

وسهلا



أهلا

يُمنع أخذ السلايدات بدون  
إذن المحرر واي اجراء  
يخالف ذلك يقع تحت طائلة  
المسؤولية القانونية  
جميع المعلومات للاستخدام  
التعليمي فقط

الأستاذ الدكتور يوسف حسين

كلية الطب - جامعة مؤتة - الأردن

دكتورة من جامعة كولونيا المانيا

اليوتيوب د. يوسف حسين

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# Anatomy of Kidney

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**Upper pole**

**Lateral border**

**Anterior surface**

**Lower pole**

**\*\* Size;** 12 cm long, 6 cm wide, 3 cm thick.

**\*\* Position:** kidneys lie behind the peritoneum of the posterior abdominal wall.

**\*\* Weight,** 150 gm in male and 135 gm in females.

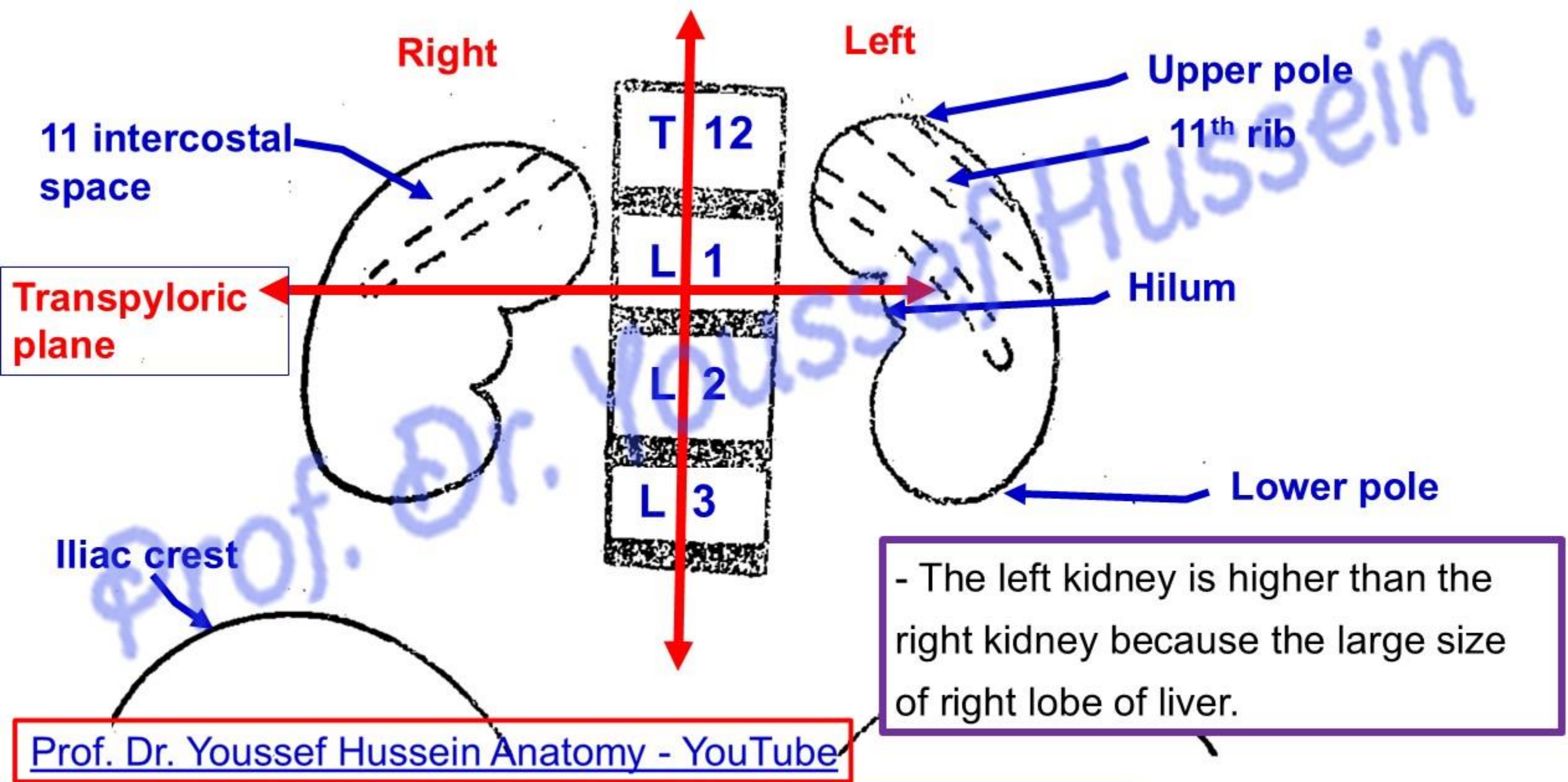
**Renal artery**

**Renal vein**

**Pelvis of ureter**

**Medial border**

**Hilum** in middle of medial border at level of **transpyloric plane (L1)**



## Surface anatomy of kidneys (anterior)

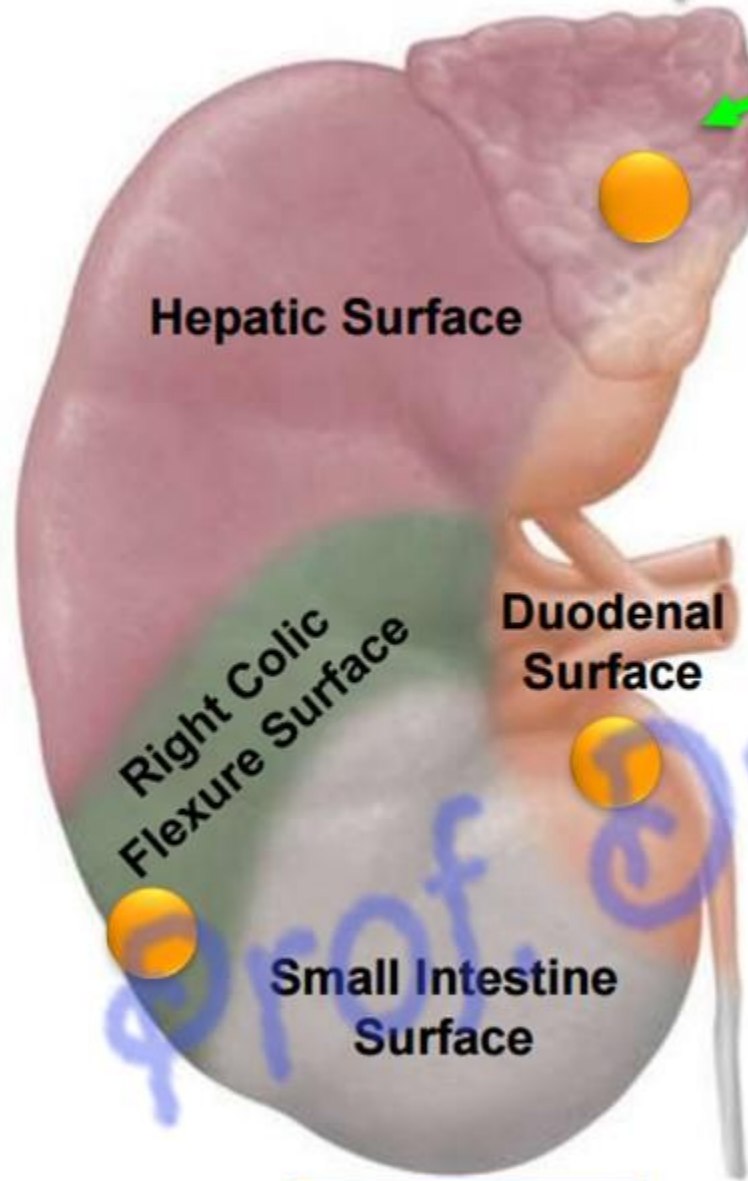


# Relations of Kidney

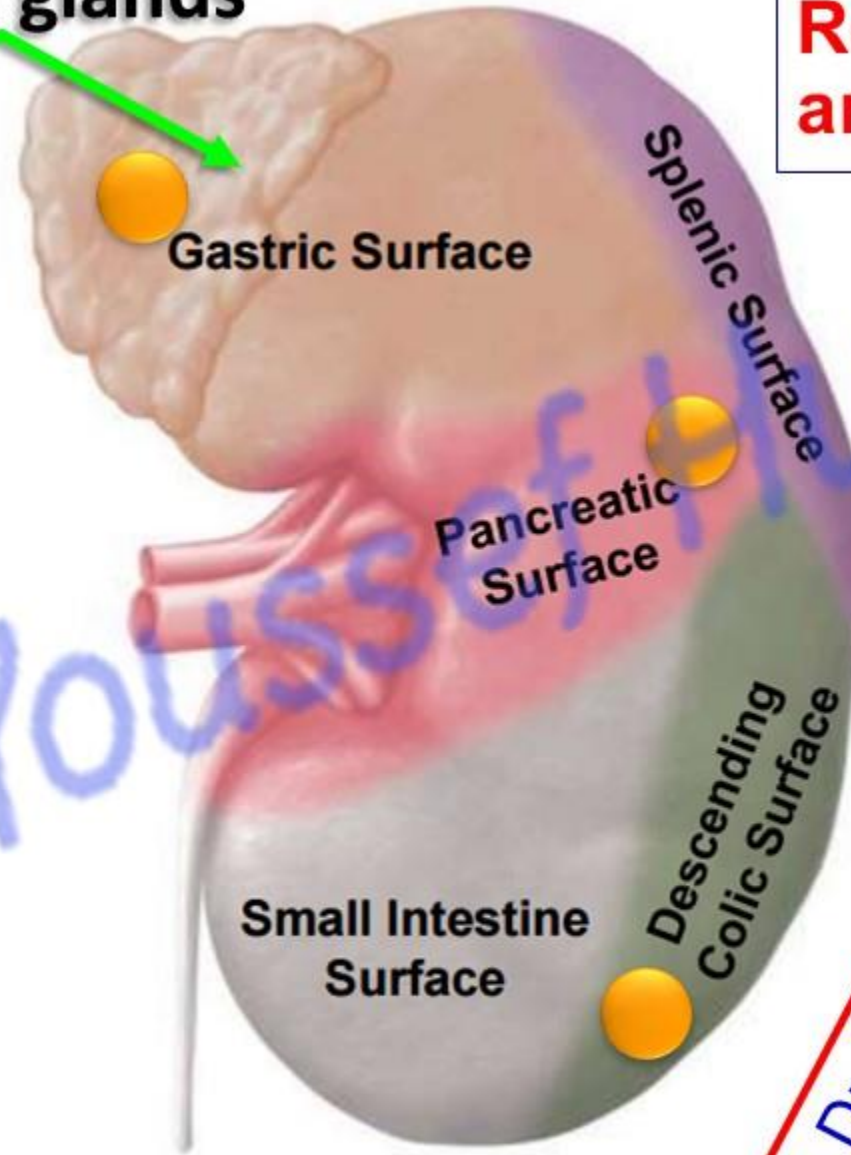
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## Suprarenal glands

**Relations of the  
anterior surface**



Right Kidney



Left Kidney

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## •\*\* Relations of the Anterior surface of the right kidney

