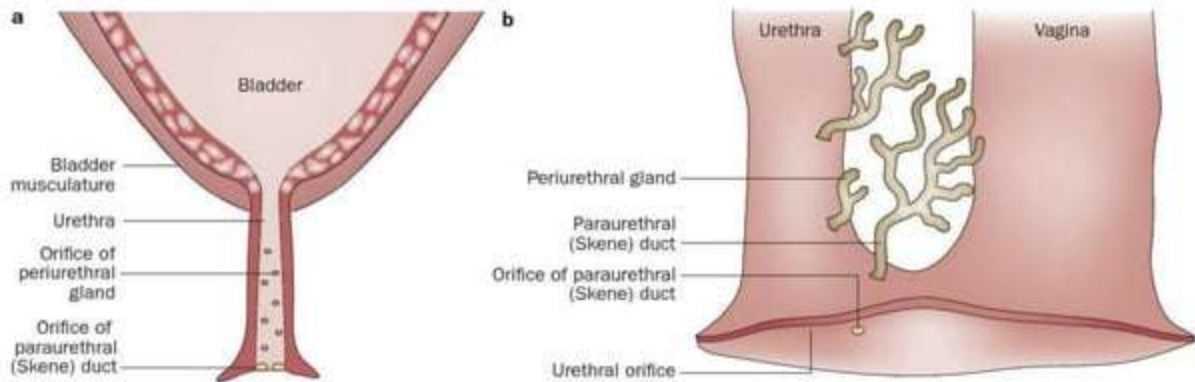
### Shape of the Female Urethra

In cross section, the shape of female urethra differs in different parts:

- *In the upper part, it is **crescentic***
- *In the middle part, it is **star-shaped** (stellate-shaped).*
- *In the lower part, it is a **transverse slit**.*
- *At the external urethral orifice, it is a **sagittal slit**.*

### Glands and Lacunae around the Female Urethra

- ***Periurethral glands***: These are small tubular glands and surround the entire urethra.
- ***Paraurethral glands (of Skene)***: These are relatively large mucous glands and aggregated on each side of the upper part of the urethra.
- ***Urethral lacunae***: These are pit-like mucous recesses along the entire urethra.



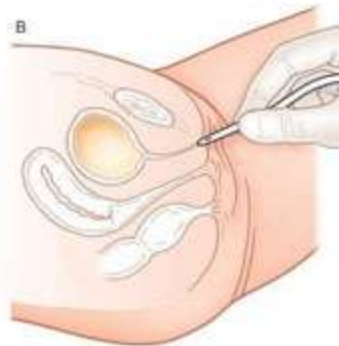
**Figure 2** | The anatomy of the periurethral glands and the paraurethral glands of Skene in relation to the bladder and



- **ARTERIAL SUPPLY** – vesical and vaginal artery
- **VENOUS SUPPLY** – Vesical venous plexus → Internal pudendal vein  
→ Internal iliac vein
- **LYMPHATIC DRAINAGE** - internal iliac & external iliac nodes

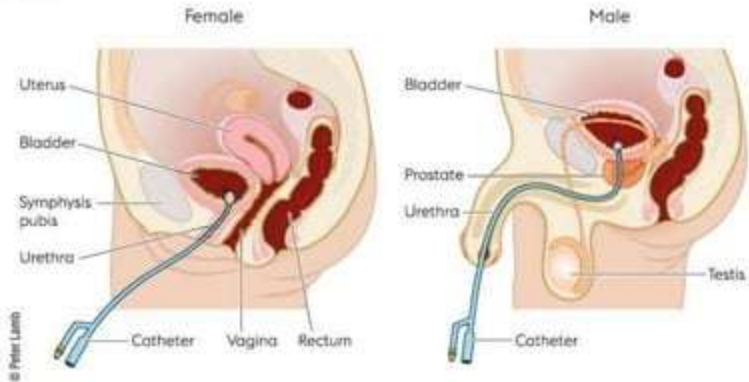
## APPLIES ASPECTS

- Catheterization
- Urinary tract infection (UTI) – more common in females due to short length of urethra.
- *Urinary incontinence* is common in females because in them external urethral sphincter is a tenuous structure and is further weakened during childbirth.



Source: Reschman SF: Emergency Medical Procedures.  
Second Edition. www.accessnursingmedication.com  
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**Figure 1.** Urethral catheters in men and women



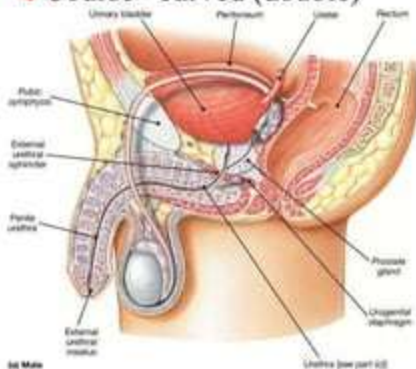
# URETHRITIS



# Difference

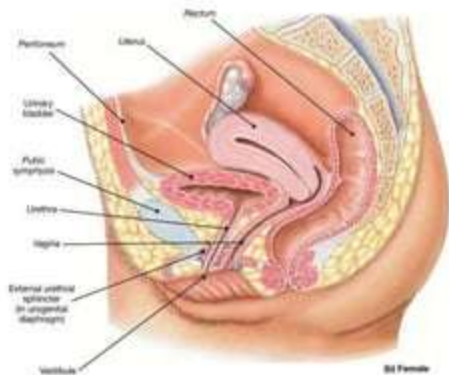
## Male urethra

- 1 Long
- 2 Length= 18- 20 cm
- 3 Function—
  - i) urination
  - ii) ejaculation of semen
- 4 Course— curved (double)



## Female urethra

- 1 Short,,
- 2 Length= 4 cm
- 3 Function—only urination
- 4 Course— nearly straight
- 5 Foley catheterisation is easy



# SYMPTOMS - ???



# THANK YOU