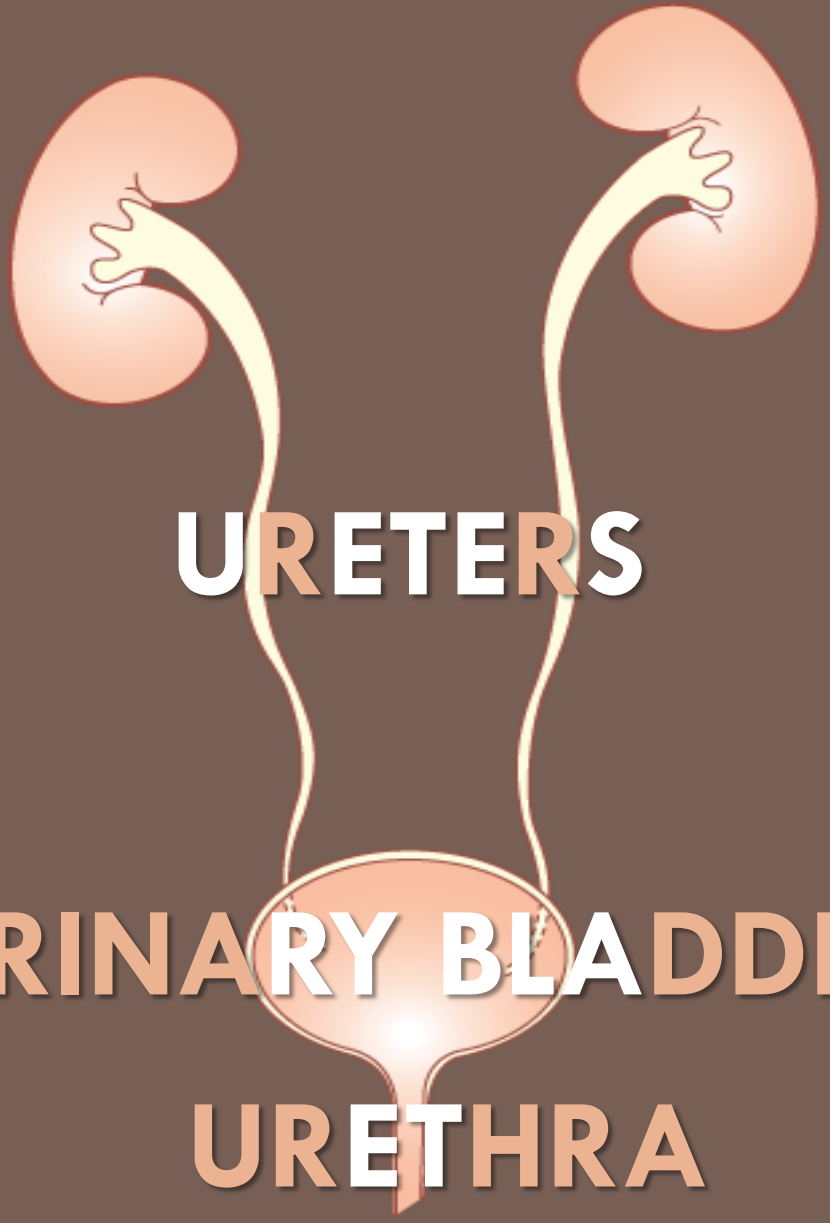


URETERS

URINARY BLADDER

URETHRA

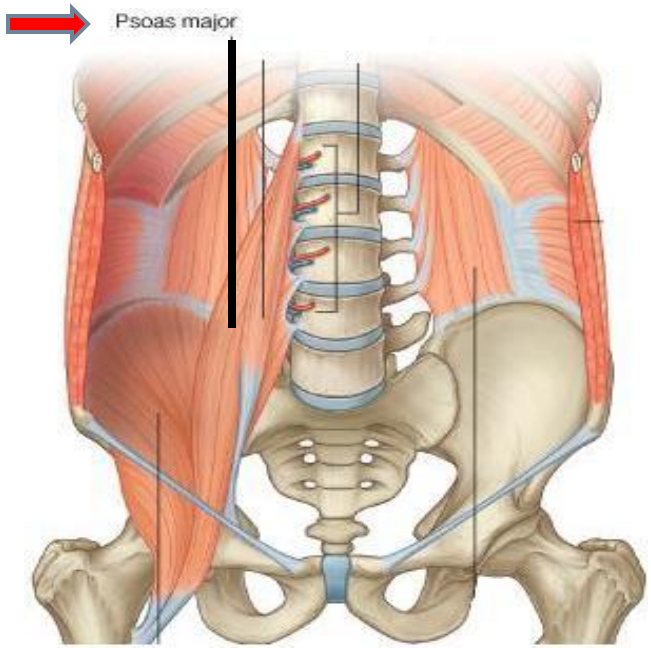
Prof. Ahmed Fathalla Ibrahim

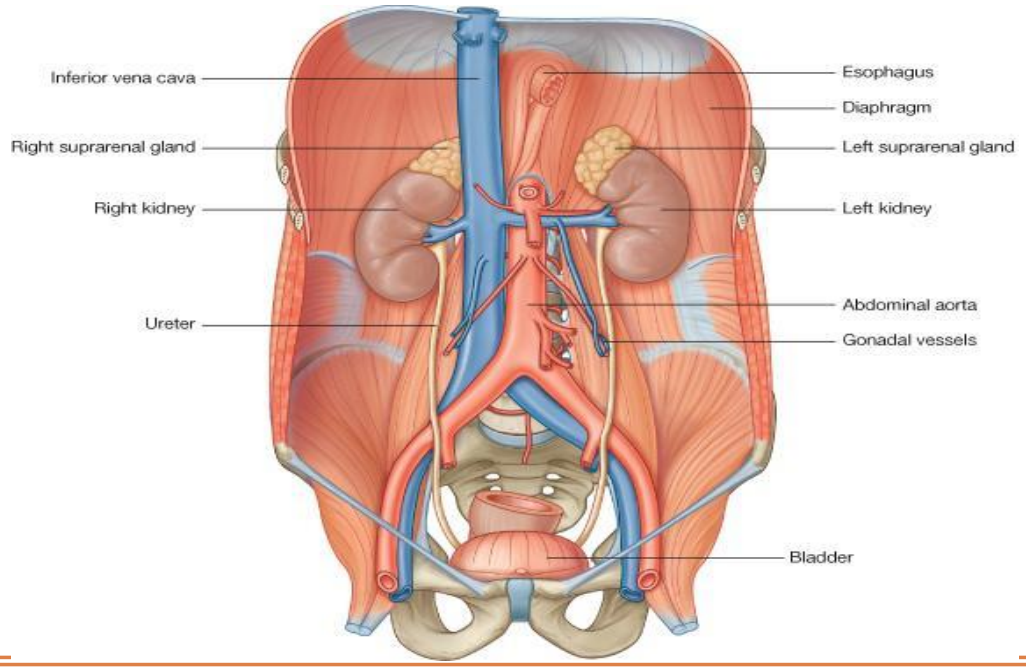
OBJECTIVES

At the end of the lecture, students should be able to:

- Describe the **course** of ureter & identify the **site of ureteric constriction**
- Describe the **important relations** & identify certain areas **(trigone, uvula vesicae)** in the base of urinary bladder.
- List the **blood supply, lymphatic drainage & nerve supply** of urinary bladder
- Differentiate between male & female urethra regarding **length, structure, course & function**.