**1- Right suprarenal gland:** related to the upper medial part.

**2- Right lobe of the liver:** related to the upper lateral part.

**3- Second part of the duodenum:** in front of the hilum.

**4- Coils of small Intestine:** related to the lower medial part.

**5- Right colic flexure:** related to the lower lateral part.

**\*\* Peritoneal covering;** anterior surface covered by peritoneum **except** (bare areas):

1) Right suprarenal gland.

2) 2nd part of the duodenum.

3) Right colic flexure.

## **\*\* Relations of the Anterior surface of the left kidney**

**1- Left suprarenal gland:** related to the upper medial part.

**2- Spleen:** related to the upper lateral part.

**3- Body of pancreas and splenic vessels:** related to the middle part.

**4- Stomach:** related to the triangular area between the left suprarenal gland, spleen and pancreas.

**5- Left colic flexure and descending colon:** related to the lower lateral part.

**6- Coils of small intestine:** related to the lower medial part.

• **\*\* Peritoneal covering;** anterior surface covered by peritoneum **except (bare areas):**

1) Left suprarenal gland.

2) Pancreas.

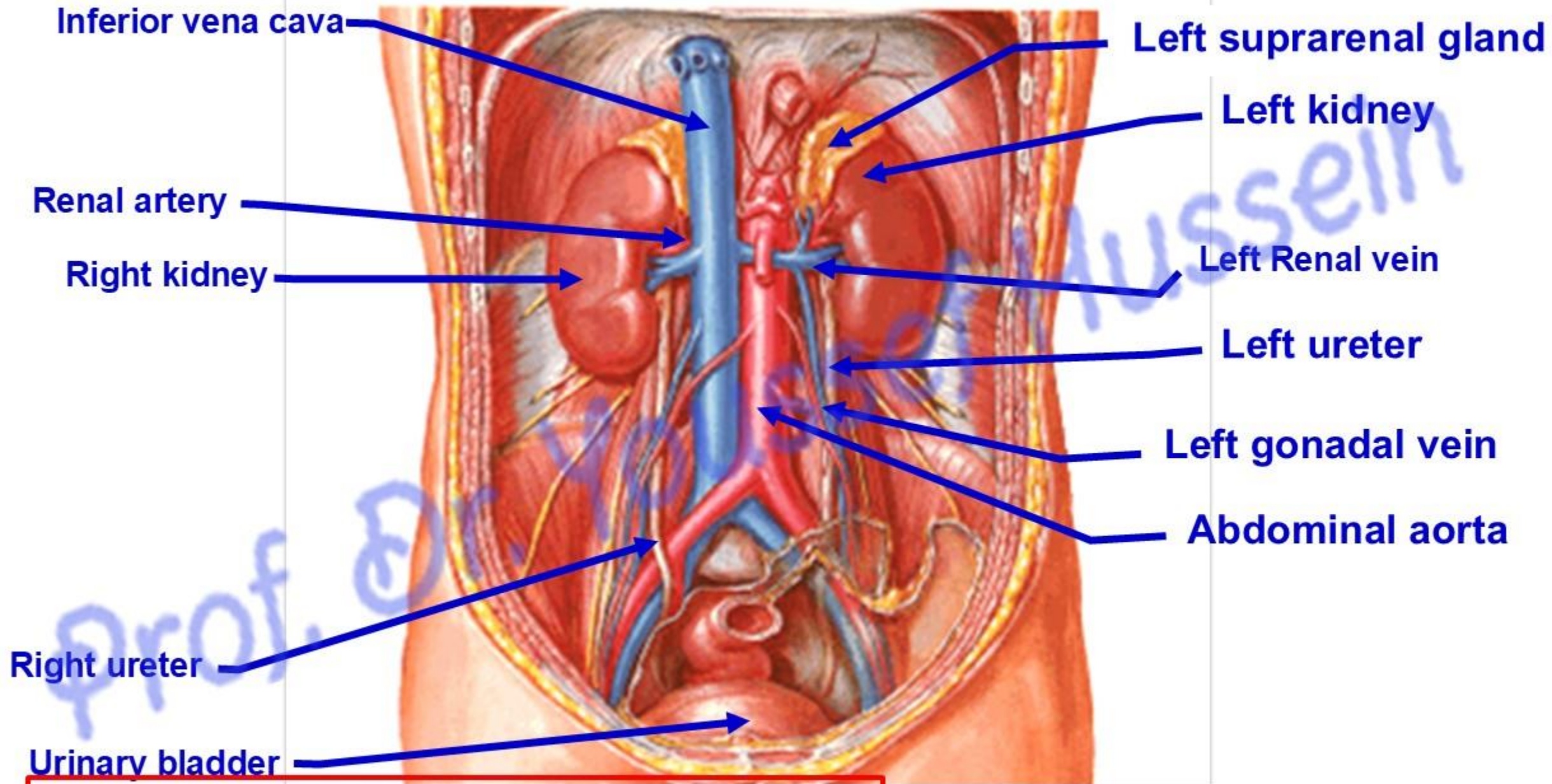
3) Colic flexure





# Blood supply of Kidney

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**\*\* Arterial supply, Renal artery** from abdominal aorta.

