



Renal Block



LECTURE (2)

URETER, BLADDER & URETHRA

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Reviewed by: Fahad Alshayhan

تنويه : هذا العمل لا يعتبر مصدر رئيسي للمذاكرة وإنما هو للمراجعة فقط

[If there is any mistake please feel free to contact us:](#)

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Both - Black

Male Notes - BLUE

Female Notes - GREEN

Explanation and additional notes - ORANGE

Verv Important note - Red





Objectives:

1- Describe the course of ureter & identify the sites of ureteric constriction

2- Describe the important relations & identify certain areas (trigone, uvula vesicae) in the base of urinary bladder.

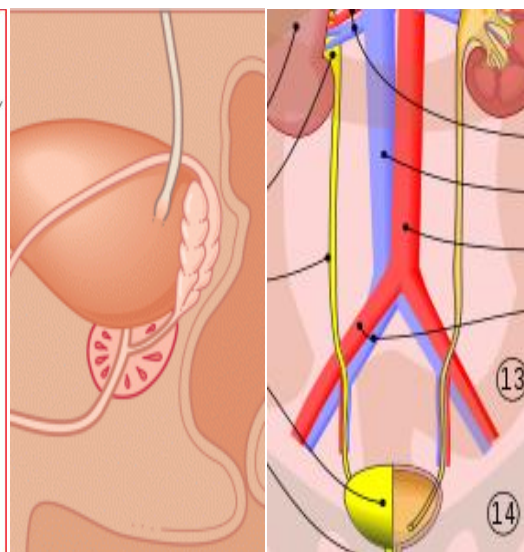
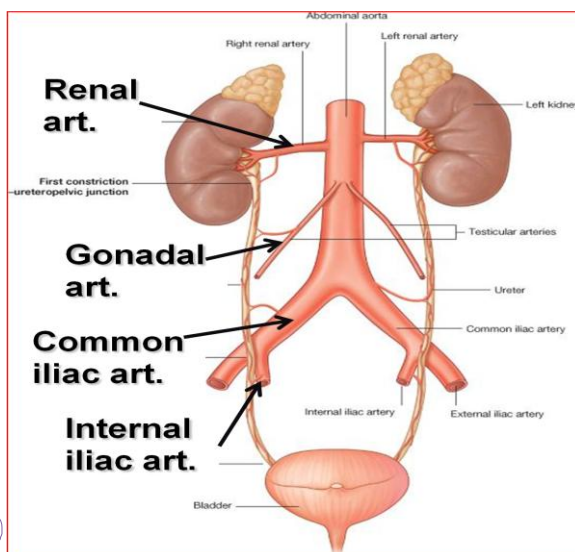
3- List the blood supply, lymphatic drainage & nerve supply of urinary bladder

4- Differentiate between male & female urethra regarding length, structure, course & function



A - Ureter

Length	25-30cm
Description	Muscular tube begins as a continuation of renal pelvis
Function	Transporting urine to the bladder
Relations:	<p>A - Abdominal :</p> <ol style="list-style-type: none"> 1) anterior to psoas major muscles (opposite tips of lumbar transverse process) 2) cross the division of common iliac art. & enters pelvis. 3) Descends anterior to the internal iliac. 4) Once it reaches the ischial spine, it'll run forward & medially. 5) Cross vas deferens (look at the pic) near to the termination. <p>B - Renal :</p> <ol style="list-style-type: none"> 1) Enters the upper lateral angel of the bladder. Passes obliquely on through 2) the wall for about 1 inch before opening into the bladder.
Unique Structures :	<p>A - constrictor parts:</p> <ol style="list-style-type: none"> 1) ureteropelvic junction. 2) crossing common iliac art. 3) entering bladder. <p>B - entering bladder:</p> <p>Bladder wall forming a part of the tube. That helps in closing the opening while bladder contracts. Check the last slide</p>
Arterial blood Sup.	Look at the pic





B - Bladder :

REMEMBER :

- 1) its normal capacity is 300 – 500
- 2) Its place and shape defers according to its filling, so we'll study it as it's empty.

