

وسهلا

أهلا

يُمنع أخذ السلايدات بدون  
إذن المحرر واي اجراء  
يخالف ذلك يقع تحت  
طائلة المسؤولية القانونية



# الأستاذ الدكتور يوسف حسين

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دكتورة من جامعة كولونيا المانيا

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Prof. Dr. Youssef Hussein Anatomy - YouTube

اليوتيوب د. يوسف حسين

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# Development of Urinary bladder

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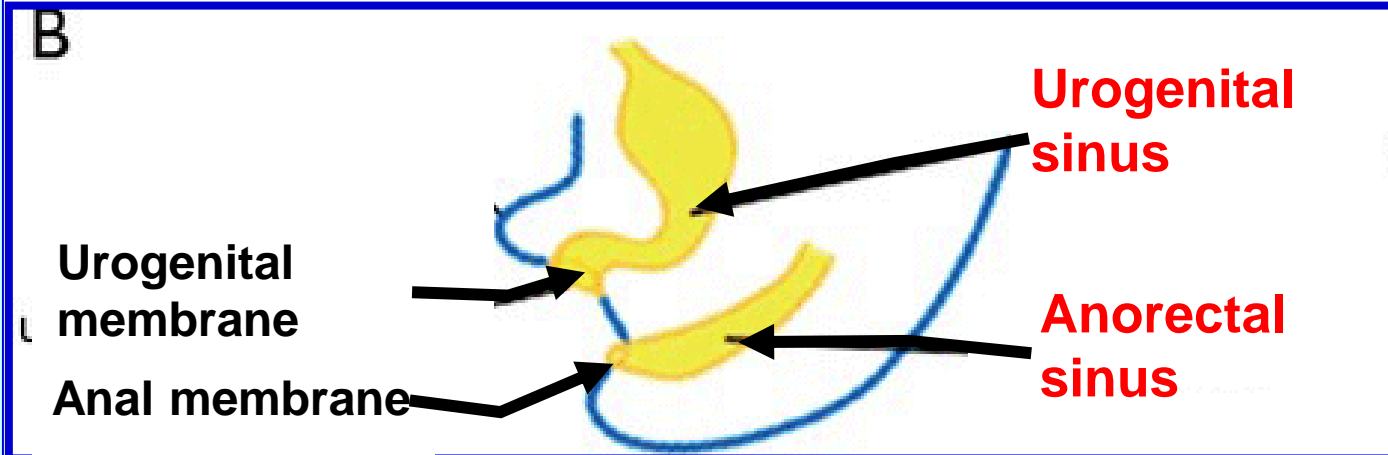
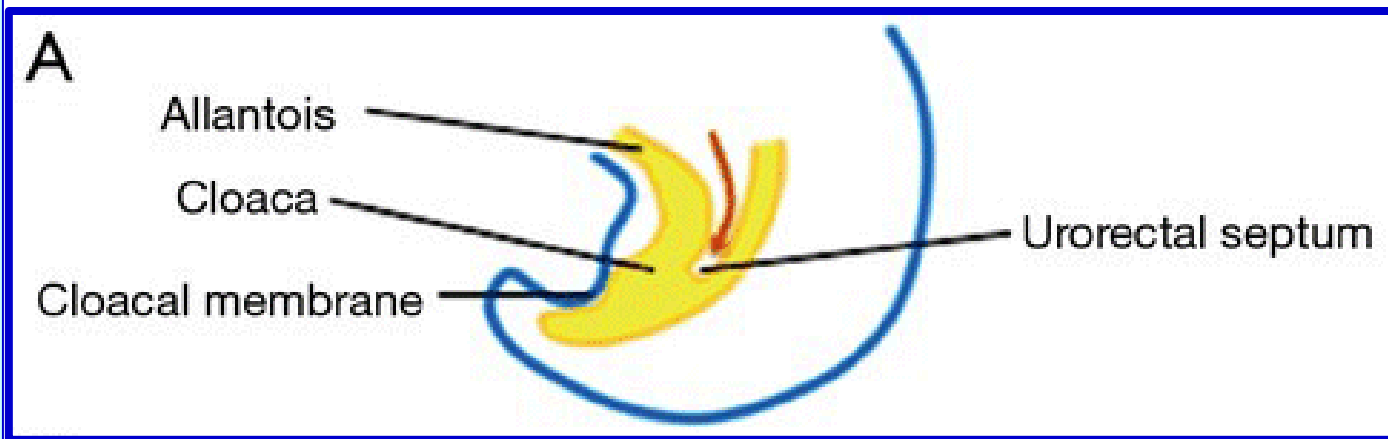
## ❖ Derivatives of cloaca

- The cloaca is the caudal dilated part of the **hindgut**, which is closed by the cloacal membrane and connected to umbilicus by **allantois (urachus)**.

- It is divided by **Urorectal septum** into:

1- **Ventral part** called **urogenital sinus**, closed by urogenital membrane that forms the mucosa of the urinary bladder and urethra (and the upper part of the vagina in females).

2- **Dorsal part** called **anorectal sinus**, closed by **anal membrane**. forms the mucosa of the rectum and upper part of the anal canal.



- **\*\* Derivatives of the urogenital sinus:**

- It receives openings of allantois and 2 mesonephric ducts.