**\*\* Venous drainage, Renal veins** end into inferior vena cava.

- **Tributaries of left renal vein:**

- 1) Kidney.

- 2) Suprarenal vein.

- 3) Gonadal (testicular or ovarian) vein **on the Left only (common varicocele)**

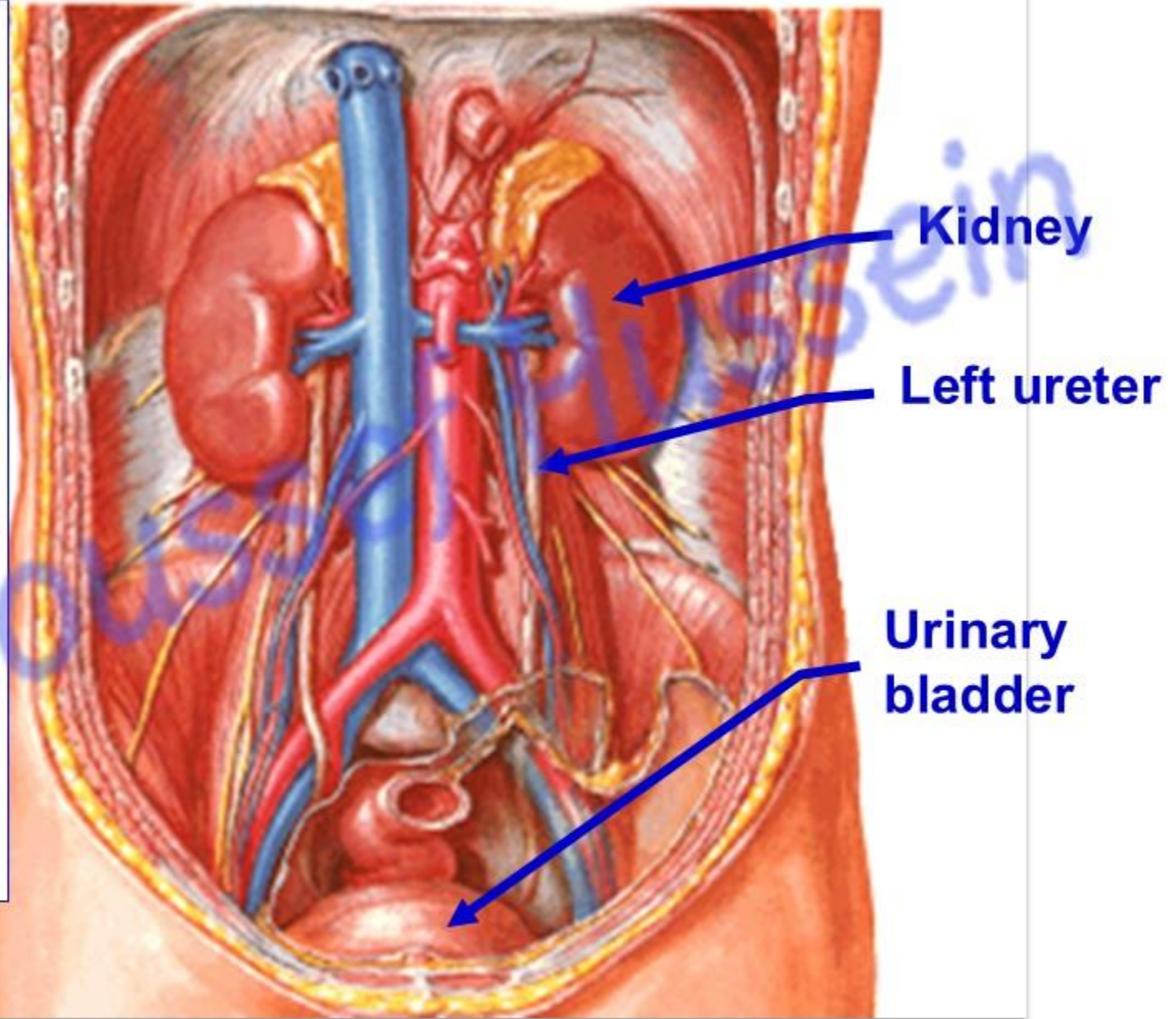
- **Kidney stone** (renal calculus or nephrolith) is formed by combination of a high level of calcium with oxalate, phosphate, urea, uric acid, and cystine.
- Stone is collected in calyces of the kidney or in the ureter.
- Common signs of kidney stones include colicky pain referred to lower abdomen and groin ,vomiting, urinary frequency and urgency, and pain during urination.

# Anatomy of Ureter

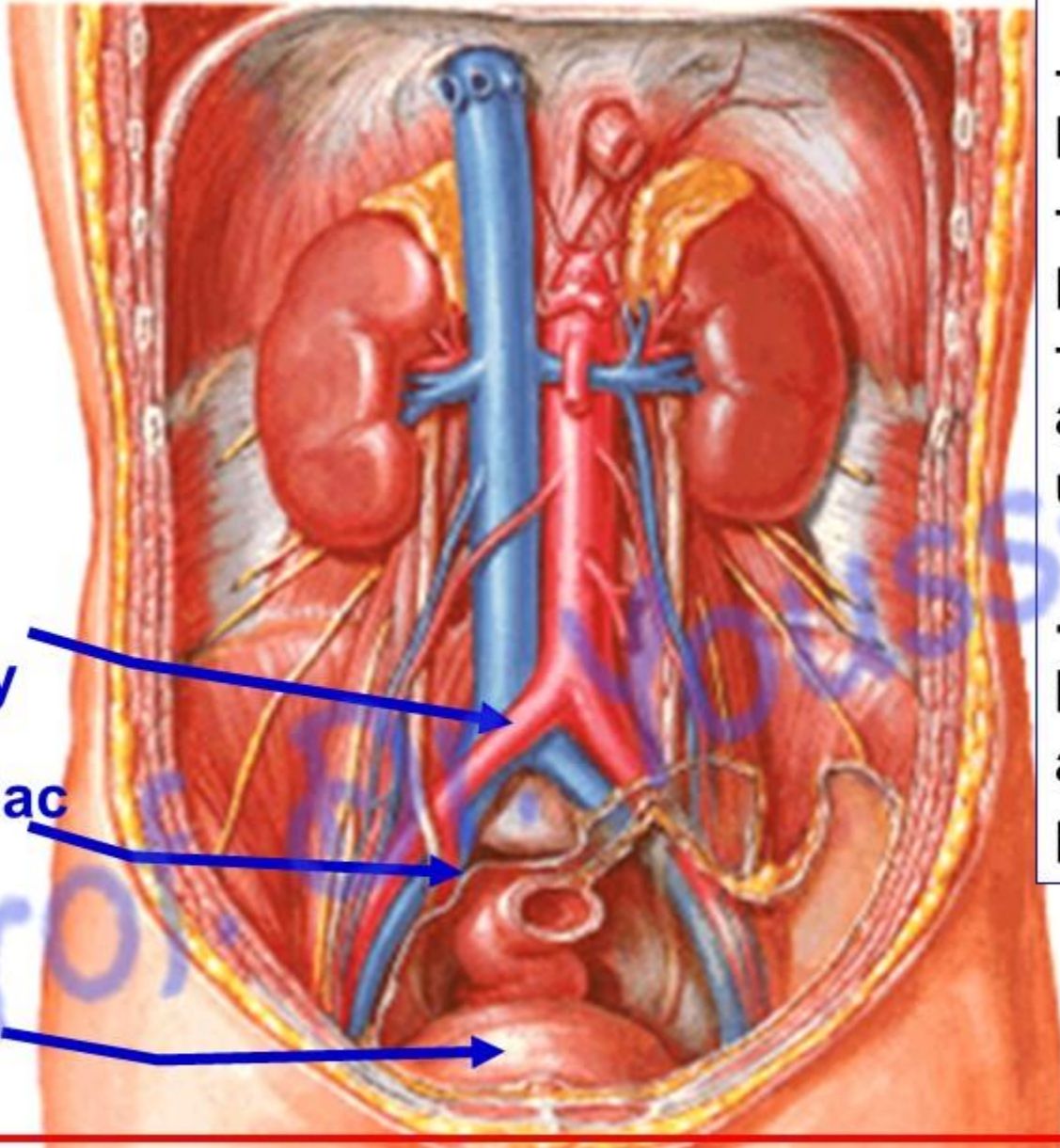
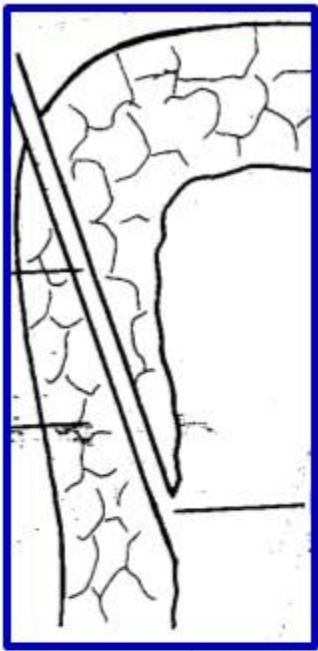
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- The ureters are 2 muscular tubes.
- They convey urine from the kidneys to the urinary bladder.
- **\*\* Begin**, from hilum of the kidney at transpyloric plane (L 1)
- **\*\* Termination**, opening into the posterosuperior angle of the urinary bladder.
- **\*\* Length**; It is about 25 cm long
- It is abdominal and pelvic part