THE URETER-1



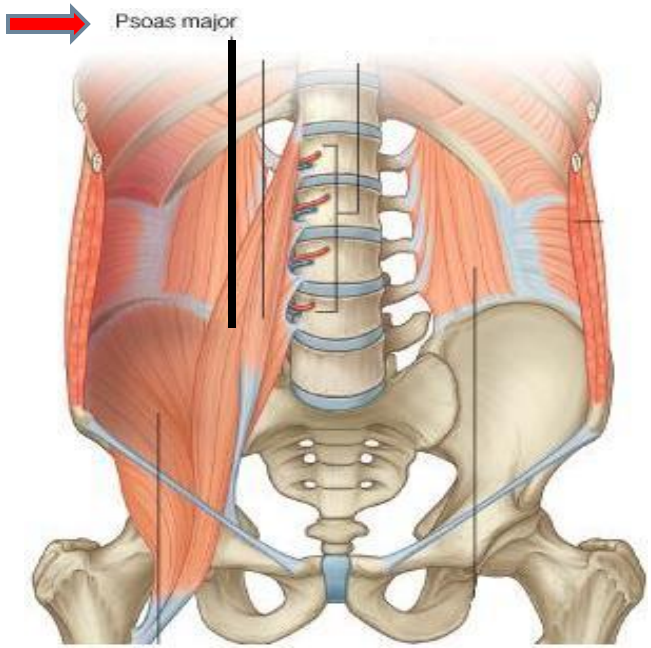


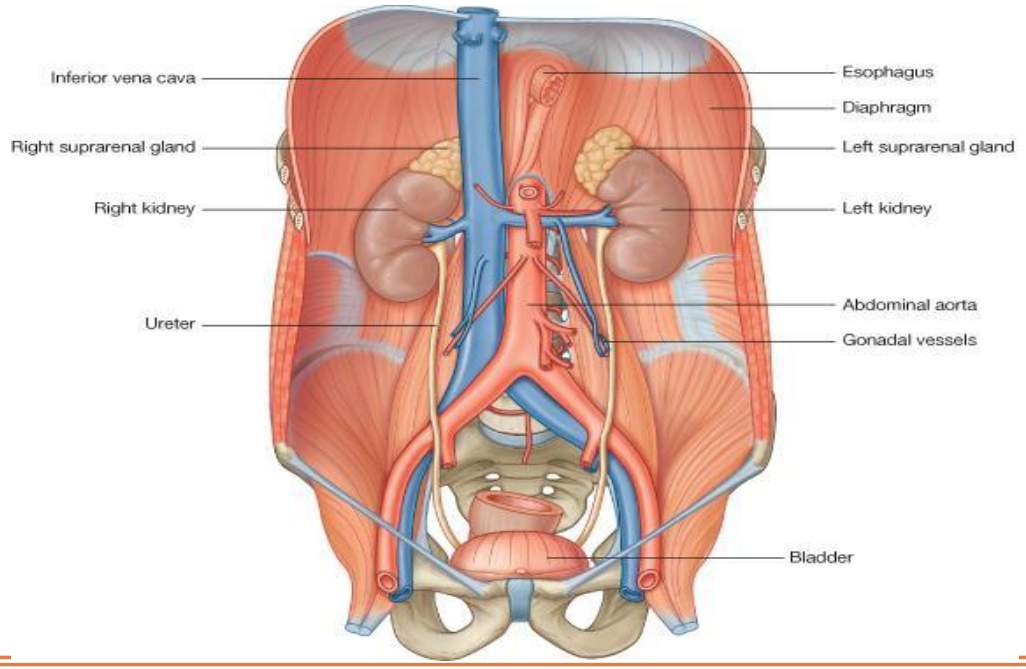
DEFINITION: It is a muscular tube transporting urine from kidney to urinary bladder.

LENGTH: 25 – 30 cm

BEGINNING: It begins as **a continuation of renal pelvis.**

THE URETER-2

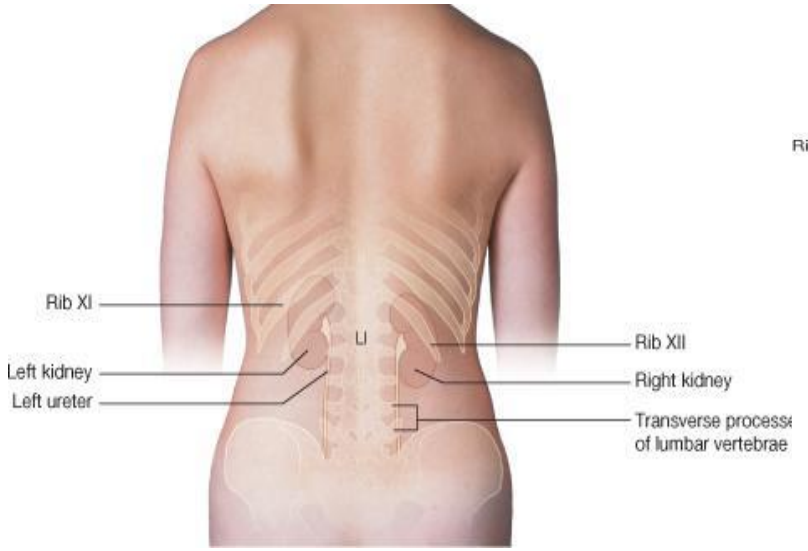


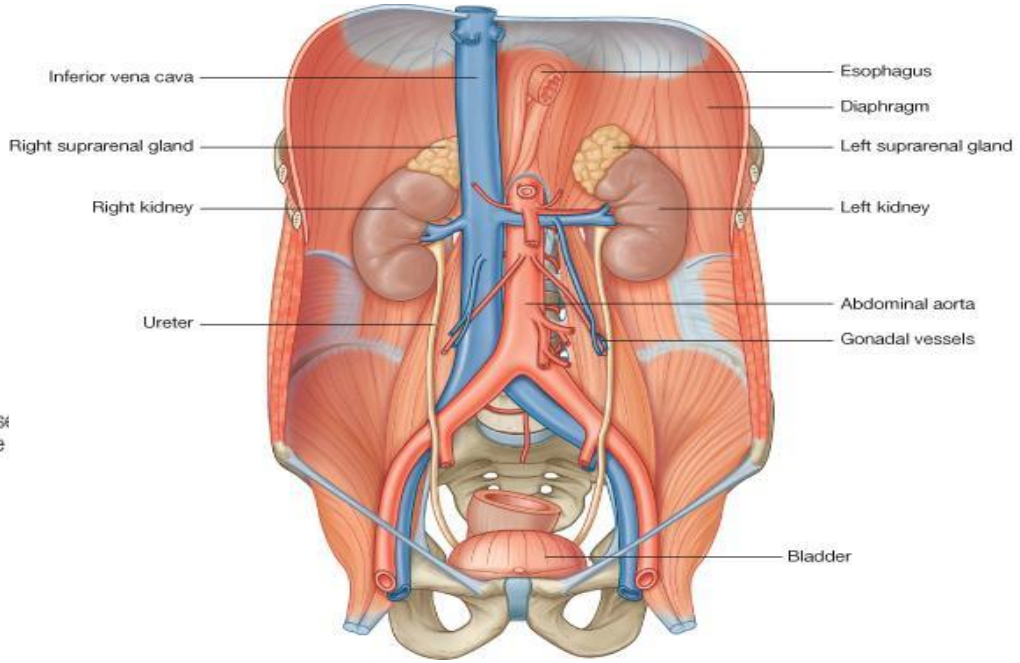


COURSE IN ABDOMEN:

- It descends **anterior to psoas major muscle (opposite the tips of lumbar transverse processes).**
- It crosses **the end (bifurcation) of common iliac artery** to enter the pelvis.

THE URETER-3





COURSE IN PELVIS & TERMINATION:

- It runs downward & backward to the level of ischial spine. It curves forward to open in upper lateral angles of the base of urinary bladder.
- It runs obliquely for ¾ inch in wall of bladder before opening (valve-like part).