- The site of opening of mesonephric ducts into **urogenital sinus** dividing it into:

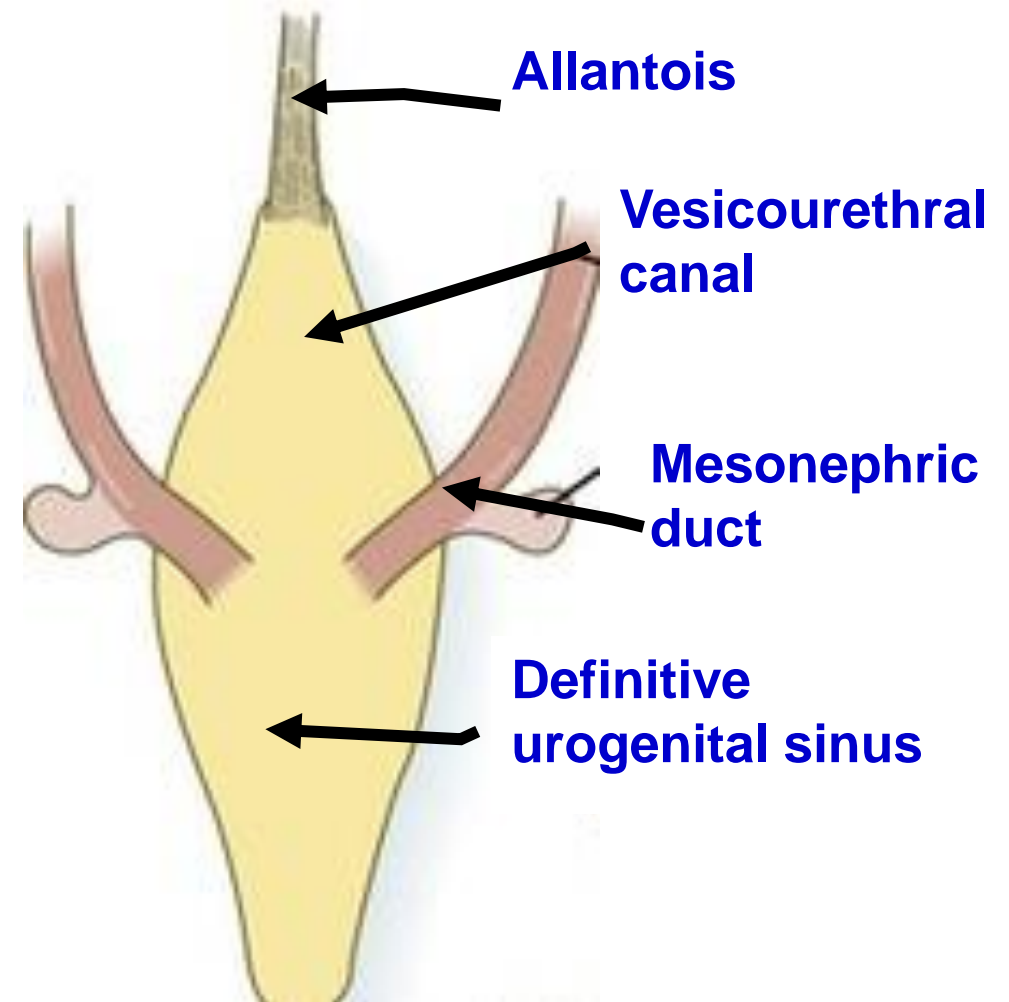
- 1- Cranial part called vesicourethral canal**

which forms mucous membrane of:

- a) Urinary bladder.**

- b) Prostatic part of urethra** above the utricle (in male) or Upper 4/5 of the **urethra** (in female).

- 2- Caudal part called definitive urogenital sinus.**



- **Development of the Urinary Bladder**

- \*\* Development of the mucous membrane**

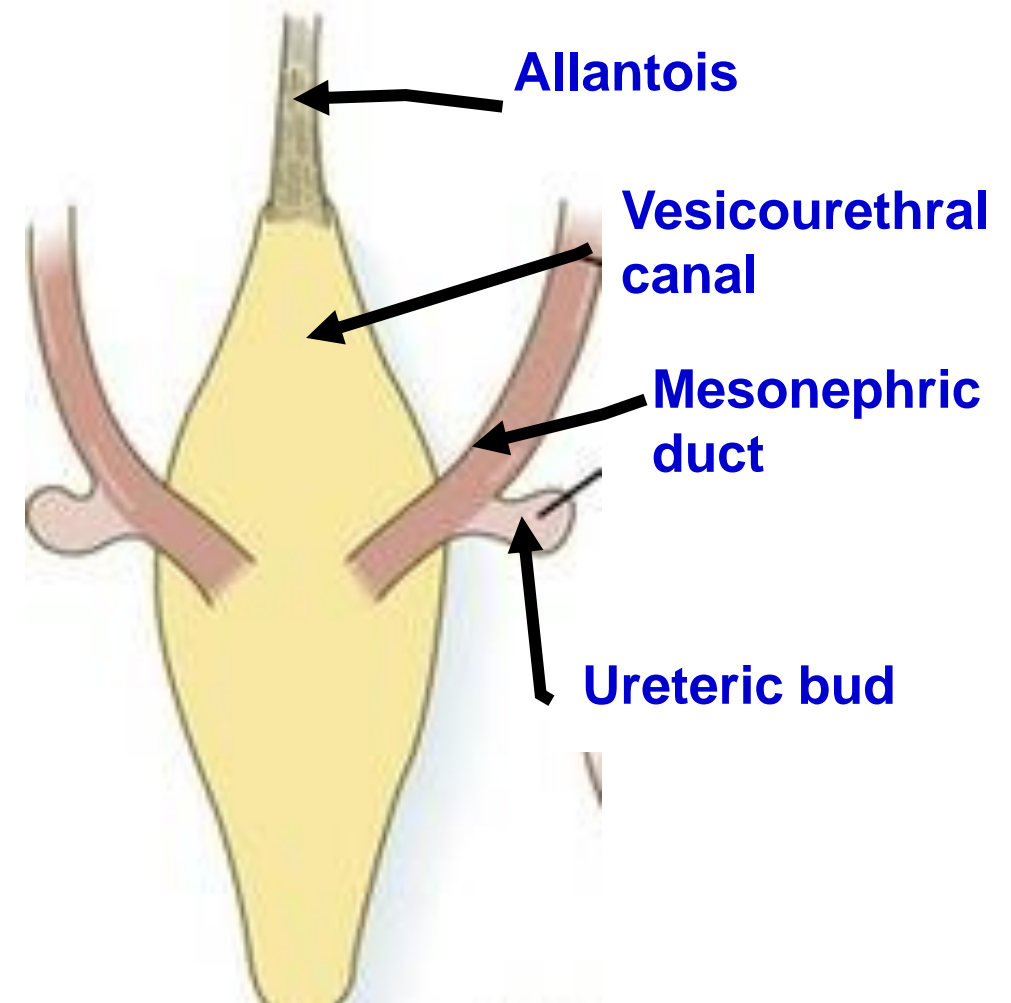
**1- Proximal part of allantois** (urachus), forms the apex of the urinary bladder (endodermal in origin).