Common  
iliac artery

Internal iliac  
artery

Urinary  
bladder

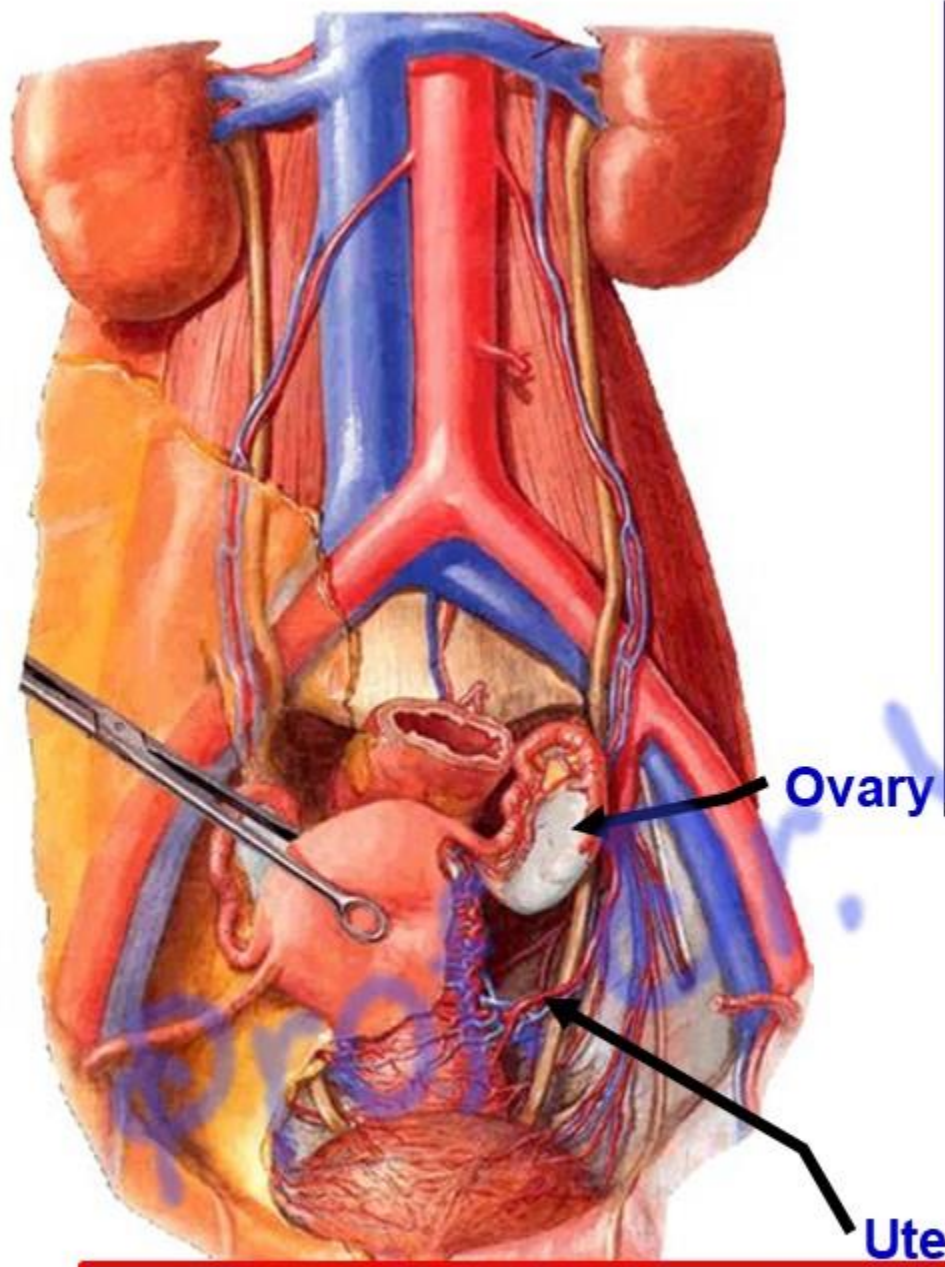
### • Pelvic Part of the Ureter

- It **enters** pelvis by crossing bifurcation of common iliac artery.
- It **descends** on lateral wall of the pelvis along the internal iliac artery.
- Opposite **ischial spine**, it curves anteromedially to the angle of the urinary bladder.

### • Intramural part

- It runs oblique through urinary bladder wall **for 2 cm** before opening act as a **valve like mechanism** to prevent regurgitation of urine.





- **\*\* Relations of the pelvic part**

- It crosses obturator nerve and vessel.
- **A- In the male,** It is crossed by vas deferens.
- **B- in female,**
- It runs **on lateral aspect of the cervix and upper part of the vagina** to reach the bladder.
- Here, it is crossed by uterine artery (**water under bridge**).