<p>Place</p>	<p><u>Adult</u> : entirely in the pelvic. when it fills, it rises up to the hypogastic region so it becomes in direct contact with the anterior abdominal wall (abdominal organ). <u>Young children</u> : in the abdomen (Important for dipping needles)</p>	
<p>Shape</p>	<p>Pyramid in shape consists of : (circular if it's filled)</p> <p><u>1) Apex :</u> directed forward behind the upper part of symphysis pubis. Connected to umbilicus by medial umbilical ligament (contain a cavity called urachus, which is the remnant of allantois). (بقايا الحبل السري)</p> <p><u>2) Base (posterior) :</u> 1) Triangular in shape 2) Lower part: Males → vas deferens & seminal vesicles (check the 1st pic) Females → vagina Vas deferens (sperm) + Seminal vesicle (fluid) = Ejaculatory Duct.</p> <p><u>3) Superior :</u> Boundaries : Males → coils ilium and colon Females → uterus covered by peritoneum: Males → completely Females → incompletely (because of uterus)</p>	
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	<p style="text-align: center;"><u>4) Infrolateral surface :</u></p> <p>A - In front of it : pubic bone and retropubic pad of fat (lining fat allow expanding of bladder, continous with the abdominal wall → rupture of bladder results in urine moving to the abdominal wall).</p> <p>B - Behind it : two muscles Obturator internus Levator ani</p>
	<p style="text-align: center;"><u>Neck (inferior) :</u></p> <p>1 - The most fixed part 2 - Related to the lower border of symphysis pubis 3 - Rests on the upper surface of prostate in males where S.muscles are continuous. Its circular muscles thickened to form sphincter vesicae</p>
Inner part :	<p>Folded mucus membrane except in the triangle between the 3 openings (ureters and urethra) it's smooth at this region. Small elevation (projection in the mucous) of the upper part produced by prostate and called Uvula vesicae. (Caused by Median lobe of prostate).</p>
Blood & Nerve Sup.	<p style="text-align: center;"><u>Blood :</u></p> <p><u>Art. :</u> internal iliac <u>Ven. :</u> internal iliac <u>Lmp. :</u> internal iliac nodes</p> <p style="text-align: center;"><u>From vesical nerve plexus :</u></p> <p><u>Symp. :</u> from L1,2 <u>Para. :</u> from pelvic splanchnic nerves 2,3 & 4 <u>Sensory :</u> from the bladder, transmit the pain during over expanding</p>

• **The sperm need fluid which is produced by:**

- 1- **Seminal vesicle: nourishing sperm**
- 2- **Prostate gland: activation of sperm**
- 3- **Bulbourethral gland: lubrication and clearance.**

- **From the apex of urinary bladder it connected to pubic bone by ligament:**

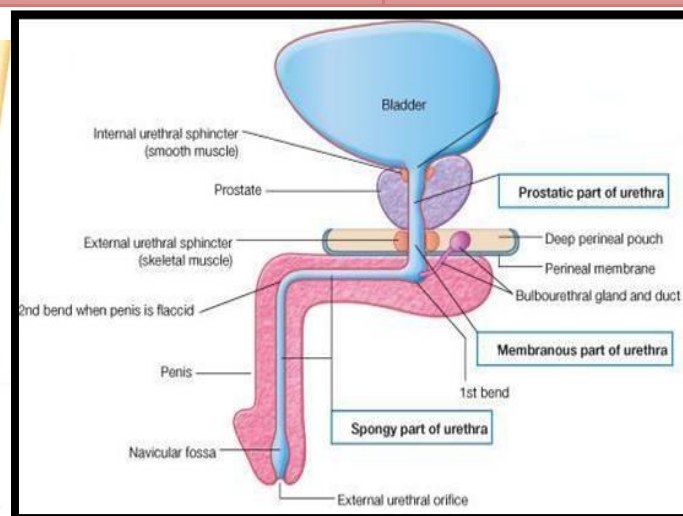
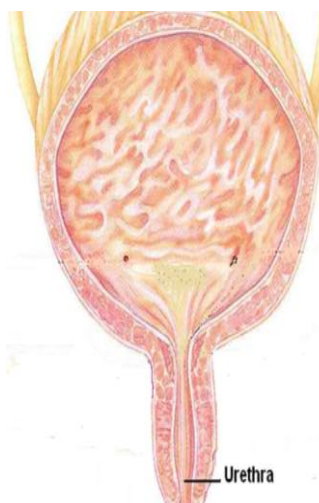
In Male: Puboprostatic ligament.