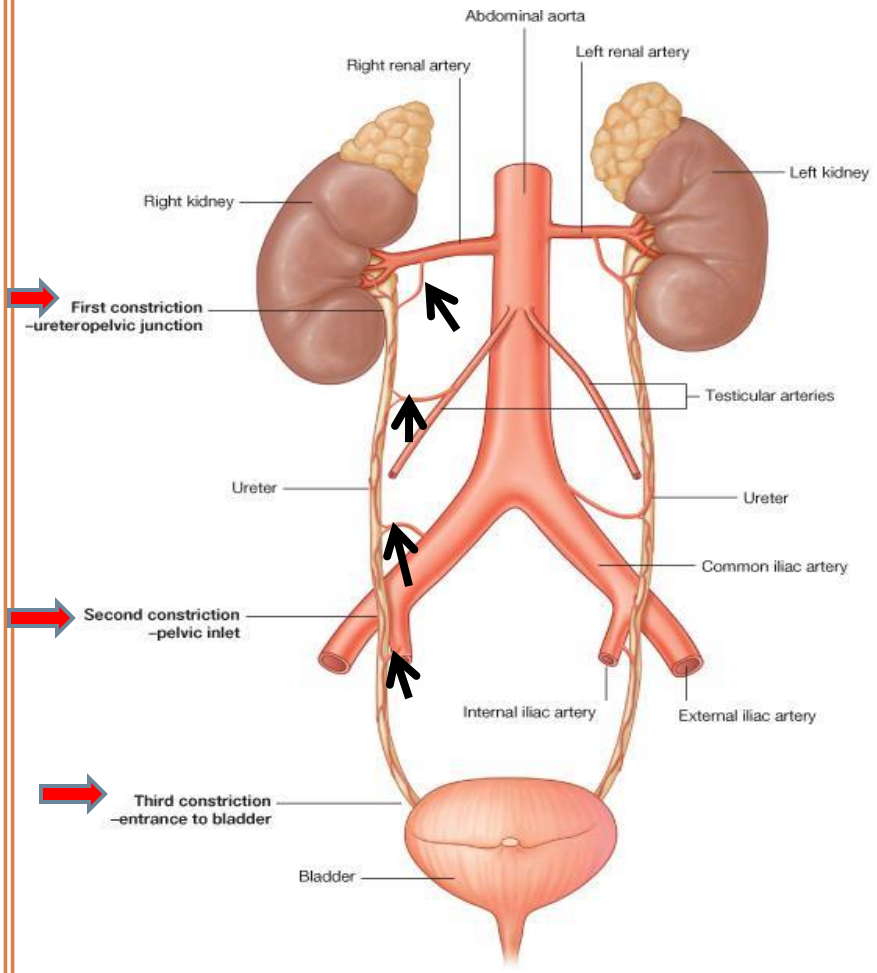
THE URETER-4

SITE OF CONSTRICTION (OBSTRUCTION-STONE IMPACTION)

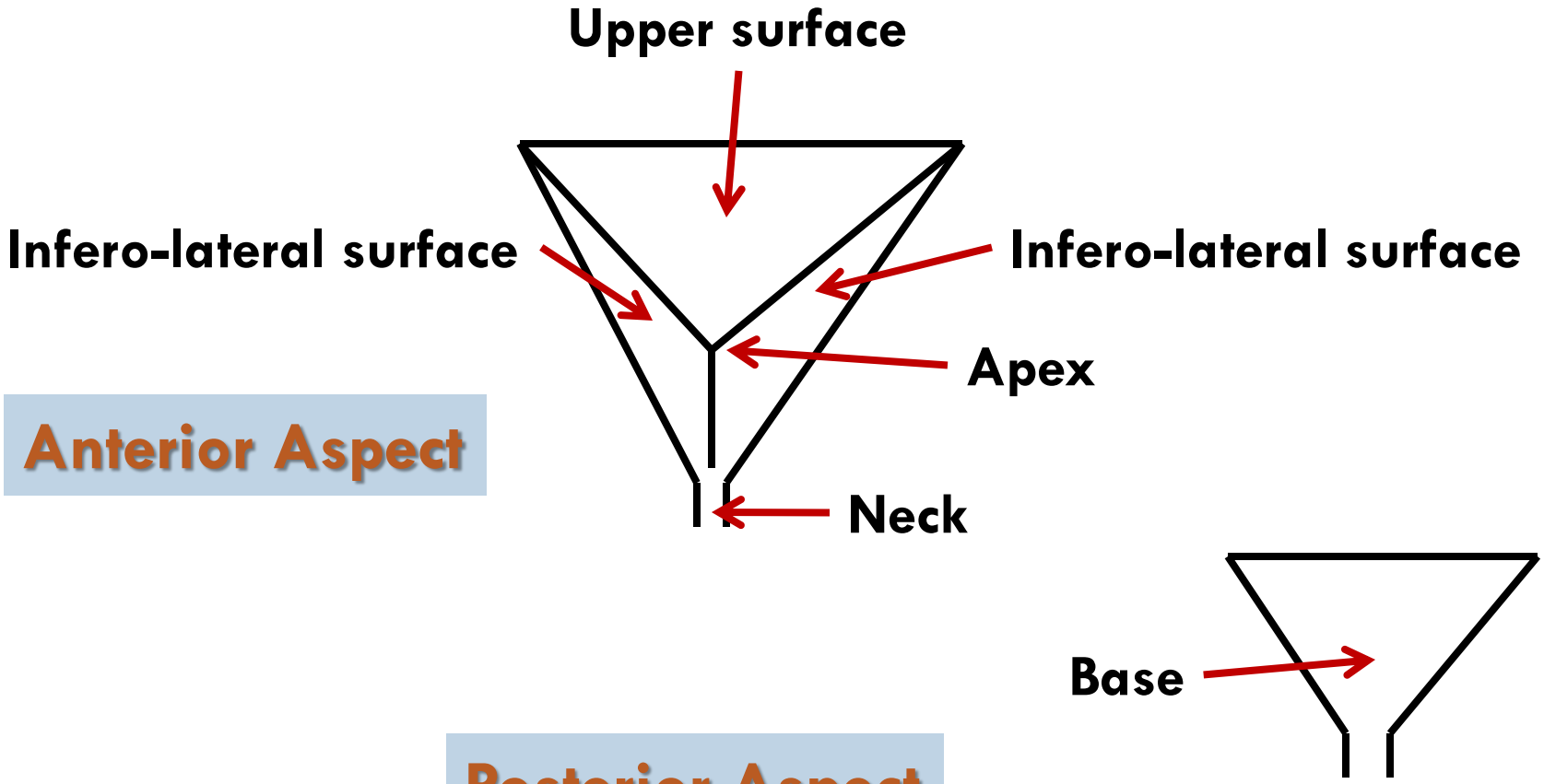
- At ureteropelvic junction
- At pelvic inlet (site of crossing of common iliac artery)
- At site of entrance to bladder

ARTERIAL SUPPLY:

- Renal artery
- Gonadal artery
- Common iliac artery
- Internal iliac artery



THE URINARY BLADDER



Anterior Aspect

Posterior Aspect

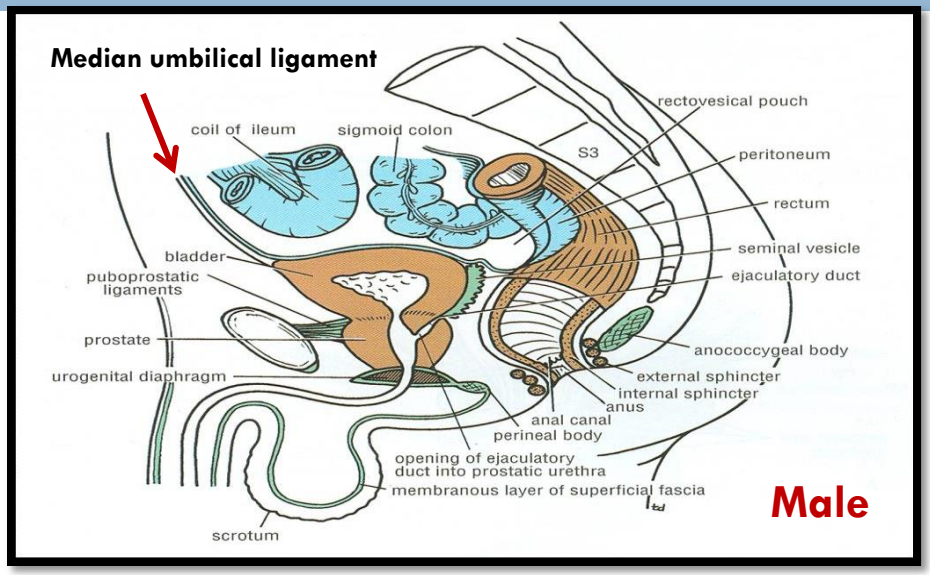
THE URINARY BLADDER-1 (SHAPE)