**2- Vesicourethral canal**, forms most of the urinary bladder (endodermal in origin).

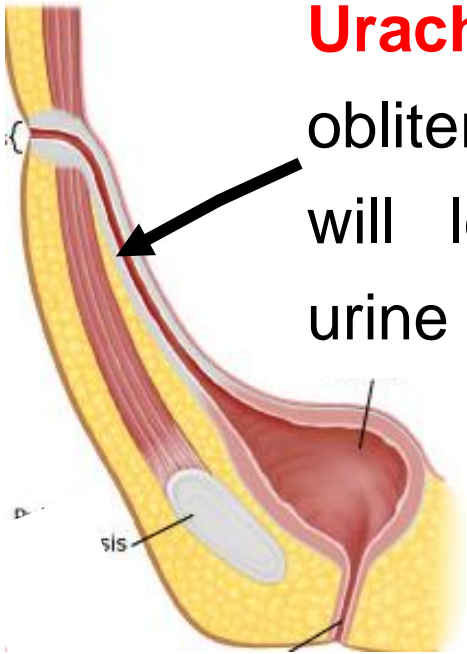
**3- Proximal parts of mesonephric ducts** till the opening of ureteric buds form **trigone** (mesodermal in origin).

- \*\* Development of muscles** (from the mesoderm surrounding the vesicourethral canal).

- Distal part of allantois (urachus) obliterated, fibrosed and formed **median umbilical ligament.**

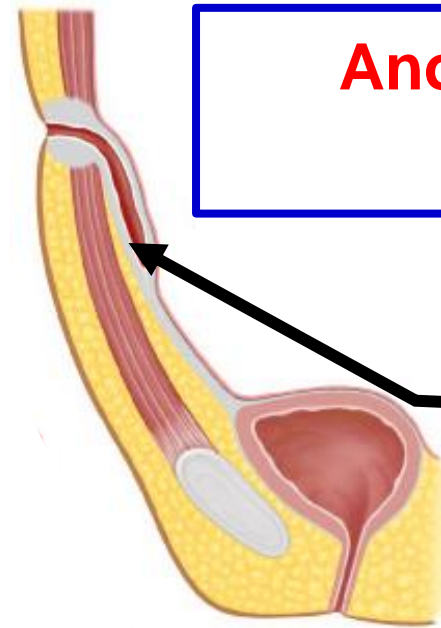


**Urachal fistula:** failure of obliteration of **urachus**. This will lead to discharge of urine from umbilicus.

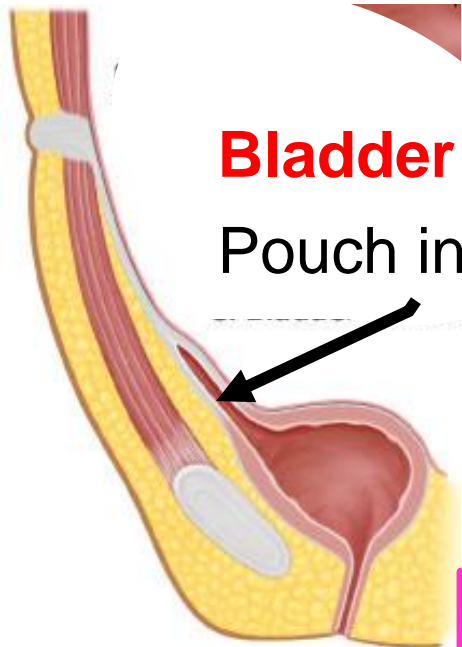


**Anomalies of urachus (allantois):**

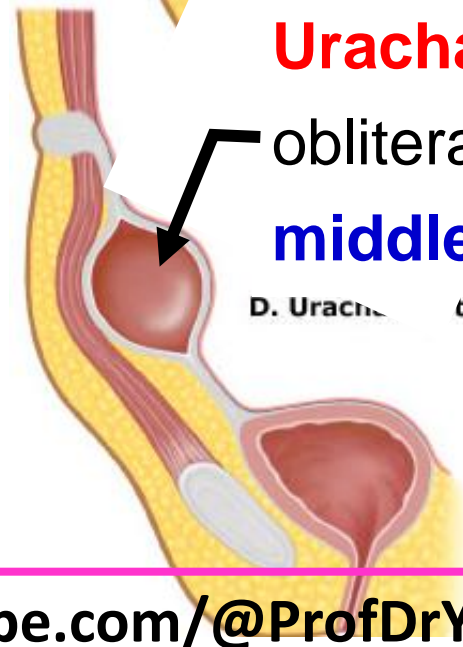
**Urachal sinus:** failure of obliteration of **distal** part of urachus.