## IVP

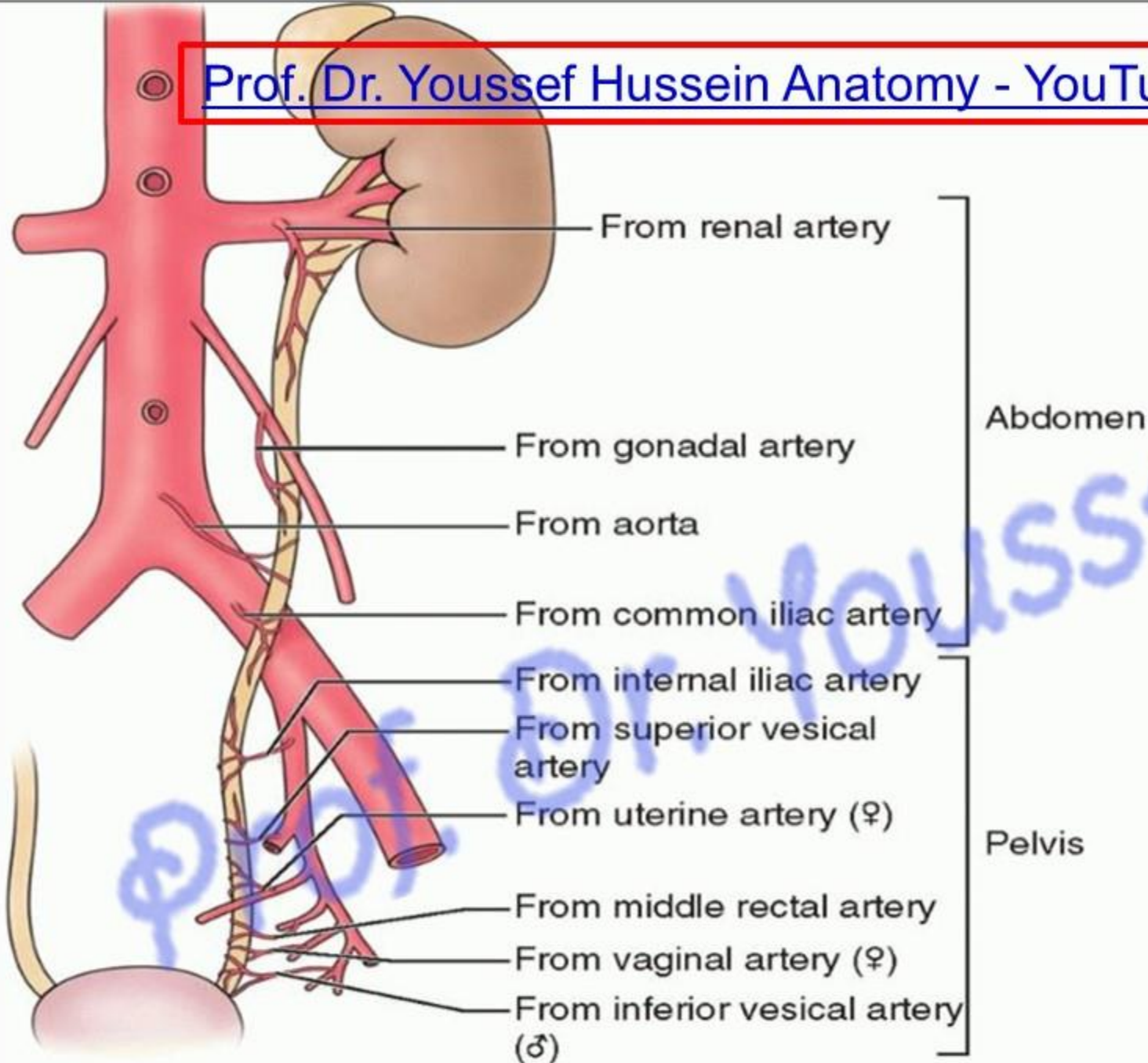
### Intravenous pyelogram

- Ureter descends downwards and slightly medially opposite the tips of transverse processes of the lumbar vertebrae.
- Then it descends in front of the sacroiliac joint.

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## Segmental Blood supply of the ureter



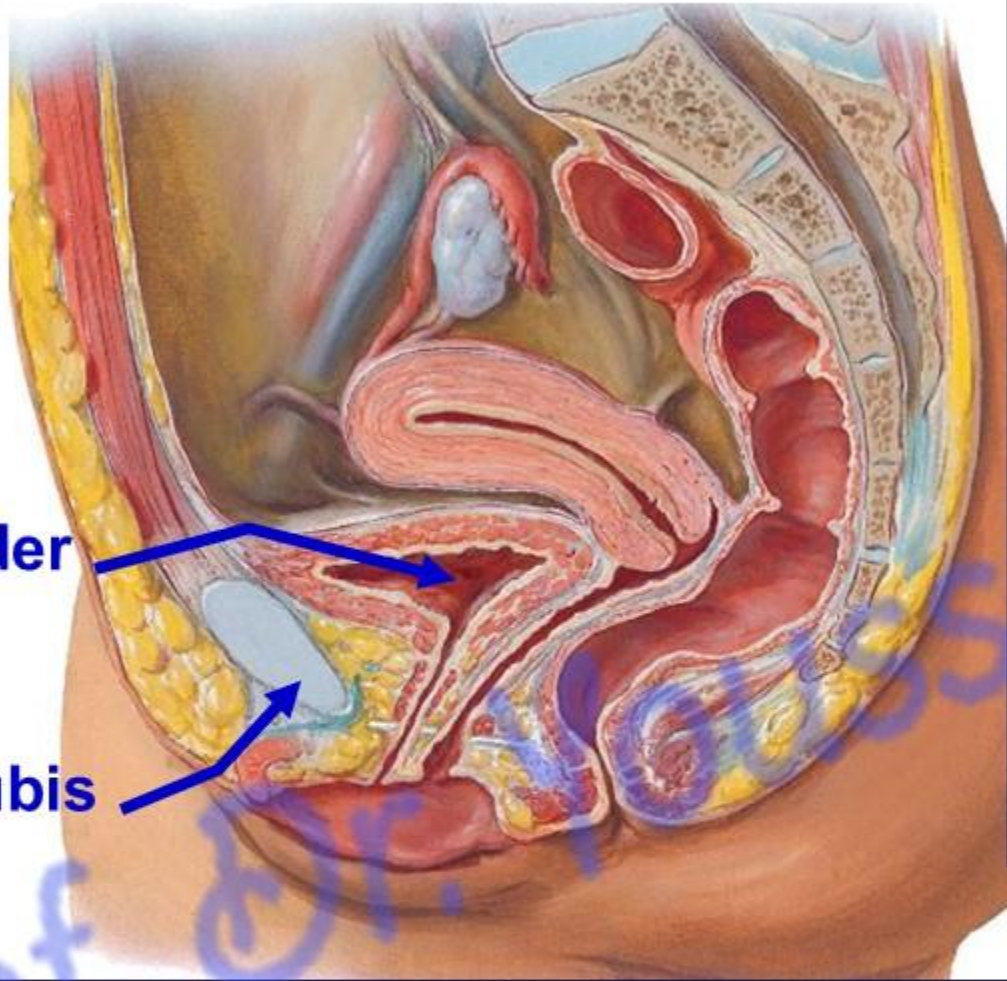
- **Nerve supply of ureter and urinary bladder**
  - Sympathetic from T 11 to L 1.
  - Parasympathetic S 2, 3, 4.
- **Renal pain is referred to the groin and external genitalia which are supplied by genitofemoral nerve (L1&2).**

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# Anatomy of Urinary bladder

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Urinary bladder

Symphysis pubis

## **\*\* Position:**

**1- During childhood**, it is an abdominal organ because the pelvis is narrow.

**2- At puberty**, lies in pelvic cavity.

- When the bladder is **distended**, it raises above the upper border of the symphysis pubis and becomes behind the anterior abdominal wall.

## **\*\* Function and capacity:**

- It is a muscular reservoir to the urine.
- The average capacity of the bladder is 400 - 500 cc.