In Female: Pubovesical ligament.



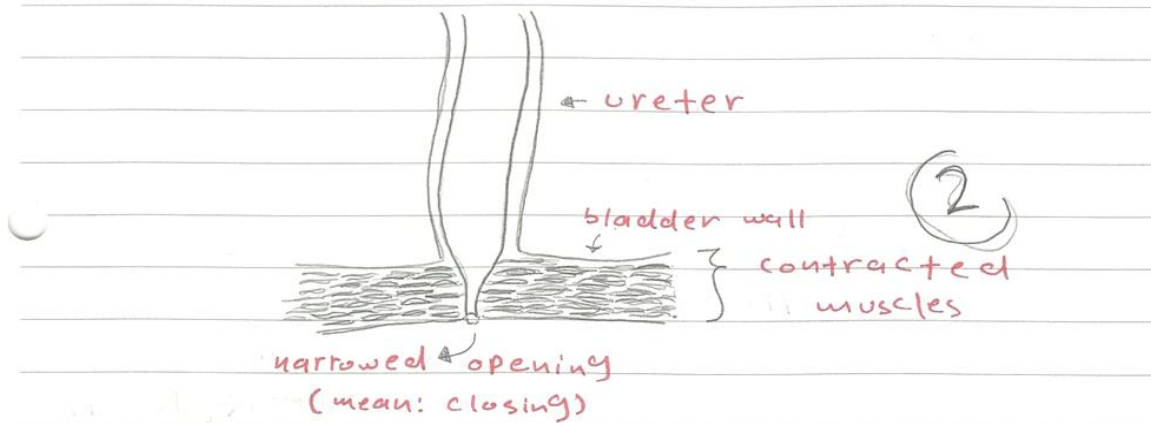
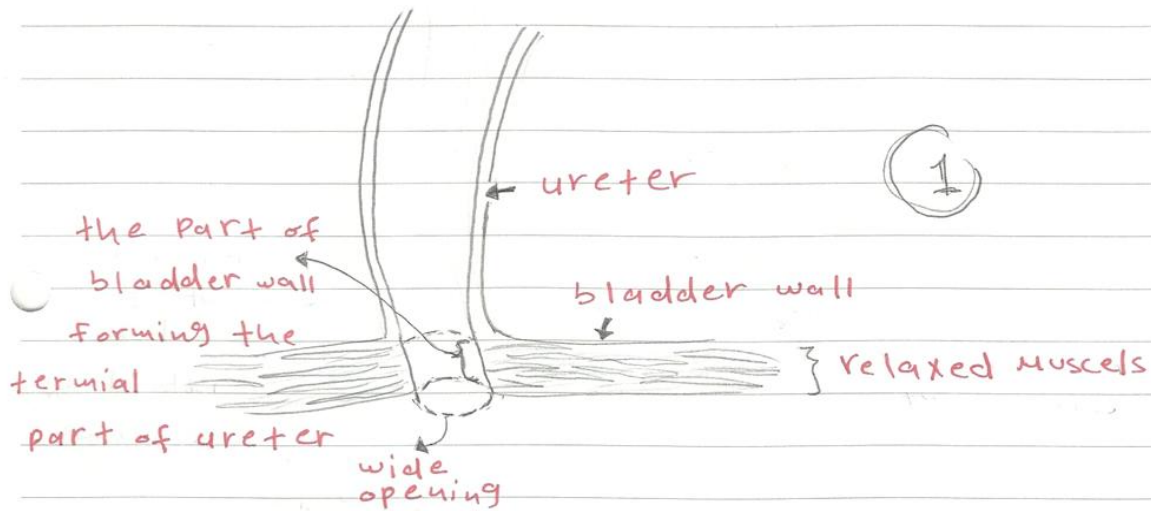
C - Urethra:

	Male	Female
Length :	8 inches , 20 cm	4 cm (shorter → higher risk for infection)
Description:	Extends from the neck to the external urinary meatus on the tip of glans penis. Has a dual function (urinary and reproductive)	Extends from the neck to open through the external urethral orifice. Has only urinary function.
Division:	<p>1) Prostatic Urethra : 3 cm , widest and dilatable , inside prostate Two ducts open into it : Ejaculatory ducts & duct of prostate</p> <p>2) Membranous Urethra : 1 cm , surrounded by external urethral sphincter.</p> <p>3) Penile (spongy) Urethra : 16 cm , narrowest part , pass through penis and opens through external urethral orifice.</p>	—





External Urethral Sphincter





Quick Review

Mention the relation of the ureter to psoas major muscle?

