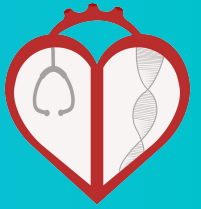




Anatomy Team
MED 439



MED439
KING SAUD UNIVERSITY



Anatomy of the Ureter, Bladder & Urethra

Renal Block - Lecture 3

Color index:

Important

In male's slides only

In female's slides only

notes

Extra information, explanation

Don't forget to check the [Editing File](#)



[@anatomy439](#)

Objectives:

- Describe the course of ureter & identify the site of ureteric constrictions.
- 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

- ◇ **Definition:** it is a muscular tube transporting urine from kidney to urinary bladder.
- ◇ **Beginning:** It begins as a continuation of renal pelvis (or pelvis of ureter).
- ◇ **Length:** 25 – 30 cm

Course In Abdomen

◇ It descends anterior to psoas major muscle (opposite the tips of lumbar transverse processes).

◇ It crosses anterior to the end (bifurcation) of common iliac artery to enter the pelvis.

Course In Pelvic & 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.

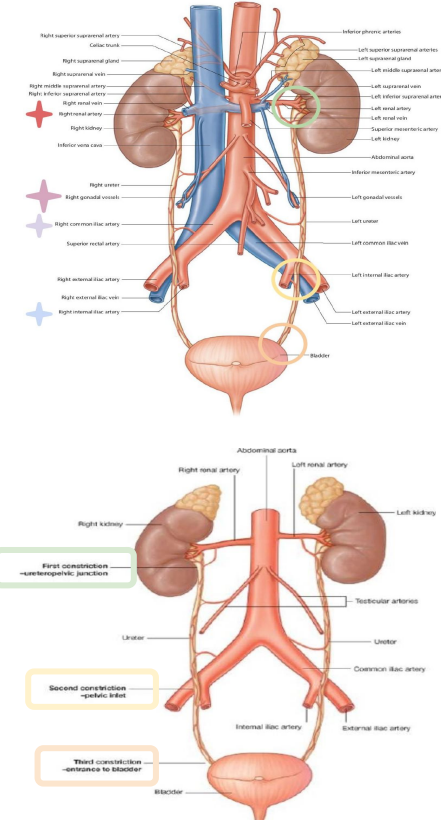
◇ It runs obliquely for $\frac{3}{4}$ inch in wall of bladder before opening (valve-like part).

◇ Arterial supply:

1. **Renal artery**
2. **Gonadal artery**
3. **Common iliac artery**
4. **Internal iliac artery**

◇ Sites of Constriction (Obstruction-stone Impaction):*

1. At **ureteropelvic junction**
2. At **pelvic inlet** (site of crossing of common iliac artery)
3. At **site of entrance to bladder**



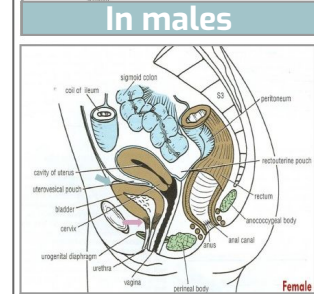
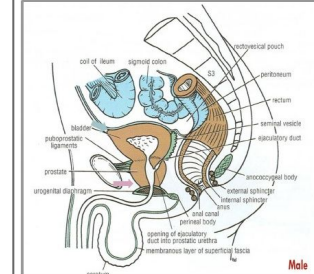
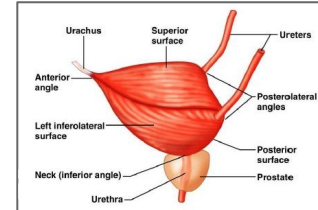
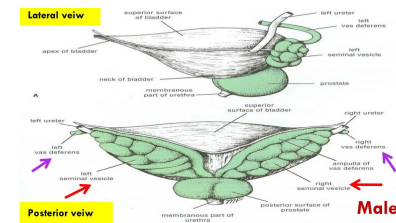
Urinary Bladder

◇ **Site:** It is **pelvic organ**. (Urinary bladder is a pelvic organ in adults)

◇ **Shape:** It has the shape of **3-sided pyramid** placed on one of its angle (**NECK**).