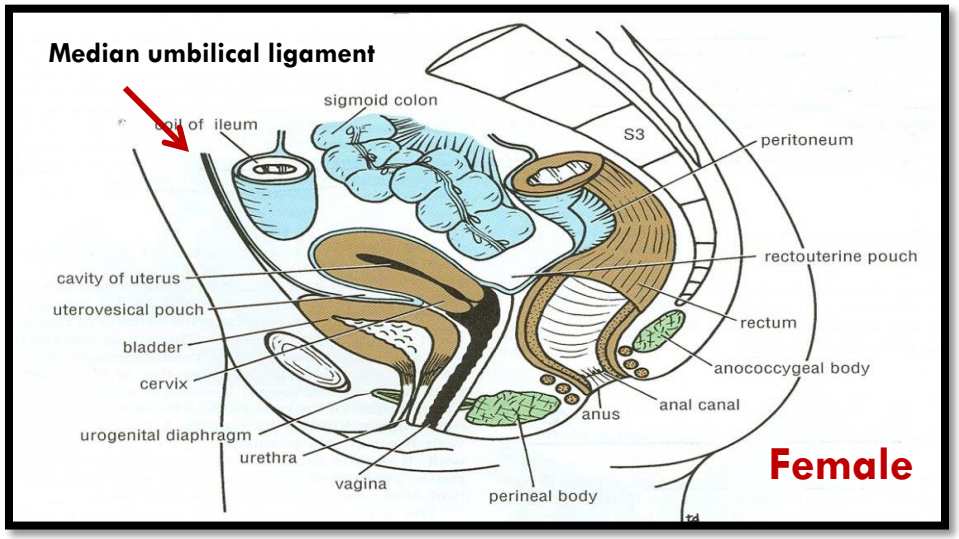
- It has the shape of three-sided pyramid placed on one of its angle (NECK).
- It has:

1) An APEX: directed anteriorly
2) A BASE: directed posteriorly
3) A SUPERIOR SURFACE
4) Two INFERO-LATERAL SURFACE

THE URINARY BLADDER-2
(APEX)

- Is directed forward
- Is related to upper border of symphysis pubis
- Is connected to umbilicus by the median umbilical ligament (remnant of urachus)





THE URINARY BLADDER-3
(BASE)

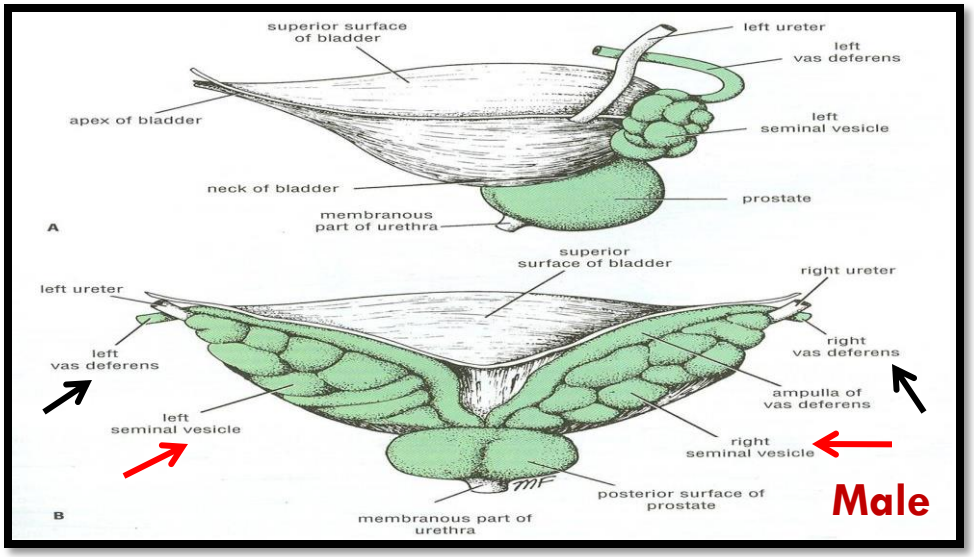
- Is directed backward

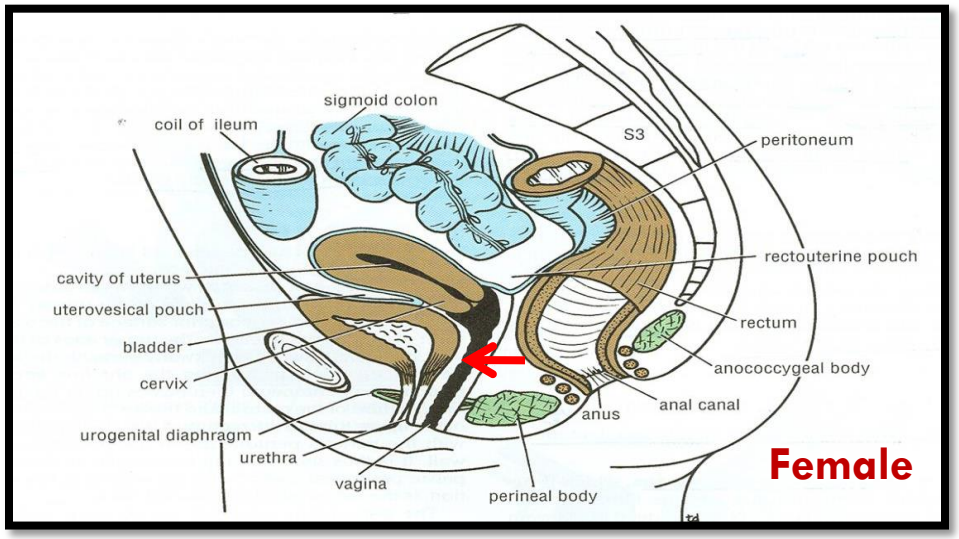
IN MALE:

- Is related to **vas deferens** & **seminal vesicle** of both sides

IN FEMALE:

- Is related to **vagina**





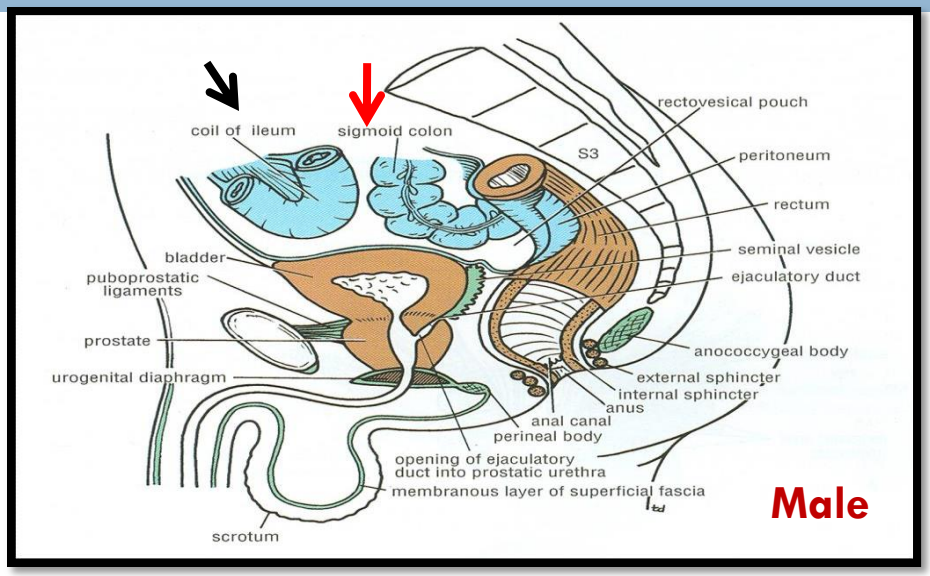
THE URINARY BLADDER-4
(SUPERIOR SURFACE)