Ureter descends anterior to psoas major muscle.

Name the artery which is crossed by ureters?

Common iliac artery

Mention the arterial supply for ureters?

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

Describe the urinary bladder in the following:

- **Adults:** It is entirely a pelvic organ, as it fills; it rises up into hypogastric region of the abdomen.
- **Children:** It is an abdominal organ and projects above the pelvic inlet.

Mention the relations of the lower part of the posterior surface in the bladder in the following:

- **Males:** Vas deferentia and seminal vesicles.
- **Females:** vagina.

Mention some facts about the retropubic fat?

1. Accommodates the distention of bladder.
2. Continuous with the fat in the anterior abdominal wall.

Describe the "trigone"?

It is a triangular region in the base of bladder in which the mucous membrane is always smooth, located between the openings of the two ureters and the urethra.

Mention structures opening into the prostatic urethra?

Ejaculatory duct & ducts of prostate gland.



Quiz

1. Ureter begins as a continuation of:

- A. Renal pelvis
- B. Renal cortex
- C. Renal medulla
- D. Renal artery

2. Which one of the following is the narrowest part of the ureteric constrictions:

- A. Ureteropelvic junction
- B. The crossing of the external/common iliac
- C. The crossing of the internal/ common iliac
- D. Uterovesical junction

3. The apex of the urinary bladder is connected the umbilicus by:

- A. Allantoise
- B. Median umbilical ligament
- C. Umbilical cord
- D. Urachus

4. Which of the following is completely covered by peritoneum:

- A. Posterior surface
- B. Superior surface
- C. Anterior surface
- D. Lateral surface

5. The inferolateral surfaces of the bladder are posteriorly related to:

- A. Retropubic fat and pubic bones
- B. Sigmoid colon
- C. Coils of ileum
- D. Obturator internus and levator ani



6. Rupture of the bladder result in escape of urine into:

- A. Posterior abdominal wall
- B. GIT
- C. Anterior abdominal wall
- D. Pelvis

7. Which one of the following is the most fixed part of the bladder:

- A. Neck
- B. Apex
- C. Base
- D. Superior surface

8. In males, smooth muscle fibers of the bladder are continuous with those of:

- A. Seminal vesicle
- B. Prostate
- C. Penis
- D. Vas deference

9. Uvula vesicae is produced by:

- A. Median lobe of the prostate
- B. Lateral lobe of the prostate
- C. Anterior lobe of the prostate
- D. Superior lobe of the prostate

10. Parasympathetic fibers of the urinary bladder are derived from:

- A. L1, L2
- B. S1, S2, S3
- C. L2, L3, L4
- D. S2, S3, S4



11. Which of the following is the widest and most dilatable part of the male urethra:

- A. Penile
- B. Membranous
- C. Prostatic
- D. Ejaculatory

12. Which of the following is true about the penile urethra:

- A. Extends from the neck of the bladder inside prostate gland
- B. Surrounded by external urethral sphincter
- C. Extends throughout the penis and open externally
- D. Opens into ducts of prostate gland

13. What is the only function of female urethra:

- A. Urine excretion
- B. Reproduction
- C. Filtration

14. Which one of the following structures is related to the inferolateral surface?

- A. Prostate gland
- B. Sigmoid colon
- C. Retropubic fat
- D. Seminal vesicle

15. Which one of the following is the site of uvula vesicae?

- A. In the superior surface of urinary bladder.
- B. Behind the internal urethral orifice.
- C. Between the 2 ureteric orifices.
- D. In relation to the apex of urinary bladder.



16. Which one of the following produce Uvula Vesicae :

- A. Medial lobe.
- B. Median lobe.
- C. Lateral lobe.
- D. Inferior lobe.

Question	Answer
1	A
2	D
3	B
4	B
5	D
6	C
7	A
8	B
9	A
10	D
11	C
12	C
13	A
14	C
15	B
16	B



Anatomy Team Leaders:

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