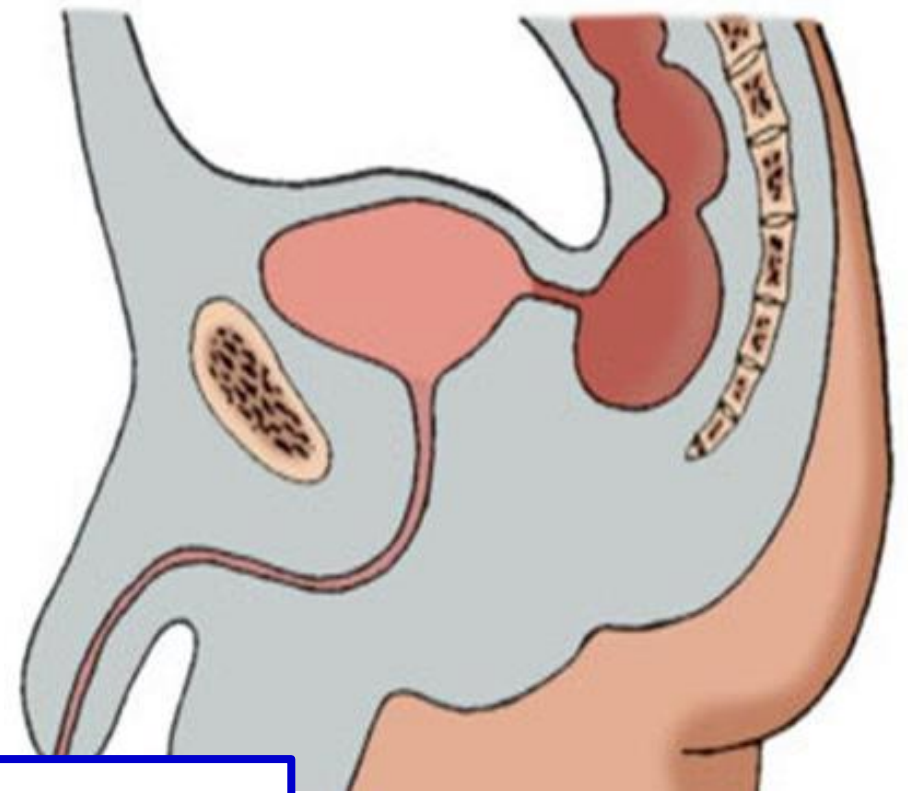
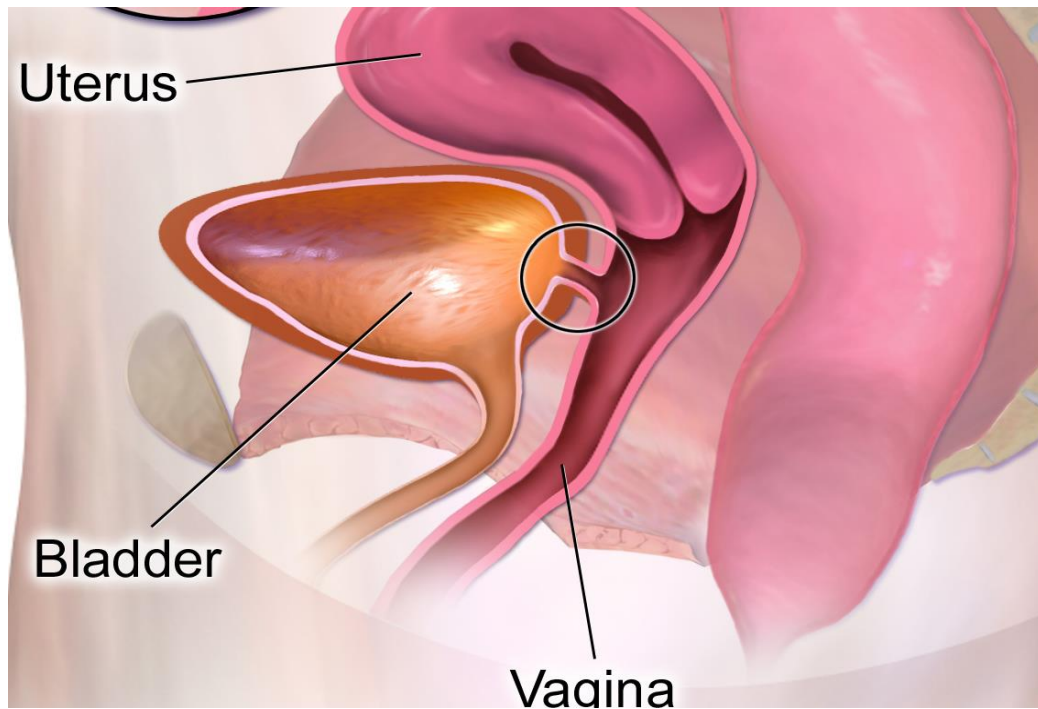


**Bladder diverticulum:**  
Pouch in the apex



**Urachal cyst:** failure of obliteration of the **middle** part of urachus.





**Fistulae of the urinary bladder:** due to defect in the urorectal septum.

**(a) Vesicovaginal fistula:** communication between urinary bladder and vagina (**female**).

**(b) Rectovesical fistula:** communication between urinary bladder and rectum (**male**).

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- **Ectopia vesica:**

- The inner aspect of the urinary bladder is exposed below the umbilicus.
- This occurs due to failure of the formation of the anterior abdominal wall and anterior wall of the urinary bladder.