◇ **It has:**

apex	base	Superior Surface	2 Infero-lateral Surface	Neck
<p>◇ Directed Forward (anteriorly)</p> <p>◇ Related anteriorly to upper border of symphysis pubis.</p> <p>◇ Connected to umbilicus by the median umbilical ligament (remnant of urachus).</p>	<p>◇ Directed Backward (posteriorly)</p> <p>In males</p> <p>◇ Related to vas deferens & seminal vesicle of both sides.</p> <p>In females</p> <p>◇ Related to vagina</p>	<p>In males</p> <p>◇ Related to coils of ileum & sigmoid colon</p> <p>In females</p> <p>◇ Related to uterus</p>	<p>◇ Are related to retroperic fat separating them from pubic bones</p> <p>Retroperic fat:</p> <p>◇ Accommodates distention of bladder.</p> <p>◇ Continuous with anterior abdominal wall. So Rupture of bladder will lead to escape of urine to anterior abdominal wall.</p>	<p>◇ Is the lowest & most fixed part of urinary bladder.</p> <p>◇ Continues with urethra.</p> <p>◇ Related to (lies behind) lower border of symphysis pubis</p> <p>In males</p> <p>Related to to upper surface of prostate gland (inferiorly, it rests on the base of prostate)</p>



In females

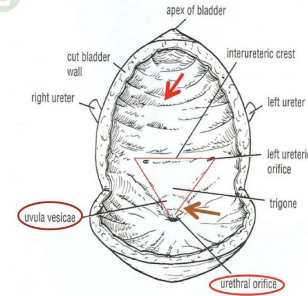
Urinary Bladder (interior)

1. Mucous membrane is folded.

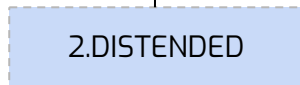
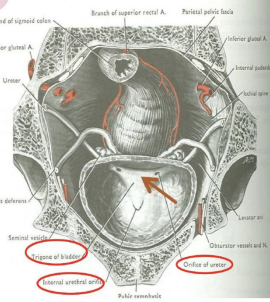
2. **Uvula vesicae**: elevation behind internal urethral orifice, produced by **median lobe** of **prostate gland**.

3. **Trigone**: a **triangular area in base of bladder** bounded by the **2 ureteric orifices** & **internal urethral orifice**. Its mucous membrane is elastic (**not folded**)

2



3



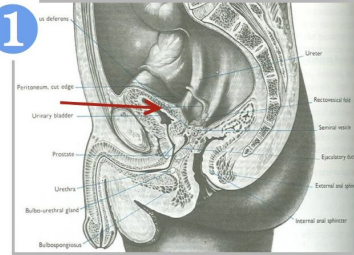
Empty bladder is a pelvic organ.

Accommodates from 300 – 500 ml of urine

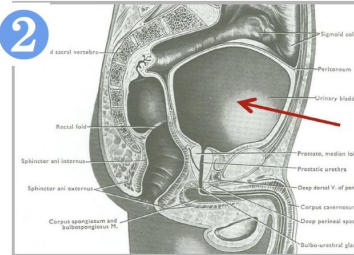
Is circular in shape

Bulges into abdominal cavity

1



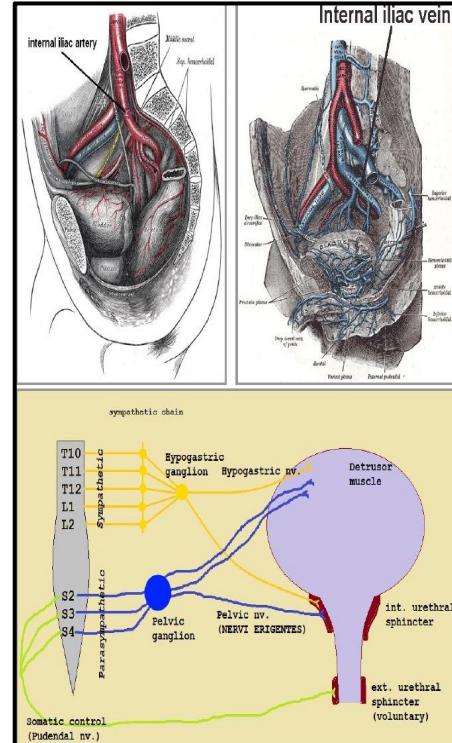
2



Urinary Bladder (Position & Supply)

- ◇ It 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

Arteries	<p>From internal iliac artery.</p> <p>In males : 1) Superior vesical. 2) Inferior vesical. In females : 1) Superior vesical. 2) vaginal.</p>
Veins	Into internal iliac vein.
Lymph	Into internal iliac lymph nodes.
Nerves	<p>1-Parasympathetic: Through pelvic splanchnic nerves from S2, S3, S4.</p> <p>2-Sympathetic: From L1,L2 through hypogastric nerves. (it is actually from T10 to L2 ,but the lumbar supply is more than thoracic. So L1 to L2 is more accurate)</p> <p>3-Sensory: Transmitting pain due to <u>overdistention</u> of bladder. (via general visceral afferent fibres from bladder to CNS).</p> <p>4-Voluntary motor: Pudendal nerve.</p>



Urethra

Urethra

Male

- ◇ Length: 20 cm.
- ◇ Function: both urinary and genital (never together work at the same time)
- ◇ Divided into three parts:

1- Prostatic Urethra

- Length: 3 cm.
- Widest & most dilatable.
- Extends from neck of bladder inside prostate gland.