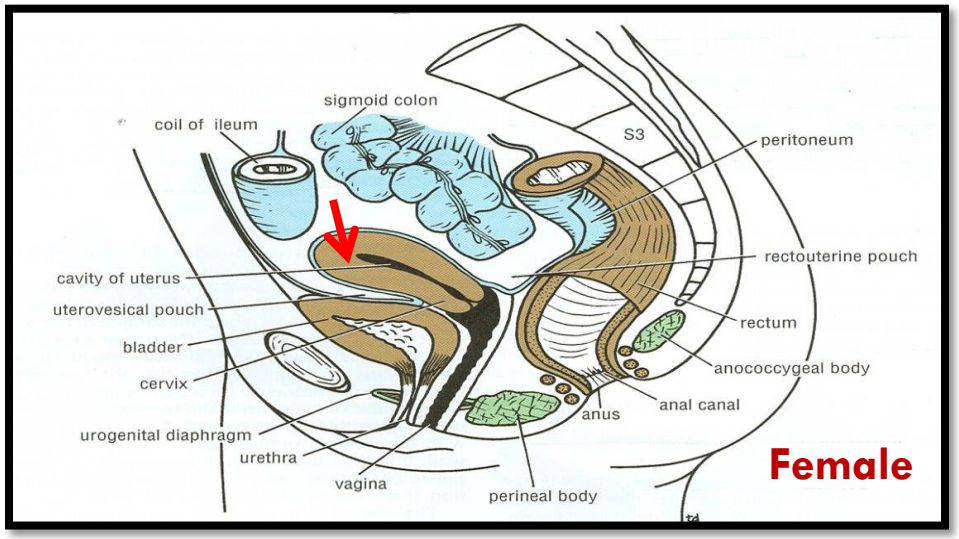
IN MALE:

- Is related to coils of ileum & sigmoid colon

IN FEMALE:

- Is related to the uterus



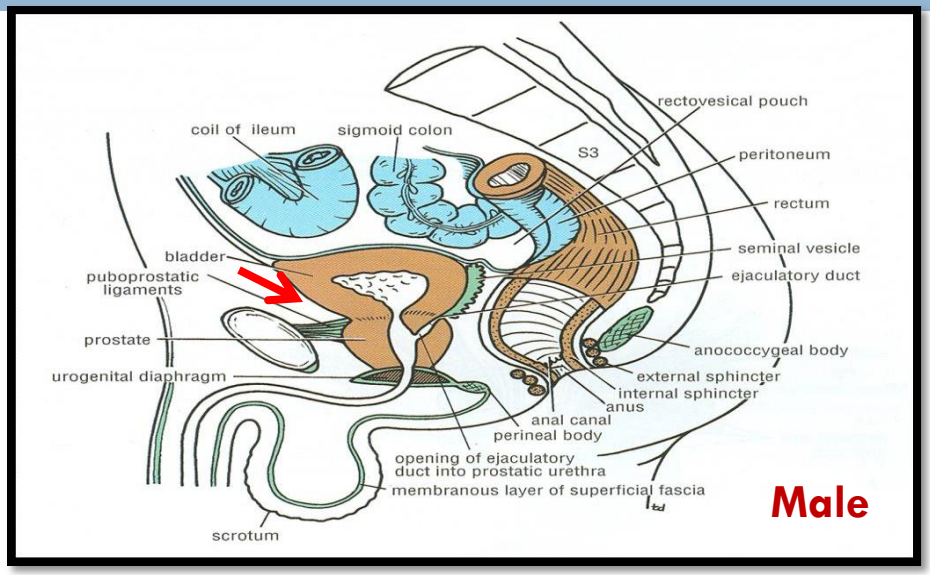


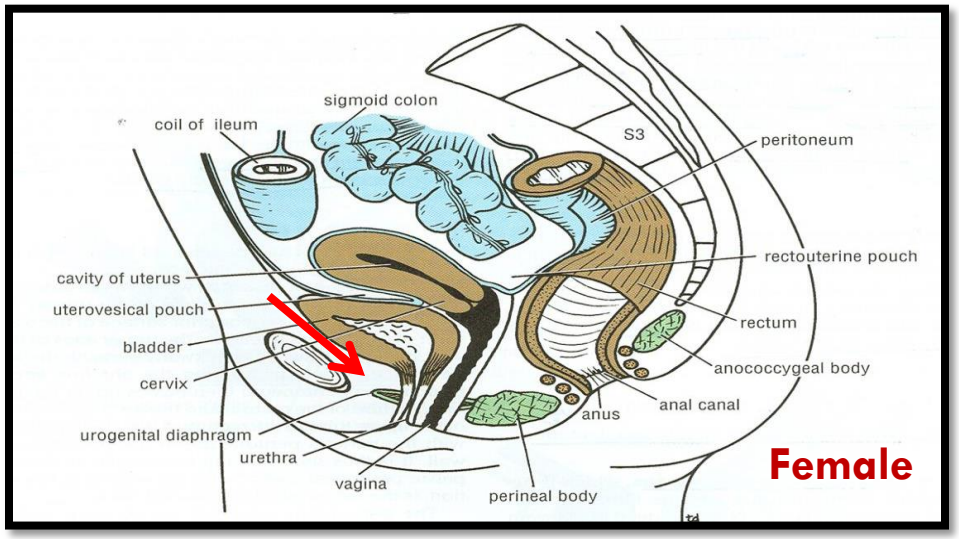
THE URINARY BLADDER-5
(INFERO-LATERAL SURFACES)

- Are related to **retropubic fat** separating them from pubic bones

Retropubic fat

- Accomodates distention of bladder
- Continuous with anterior abdominal wall. Rupture of bladder → escape of urine to anterior abdominal wall