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Loop of ileum

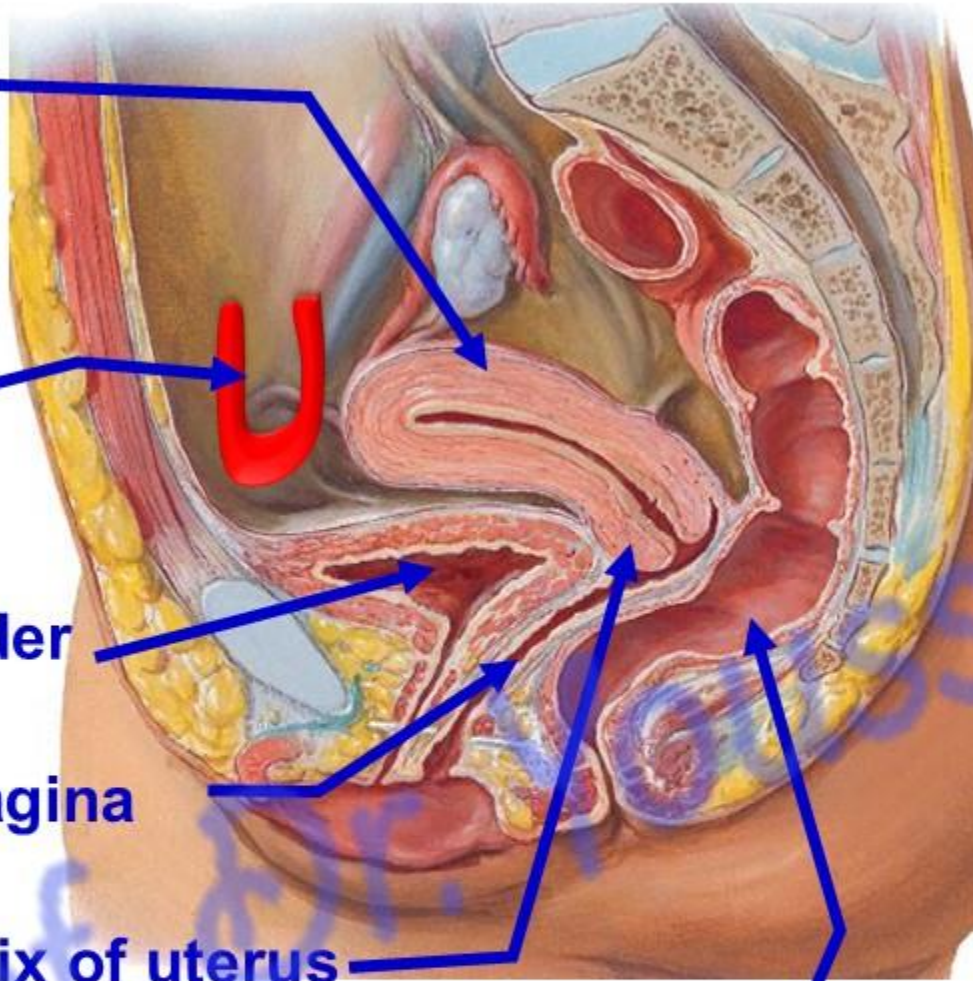
Uterus

Urinary bladder

Vagina

Cervix of uterus

Rectum



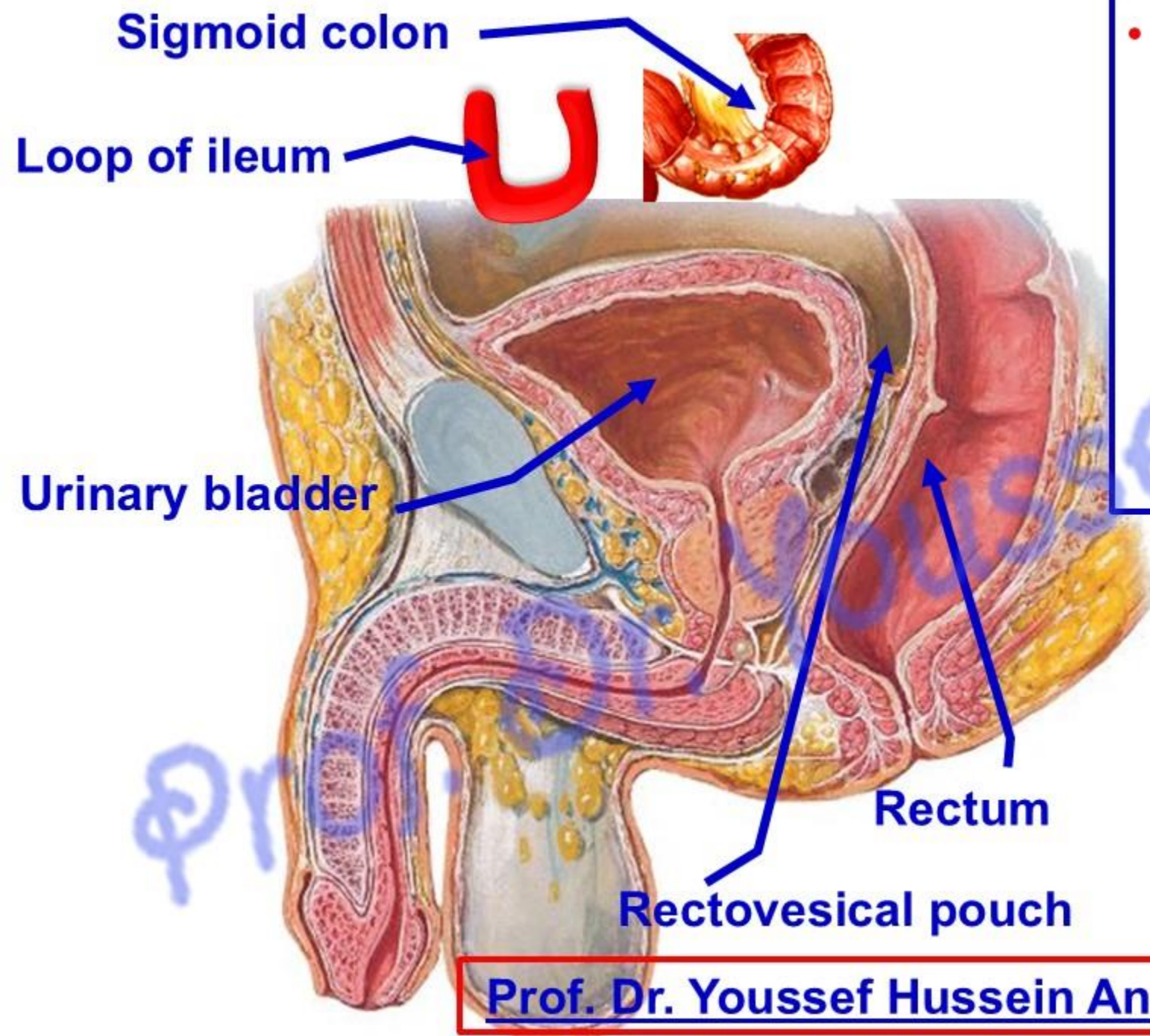
- **Relations of Superior surface In female:**