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# Development of urethra

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## **\*\* Development of the female urethra**

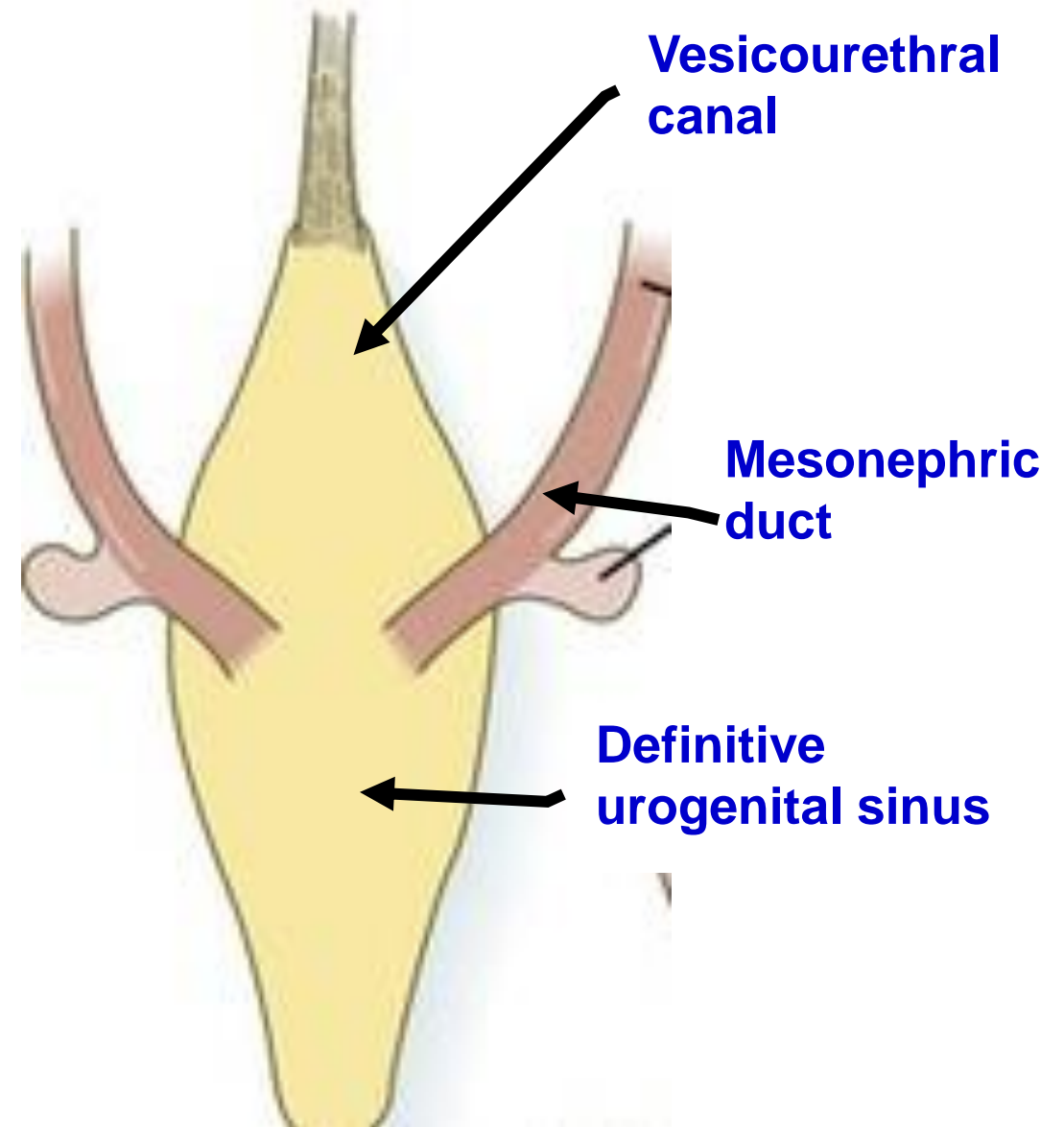
- The site of opening of mesonephric ducts into **urogenital sinus** dividing it into:

### **1- Cranial part called vesicourethral canal**

which forms mucous membrane of Upper 4/5 of the urethra.

### **2- Caudal part called definitive urogenital sinus**

- The urethral sphincters are developed from the surrounding mesoderm.