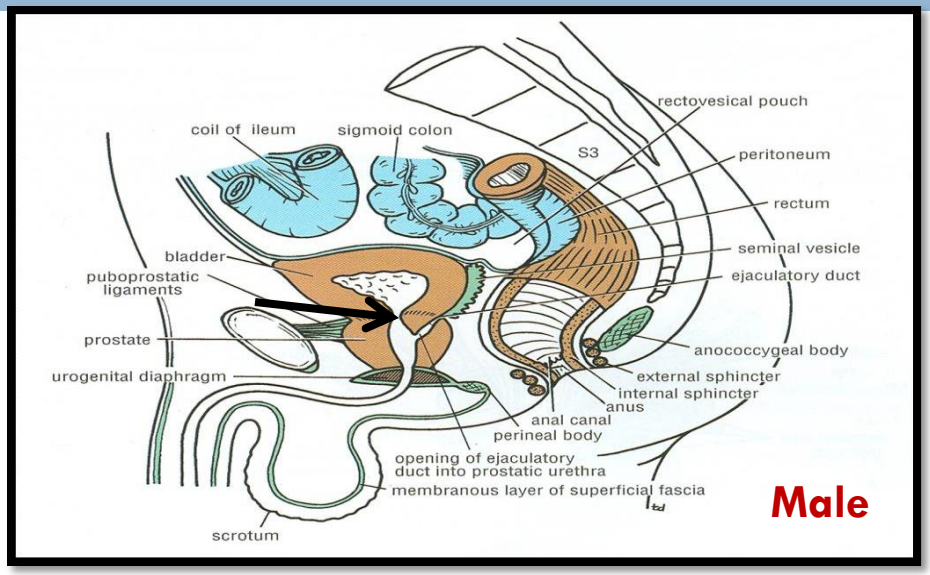


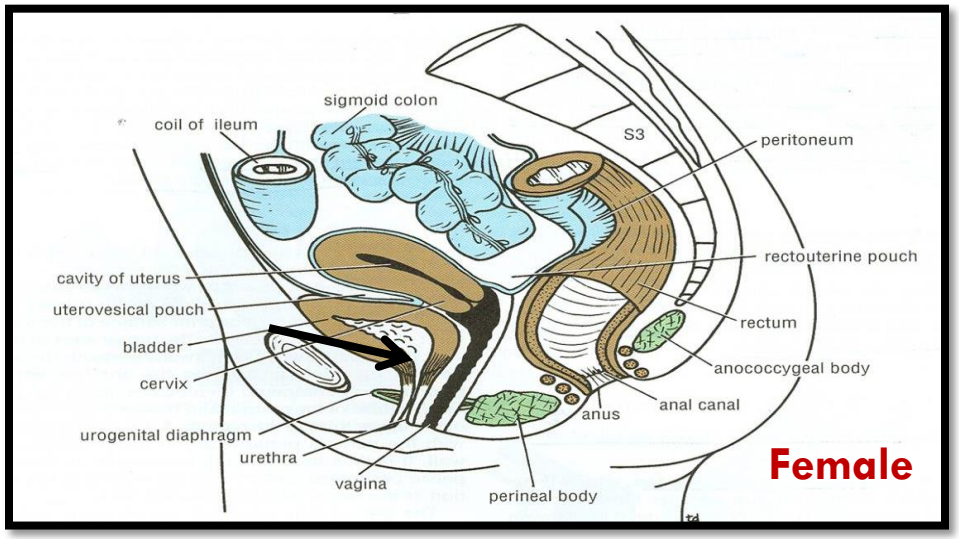
THE URINARY BLADDER-6
(NECK)

- Is the lowest & most fixed part of urinary bladder
- Is continuous with urethra
- Is related to lower border of symphysis pubis

IN MALE:

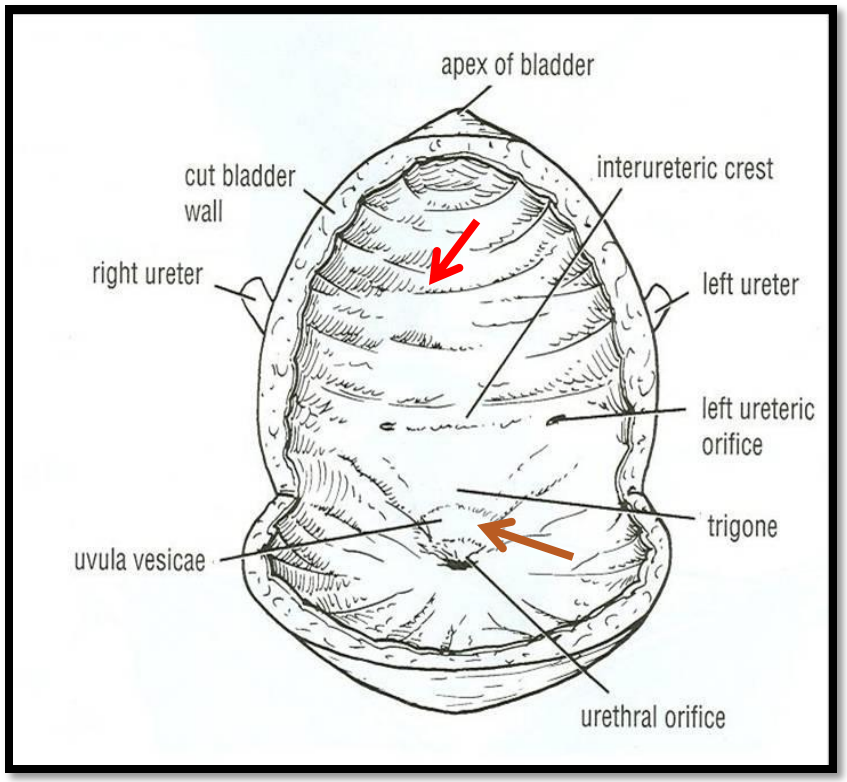
- Is related to upper surface of prostate gland

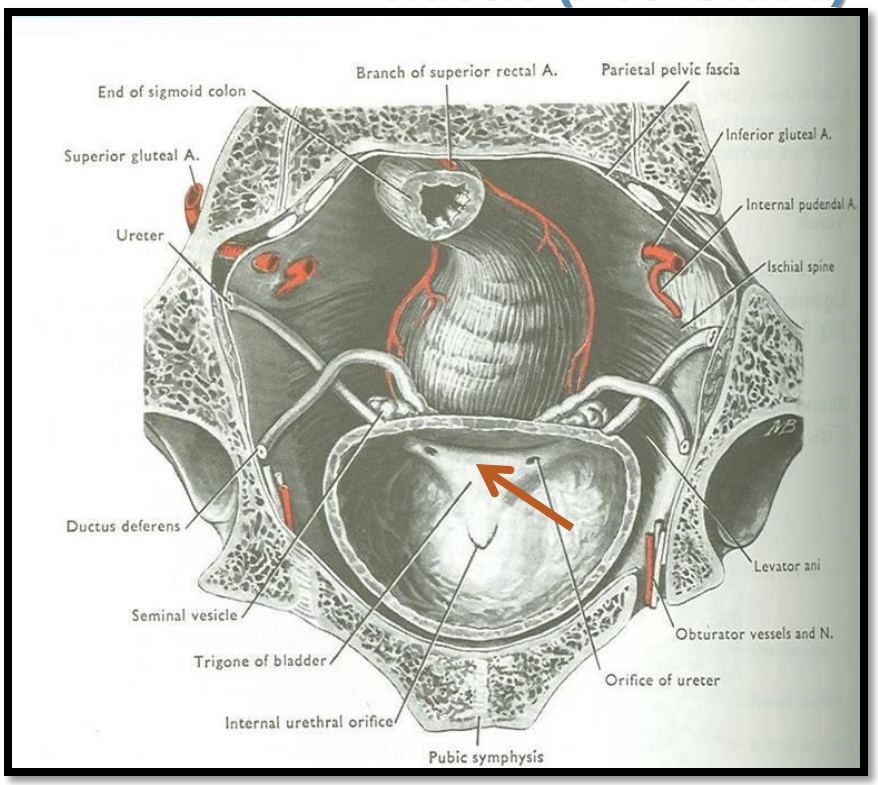




THE URINARY BLADDER-7
(INTERIOR)

- Mucous membrane is **folded**.
- **Uvula vesicae:** elevation behind internal urethral orifice, **produced by median lobe of prostate gland**
- **Trigone:** a triangular area in base of bladder **bounded by the 2 ureteric orifices & internal urethral orifice.** Its mucous membrane is **elastic (not folded)**