- 1) Anterior surface of uterus
- 2) Loop of ileum

- **Posterior relations**

- 1) Cervix of the uterus.
- 2) Anterior wall of the vagina.
- 3) Rectum





- **Relations of Superior surface In male:**

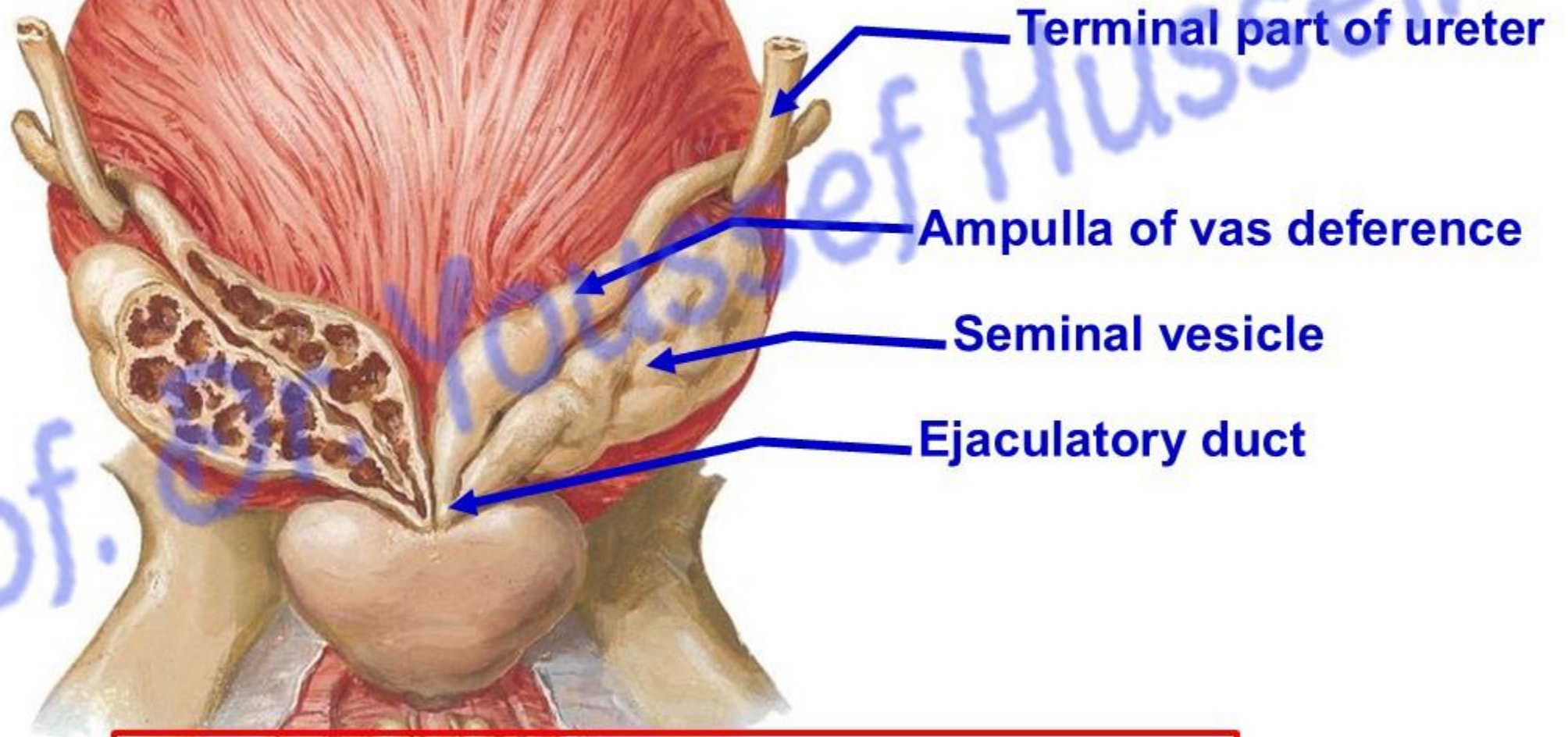
- 1) Sigmoid colon
- 2) Loop of ileum

- **Posterior relations**

- 1) Rectum
- 2) Rectovesical pouch



- **Posterior Relations of urinary bladder In male**





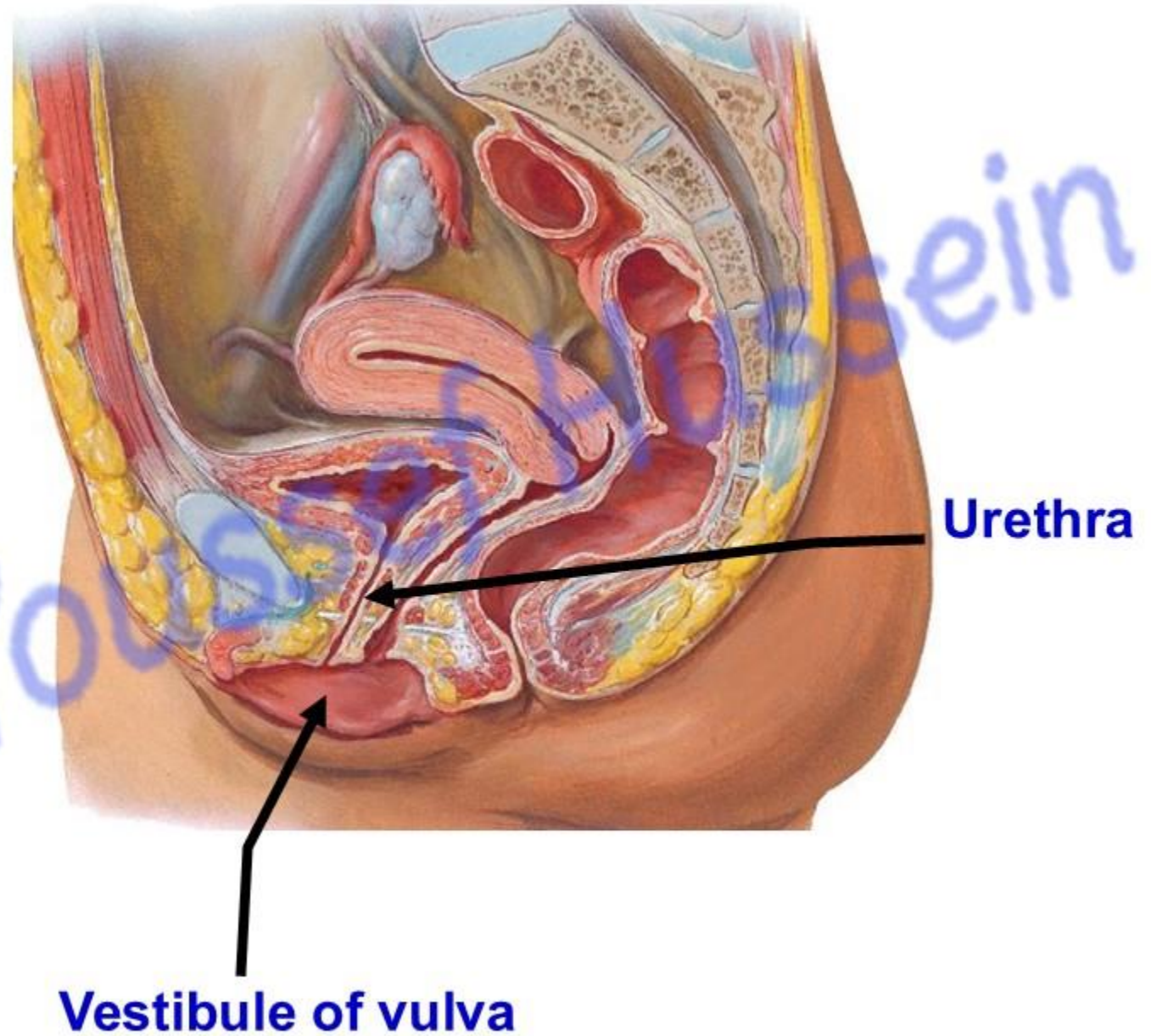
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# Anatomy of Female urethra

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- **Female Urethra**

- The female urethra is very short, **about 4 cm long**.
- **It begins** from internal urethral orifice in the neck of urinary bladder.
- **It ends** by external urethral orifice into the vestibule.
- It is surrounded by internal **urethral sphincter** (smooth muscle) and **external urethral sphincter** (striated muscle).