# Male Urinary Bladder and Urethra

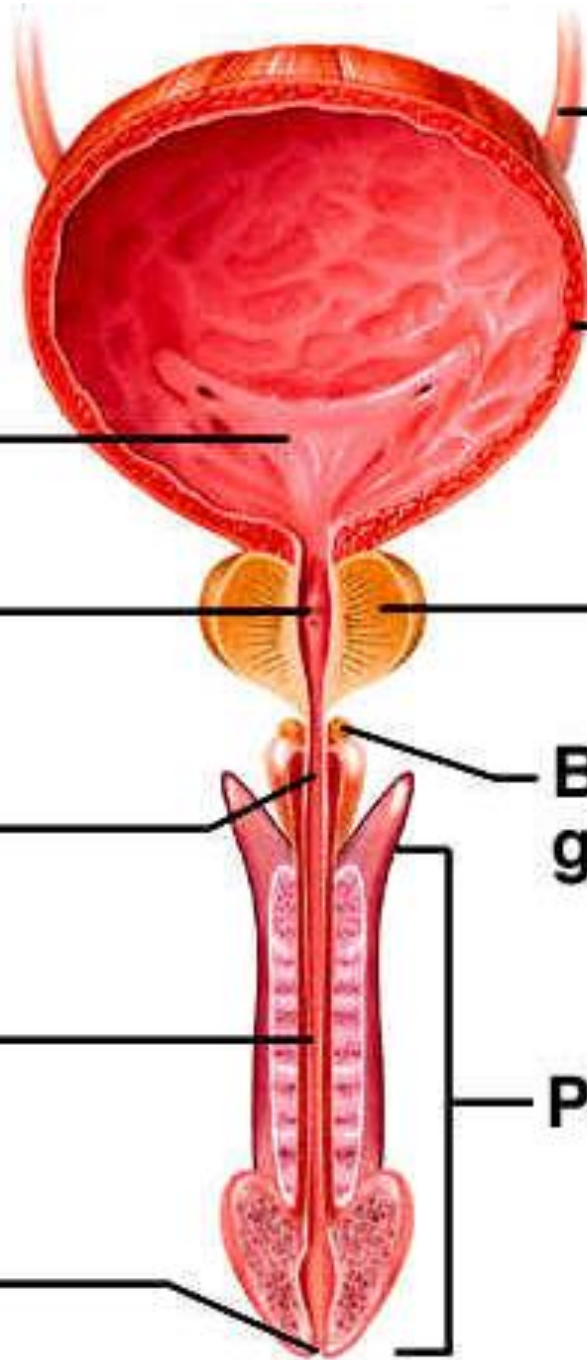
Trigone

Prostatic urethra

Membranous urethra

Penile urethra

External urethral orifice



Ureter

Urinary bladder

Prostate gland

Bulbourethral gland

Penis

## **\*\* Development of male urethra**

**A- Vesicourethral canal forms** Prostatic part of the urethra above the utricle .

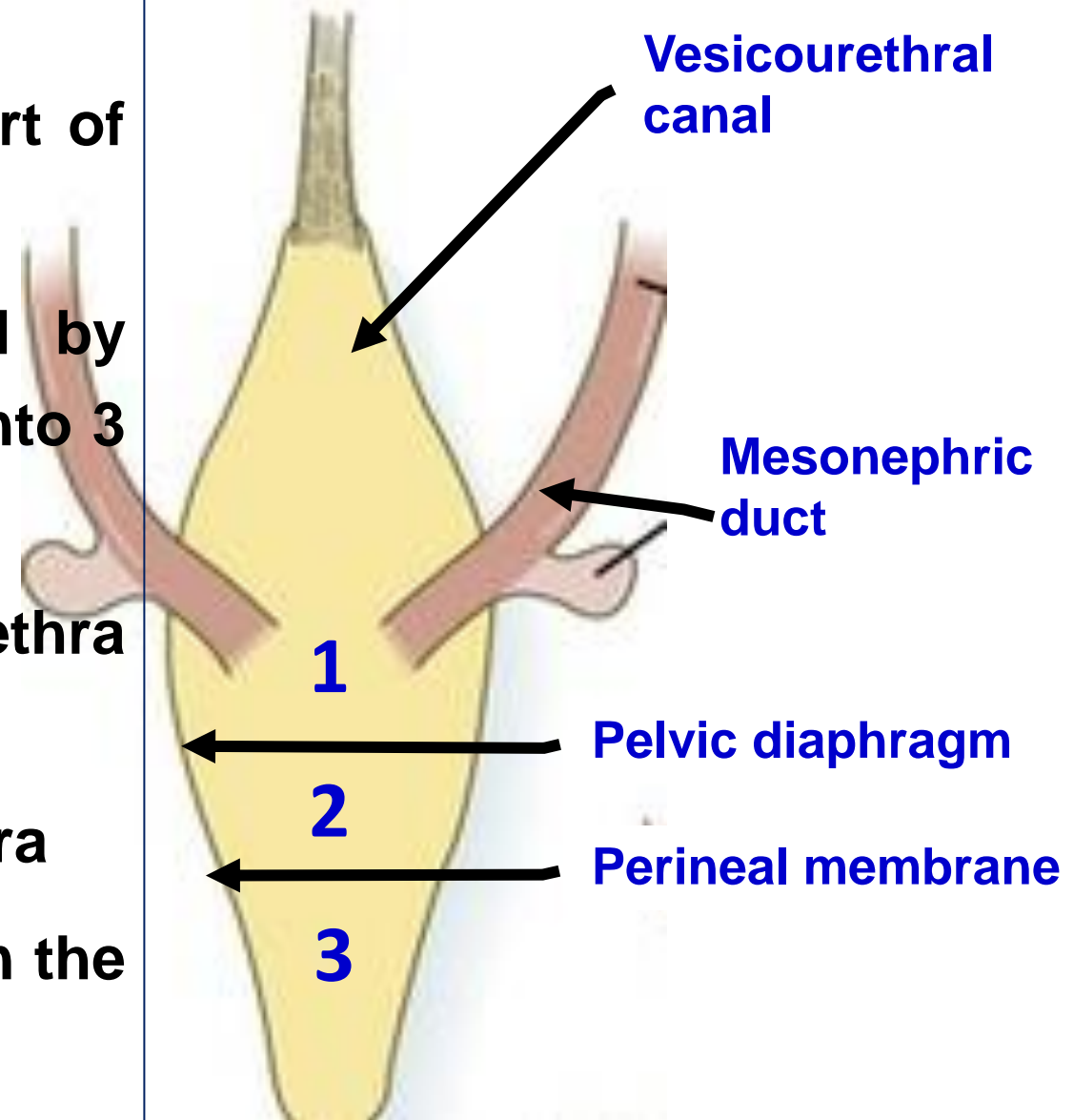
**A- Definitive urogenital sinus** is divided by **pelvic diaphragm** and **perineal membrane** into 3 parts:

**1- Cranial part** form **Prostatic** part of the urethra **below** the utricle

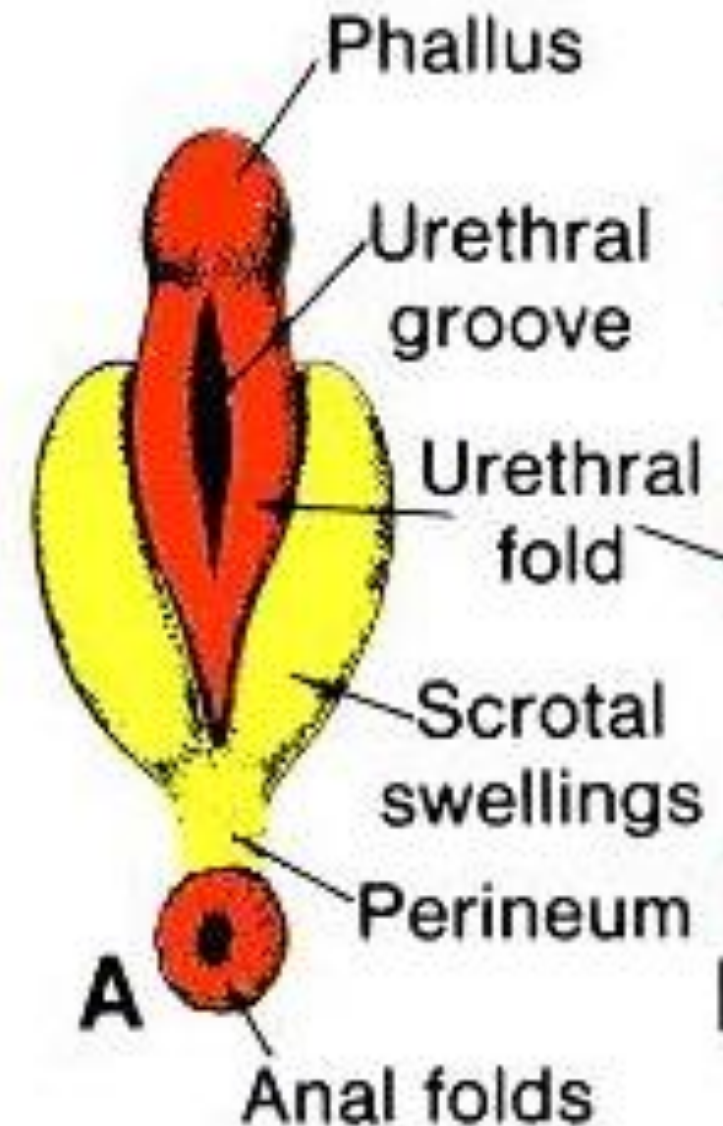
**2- Middle part** forms the **membranous** urethra

**3- Caudal part** forms forms **penile urethra** in the root of the penis

- The urethral sphincters are developed from the surrounding mesoderm.



- **Steps of development of penile (spongy) urethra**
- 2 folds develop on each side of the urogenital membrane
  - a. Inner fold called **urethral fold**.
  - b. Outer fold called **genital fold (scrotal)**.
- The 2 genital fold meet each other **cranial** to the urogenital membrane to form **genital tubercle (phallus)** that forms **body of the penis and glans penis**.
  - The 2 urethral folds fuse with each other to form **urethral tube --- solidified --- urethral plate --- canalized --- urethral groove** -- edges of the urethral groove fuse with each other --- **penile urethra in body of the penis and glans penis**.
- Mesoderm around the urethra forms erectile tissues and blood vessels of the penis.



## • Hypospadias

- External meatus is found on the lower surface of the penis.
- It is caused by failure in fusion of the urethral groove.