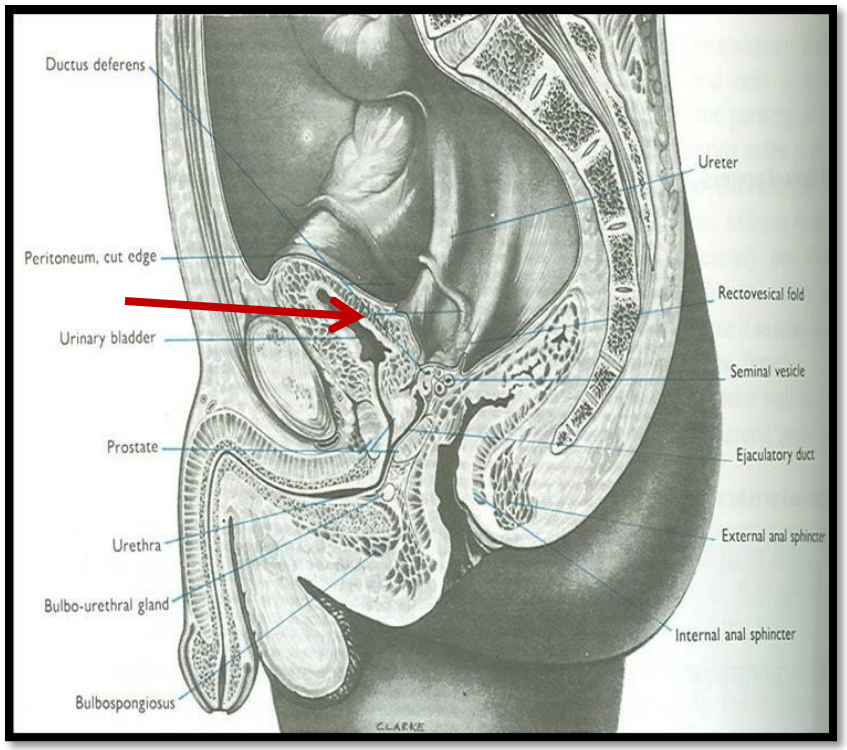
THE URINARY BLADDER-8 (CAPACITY)

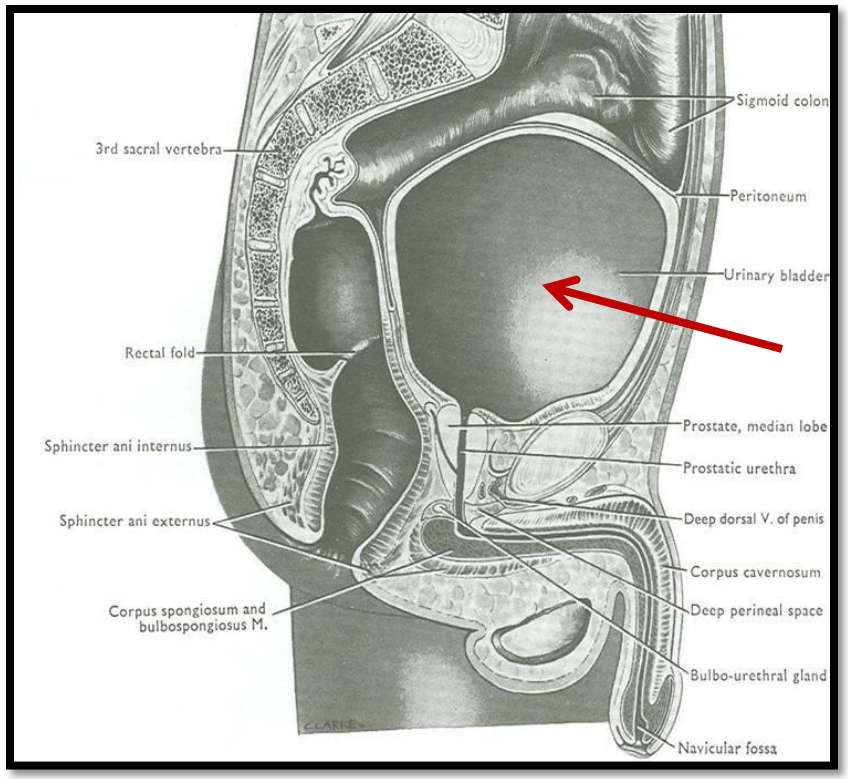
EMPTY

- Accomodates from 300 – 500 ml of urine

DISTENDED

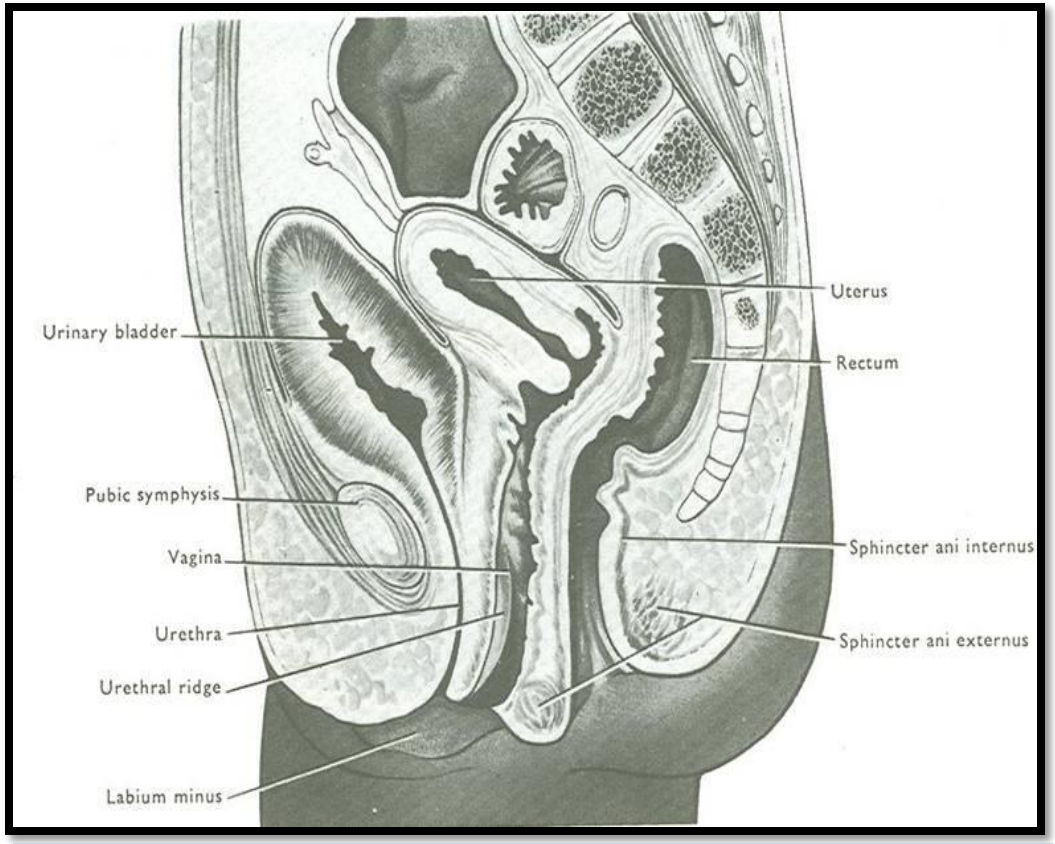
- Is circular in shape
- Bulges into abdominal cavity





THE URINARY BLADDER-9
(POSITION)

- Is found in abdomen until age of 6 years
- Begins to enter the enlarging pelvis from age of 6 years onward
- Is found entirely in pelvis at puberty



A median sagittal section of a newborn female child

THE URINARY BLADDER-10
(SUPPLY)

- **ARTERIES:** from **internal iliac** artery
- **VEINS:** into **internal iliac** vein
- **LYMPH:** into **internal iliac** lymph nodes
- **NERVES:**

1) ***Parasympathetic:*** pelvic splanchnic nerves from S2, 3, 4
2) ***Sympathetic:*** from L1,2
3) ***Sensory:*** transmitting pain due to overdistention of bladder

MALE URETHRA
(LENGTH: 20 CM)

PROSTATIC URETHRA (Length=3 cm):