2- Membranous Urethra

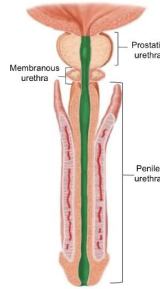
- Length: 1 cm.
- Surrounded by external urethral sphincter.

3- 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:

1. Ejaculatory ducts: containing sperms & secretion of seminal vesicles.
2. Ducts of prostate gland.



Female

- ◇ Length: 4 cm.
- ◇ Function: Has only urinary function. Extends from neck of urinary bladder to **open externally** through the external urethral orifice which lies anterior to the vaginal opening



Intravenous Urogram (IVU, IVP)

- ◇ A urogram (Post micturition): demonstrates a bladder stone. Or any obstruction in the urinary system.



Congratulations Med 439
We made it through first year Anatomy.
It was a hard journey, but we couldn't have done it without our members.

We thank everyone who worked in the Anatomy team throughout the year and wish you
all the best.

Abdullah Alsubaihi & Abeer Awwad

A Special Thanks to the amazing leaders who lead us through the toughest part of the
journey :

Fahad Alajmi & Mayasem Alhazmi.

We appreciate everything you did for the team.
Were Looking forward to working with you next year.

MCQ

Q1: The length of the ureter is

- A.** 20 - 25
- B.** 25 - 30
- C.** 20 - 30
- D.** 15 - 25

Q2: Which is not found in the trigon area **Q3:** Which of the following is related to the lower border of the symphysis pubis

- A.** Internal urethral orifice
- B.** External urethral orifice
- C.** Ureteric orifice
- D.** All of the above

- A.** Apex of the bladder
- B.** Ureter
- C.** Urethra
- D.** Neck of bladder

Q4: Which of the following is related to the upper border of the symphysis pubis **Q5:** If the bladder ruptures towards the anterior abdominal wall the urine will escape to

- A.** Apex of the bladder
- B.** Ureter
- C.** Urethra
- D.** Neck of bladder

- A.** Uterus
- B.** Vagina
- C.** Prostate
- D.** Retropubic fat

Q6: Which is the first common site of constriction of the ureters

- A.** Ureteropelvic junction
- B.** Pelvic inlet
- C.** Level common iliac artery bifurcation
- D.** Bladder entrance

MCQ

Q7: In the abdomen, the ureter is anterior to

- A. Psoas minor
- B. Quadratus lumborum
- C. Transversus abdominis
- D. Psoas major

Q10: In females, the upper surface of the bladder is related to

- A. Sigmoid colon
- B. Ileum
- C. Uterus
- D. None of the above

Q8: Which of the following is not participating in the arterial supply of the ureter

- A. Ovarian artery
- B. Renal artery
- C. External iliac artery
- D. Internal iliac artery

Q11: Uvula vesicae is an elevation caused by

- A. Lower lobe of prostate
- B. Symphysis pubis
- C. Median lobe of prostate
- D. Anterior lobe of prostate

Q9: The apex of the bladder is connected to the umbilicus via

- A. Medial umbilical ligament
- B. Median Umbilical ligament
- C. Inguinal ligament
- D. Psoas major

Q12: In males, the widest part of the urethra is

- A. Prostate
- B. Spongy
- C. Membranous
- D. None of the above

SAQ :

1: List the arterial supply of the Ureter.

2: List the nervous supply of the Urinary Bladder.

3: List the sites of constriction of the Ureter.

4: What are the structures opening in the Prostatic Urethra?

SAQ Answers :

1:

1. Renal artery
2. Gonadal artery
3. Common iliac artery
4. Internal iliac artery

2:

1-**Parasympathetic:** Through pelvic splanchnic nerves from S2, S3, S4.

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4-**Voluntary motor:** Pudendal nerve.

3:

1. At ureteropelvic junction
2. At pelvic inlet (site of crossing of common iliac artery)
3. At site of entrance to bladder

4:

1. Ejaculatory ducts: containing sperms & secretion of seminal vesicles.
2. Ducts of prostate gland.

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