**A- Complete:** groove extends from the head of the penis till the scrotum (resembles labia majora).

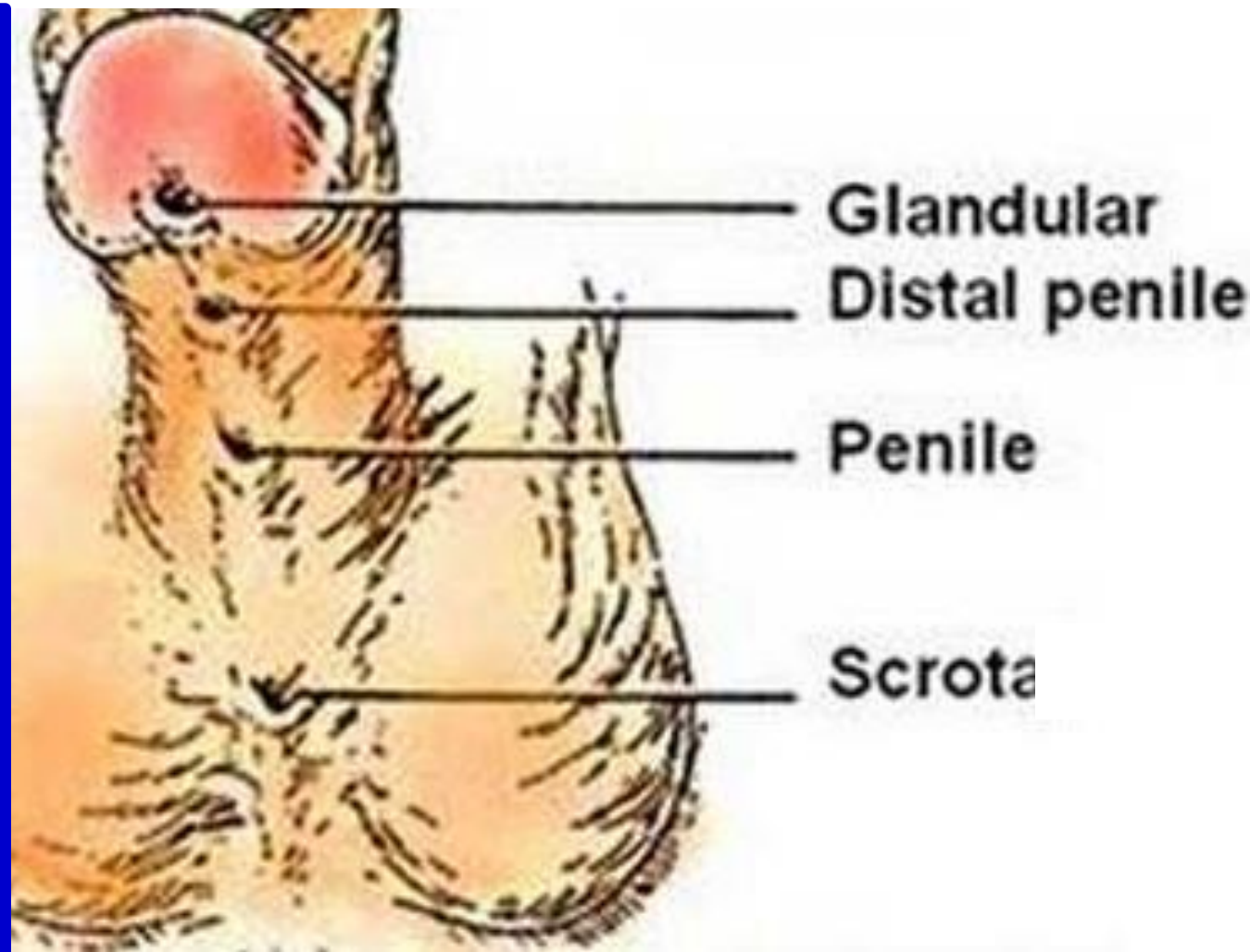
### **B- Incomplete:**

**a- Scrotal:** at the root of the penis.

**b- Penile:** at any site along the inferior surface of the penis

**c- Distal** at the terminal of body

**d- Glandular:** at glans penis (The best one for man, can not be repair).



- **Epispadias**

- The opening of urethra lies on the upper surface of the penis.

- It is either occurred alone or with ectopia vesica.

- **Glandular:** at glans penis.

- **Penile:** at any site along the superior surface of the penis

- **Penopubic:** at the base of the penis.

- **Urethral fistula**

- **(defect in urorectal septum)**

- **Recto-urethral fistula:** communication between rectum and urethra.

- **Urethrovaginal fistula:** communication between vagina and urethra.

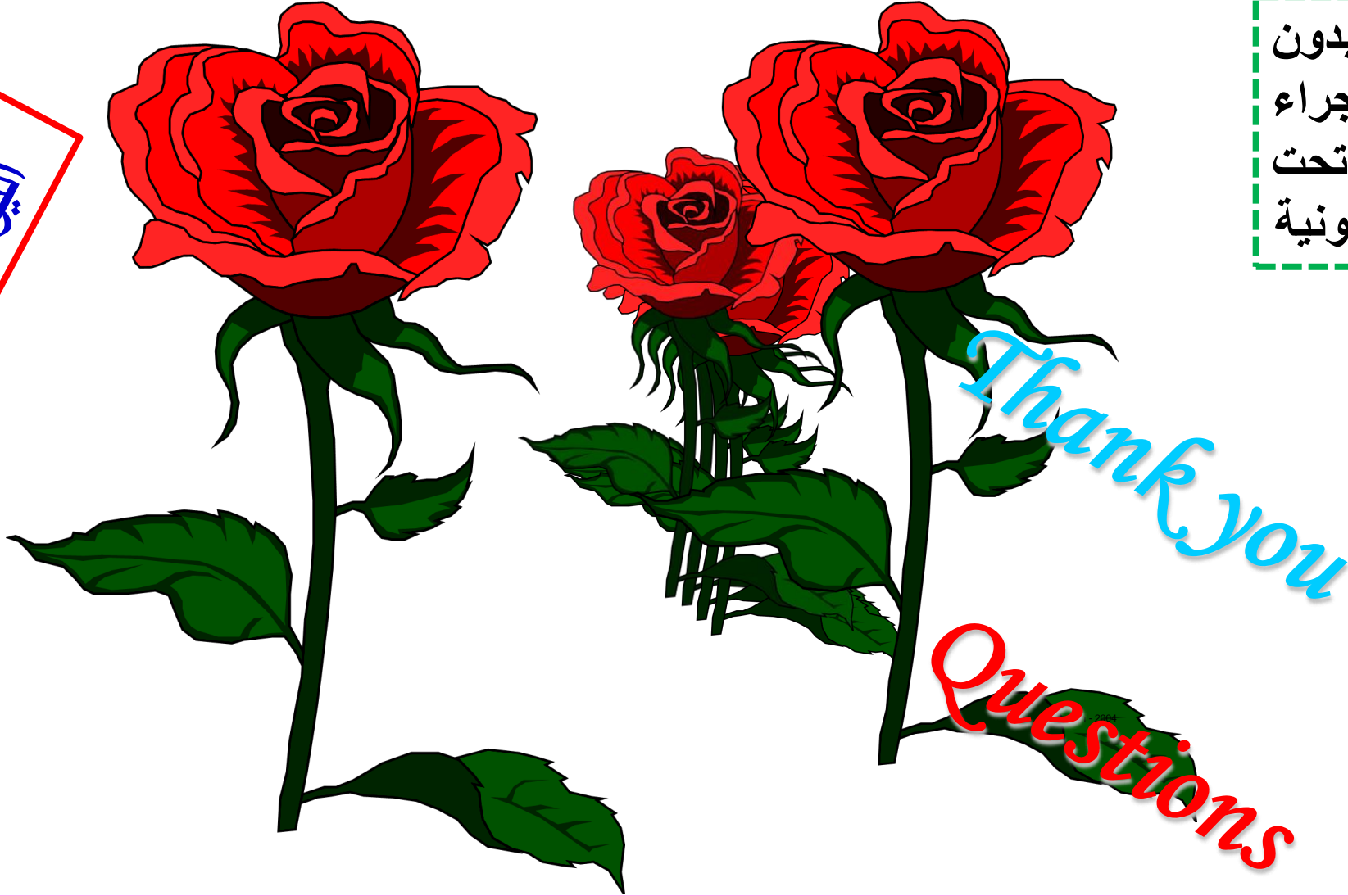


**Epispadias**

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