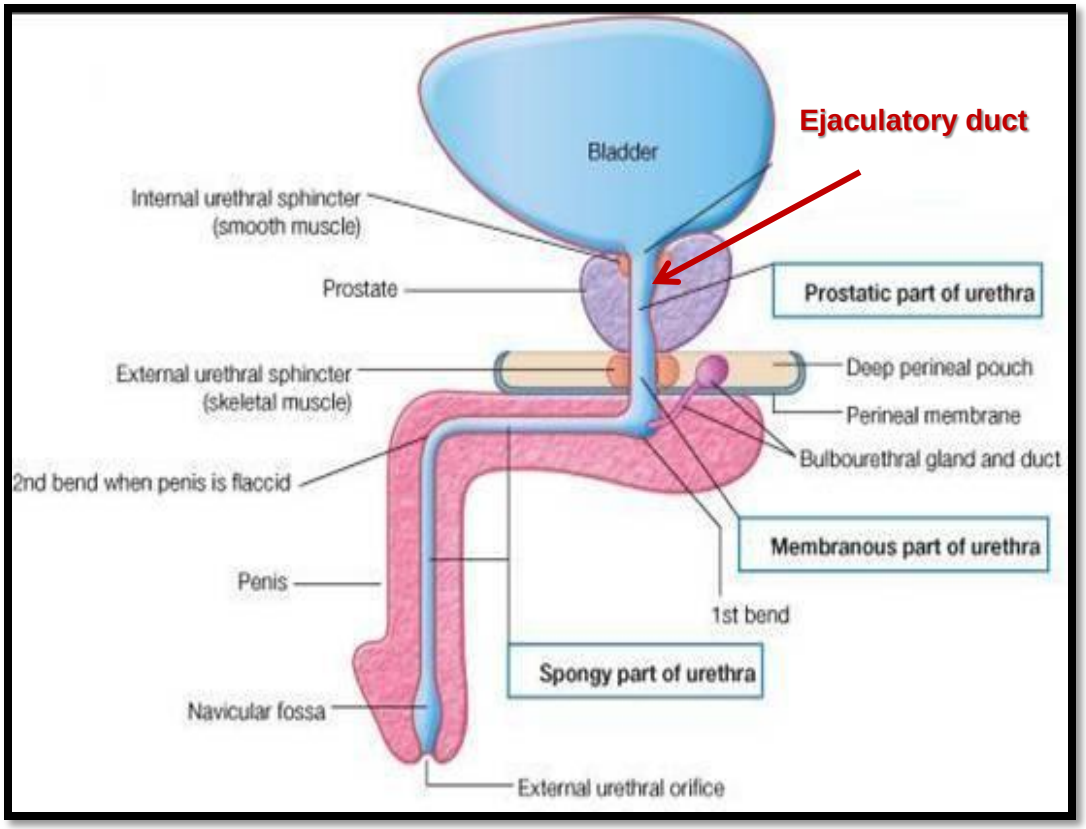
- Widest & most dilatable
- Extends from neck of bladder inside prostate gland

MEMBRANOUS URETHRA (Length=1 cm):

- Surrounded by external urethral sphincter

PENILE (SPONGY) URETHRA (Length=16 cm):

- Extends inside penis & opens externally through external urethral orifice **(narrowest part of whole urethra)**

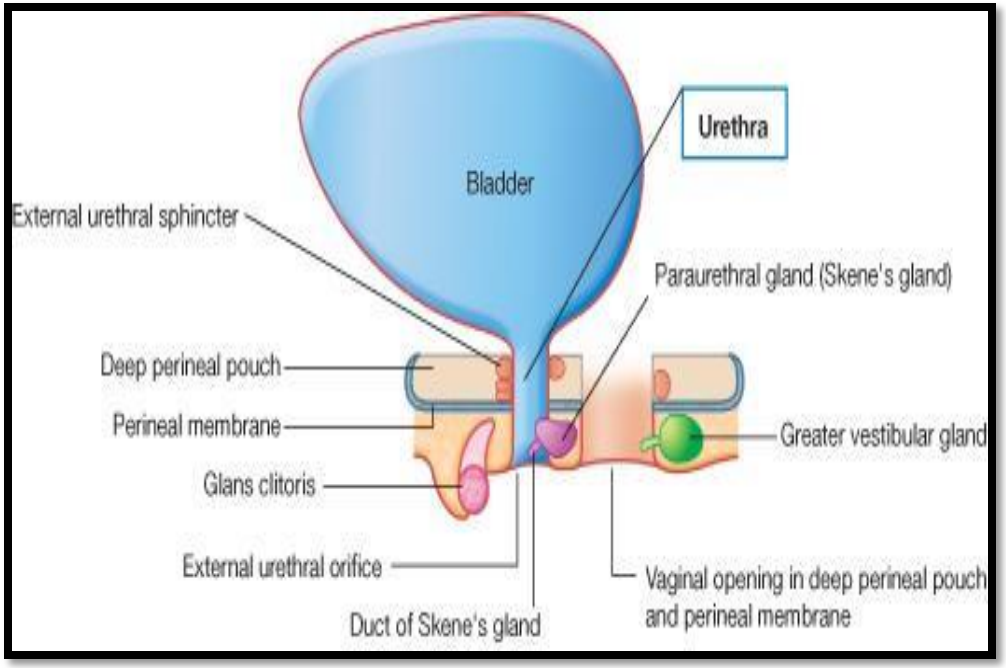


Structures openings into prostatic urethra:

- **Ejaculatory ducts:** containing sperms & secretion of seminal vesicles
- **Ducts of prostate gland**

FEMALE URETHRA
(LENGTH: 4 CM)

- Has only urinary function
- Extends from neck of urinary bladder to open externally through the external urethral orifice (anterior to the vaginal opening)



INTRAVENOUS UROGRAM

A urogram (Post micturation): demonstrates a bladder stone.

SUMMARY-1

URETER:

- ***Beginning:*** **as continuation of renal pelvis**
- ***Course:*** **descends anterior to: psoas major & end (bifurcation) of common iliac artery.**
- ***Termination:*** **opens at upper lateral angle of base of urinary bladder**
- ***Sites of constriction:*** **at uteropelvic junction, at pelvic inlet, at site of entrance of bladder**
- **Arterial supply: renal, gonadal, common & internal iliac arteries**

SUMMARY-2

URINARY BLADDER:

- ***Apex:*** related to symphysis pubis, continuous with median umbilical ligament
- ***Base:*** related to vas deferens & seminal vesicle (in male) & to vagina (in female)
- ***Superior surface:*** related to coils of ileum & sigmoid colon (in male) & to uterus (in female)
- ***Inferolateral surfaces:*** related to retropubic fat
- ***Neck:*** continuous with urethra, related to upper surface of prostate gland (in male)
- ***Trigone:*** lies in the base of bladder, bounded by ureteric orifices & internal urethral orifice, its mucous membrane is elastic
- ***Uvula vesicae:*** dilatation behind internal urethral orifice, produced by the median lobe of the prostate gland
- ***Supply:*** internal iliac (artery, vein, lymph nodes)
- ***Nerves:*** parasympathetic (S2,3,4), sympathetic (L1,2)

SUMMARY-3

MALE URETHRA:

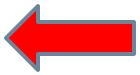
- ***Function:*** **both urinary & genital**
- ***Length:*** **20 cm, divided into prostatic (3 cm), membranous (1 cm) & penile (16 cm)**
- ***Course:*** **Extends from neck of bladder to opens externally through external urethral orifice (narrowest part of whole urethra)**

FEMALE URETHRA:

- ***Function:*** **urinary only**
- ***Length:*** **4 cm**
- ***Course:*** **Extends from neck of bladder to external urethral orifice (anterior to vaginal opening)**

QUESTION 1

- **Which one of the following structures is related to the inferolateral surface?**

1) **Prostate gland**
2) **Sigmoid colon**
3) **Retropubic fat** 
4) **Seminal vesicle**

QUESTION 2

- **Which one of the following is the site of uvula vesicae?**

1) **In the superior surface of urinary bladder.**
2) **Behind the internal urethral orifice.** 
3) **Between the 2 ureteric orifices.**
4) **In relation to the apex of urinary bladder.**


THANK YOU
&
BEST WISHES