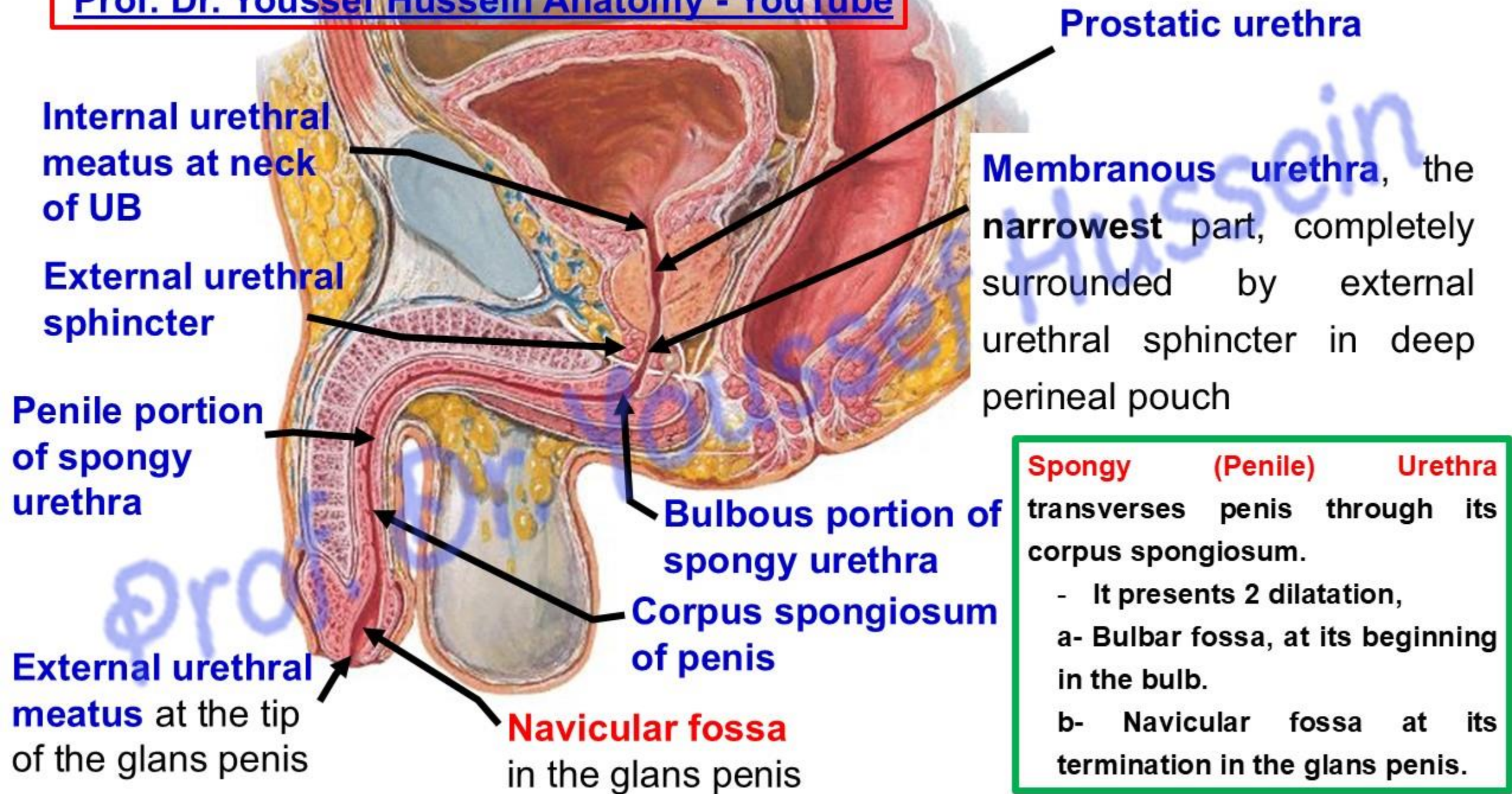


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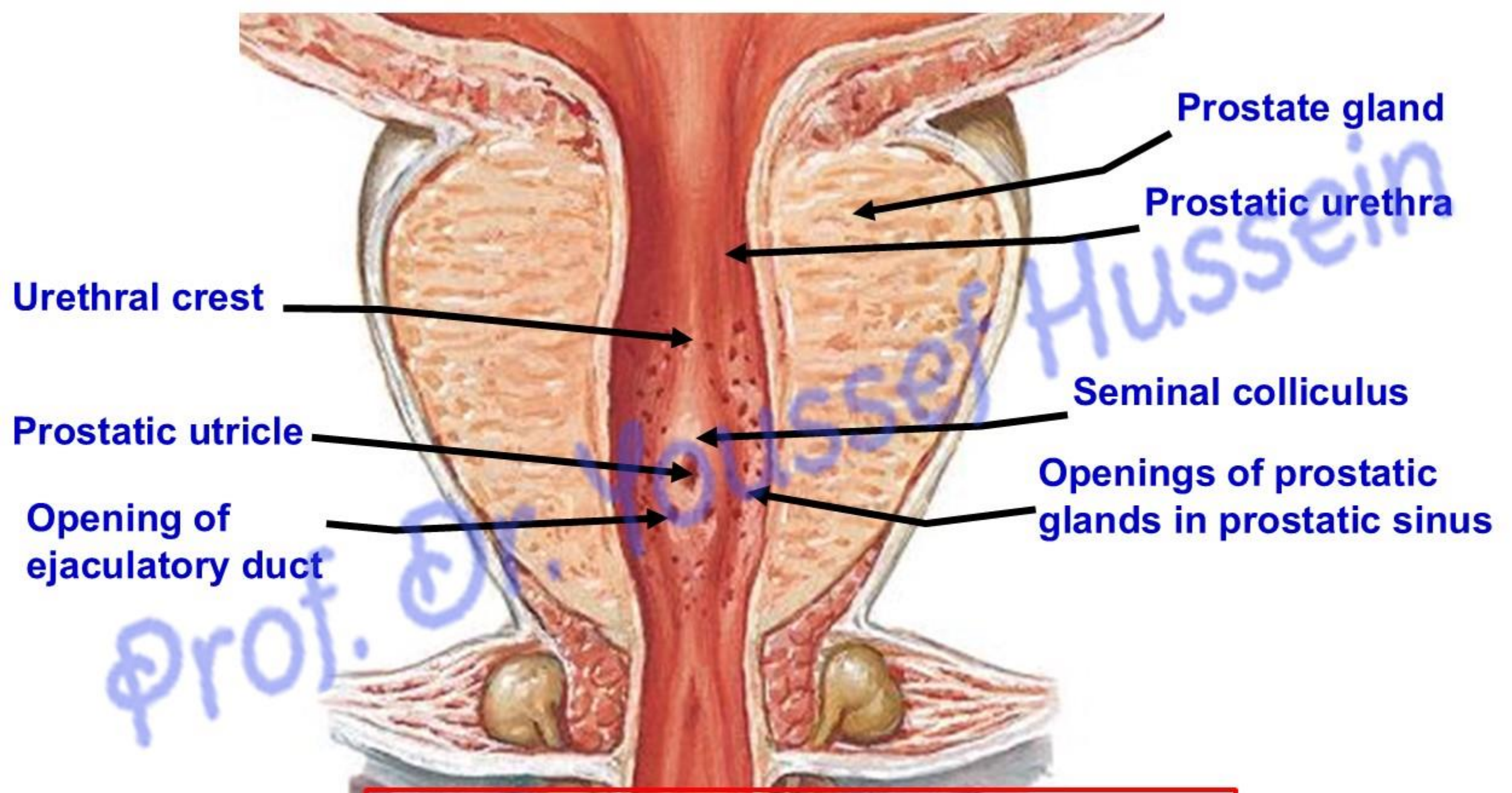
# Anatomy of Male urethra

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## • Prostatic Urethra

- It pierces the base of the prostate and exits from its apex.
- It is the widest part of the male urethra.
- It lies nearer the anterior surfaces of the prostate.
- **The posterior wall** presents several features.
  - 1- Urethral crest**, a median longitudinal elevation.
  - 2- Prostatic sinuses**, shallow grooves around the urethral crest receiving the opening of the **prostatic glands**.
  - 3- Seminal colliculus** is a swelling in the middle of the urethral crest showing **3 openings**;
    - a- Opening of the **prostatic utricle** (*resemble uterus in female*).
      - It is a blind sac directed upward and backward .
    - b- 2 lateral openings of the **ejaculatory ducts**.



Neck of urinary bladder

Prostatic urethra

Opening of ejaculatory duct

External urethral sphincter

Bulbourethral gland (Cooper's gland) opens in the bulb of the penis

Internal urethral sphincter

Membranous urethra, the narrowest part, completely surrounded by external urethral sphincter in deep perineal pouch

## Urethral sphincters

Internal urethral sphincter	External urethral sphincter
It <b>surrounds</b> neck of the bladder and prostatic urethra above the opening of the ejaculatory ducts.	It <b>surrounds</b> membranous urethra in the deep perineal pouch
<b>Smooth</b> muscle fibers	<b>Striated</b> muscle fibers
<b>Involuntary</b>	<b>Voluntary</b>
Supplied by <b>autonomic</b> fibers	Supplied by the <b>pudendal</b> nerve
<b>Prevent reflux</b> of seminal fluid into urinary bladder during ejaculation	Control the urine



[https://www.youtube.com/channel/UCVSNqbibj9UWYaJdd\\_cn0PQ](https://www.youtube.com/channel/UCVSNqbibj9UWYaJdd_cn0PQ)

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Thank You

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