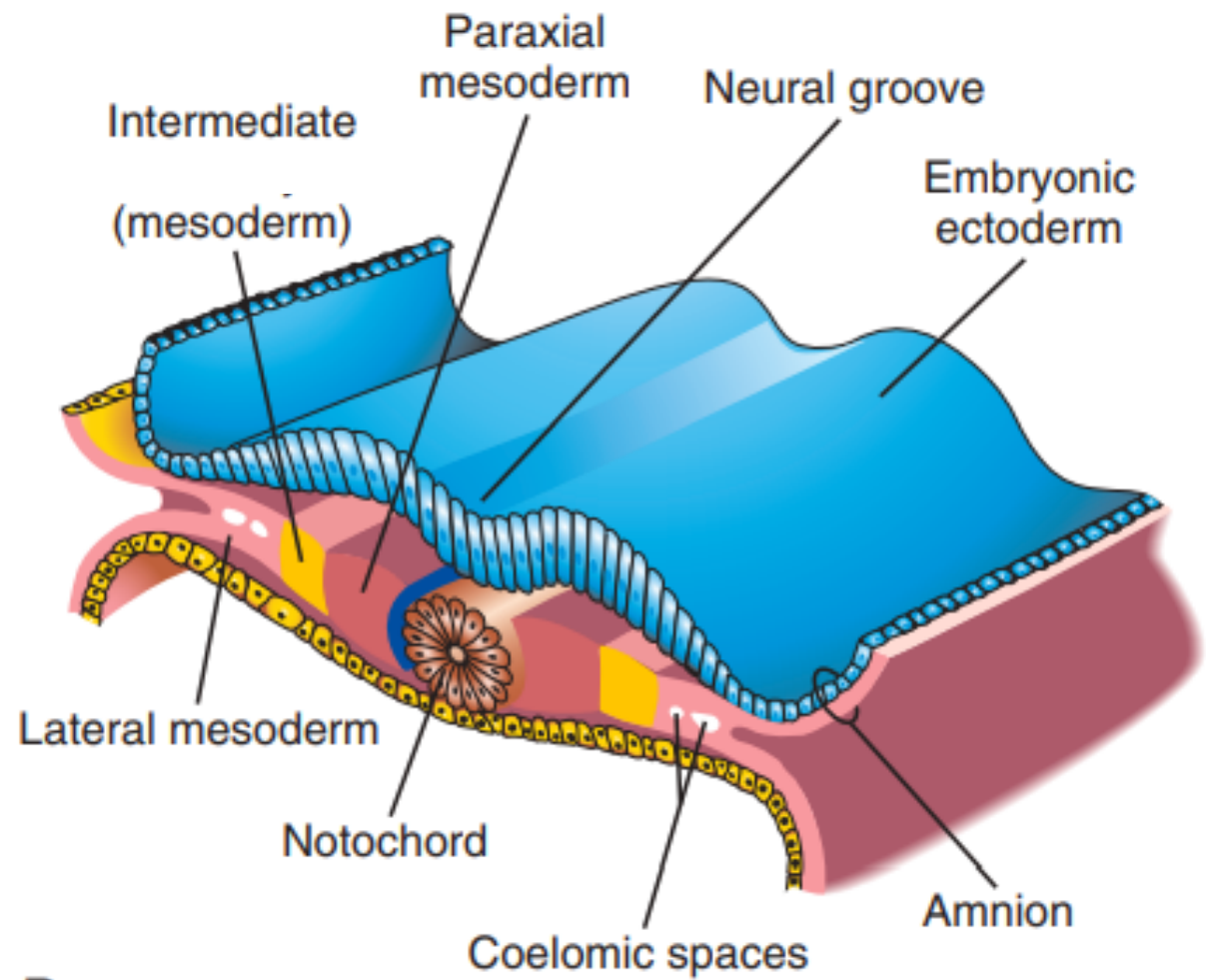


Development and teratology of urinary system

5.4.2021
Anna Mac Gillavry

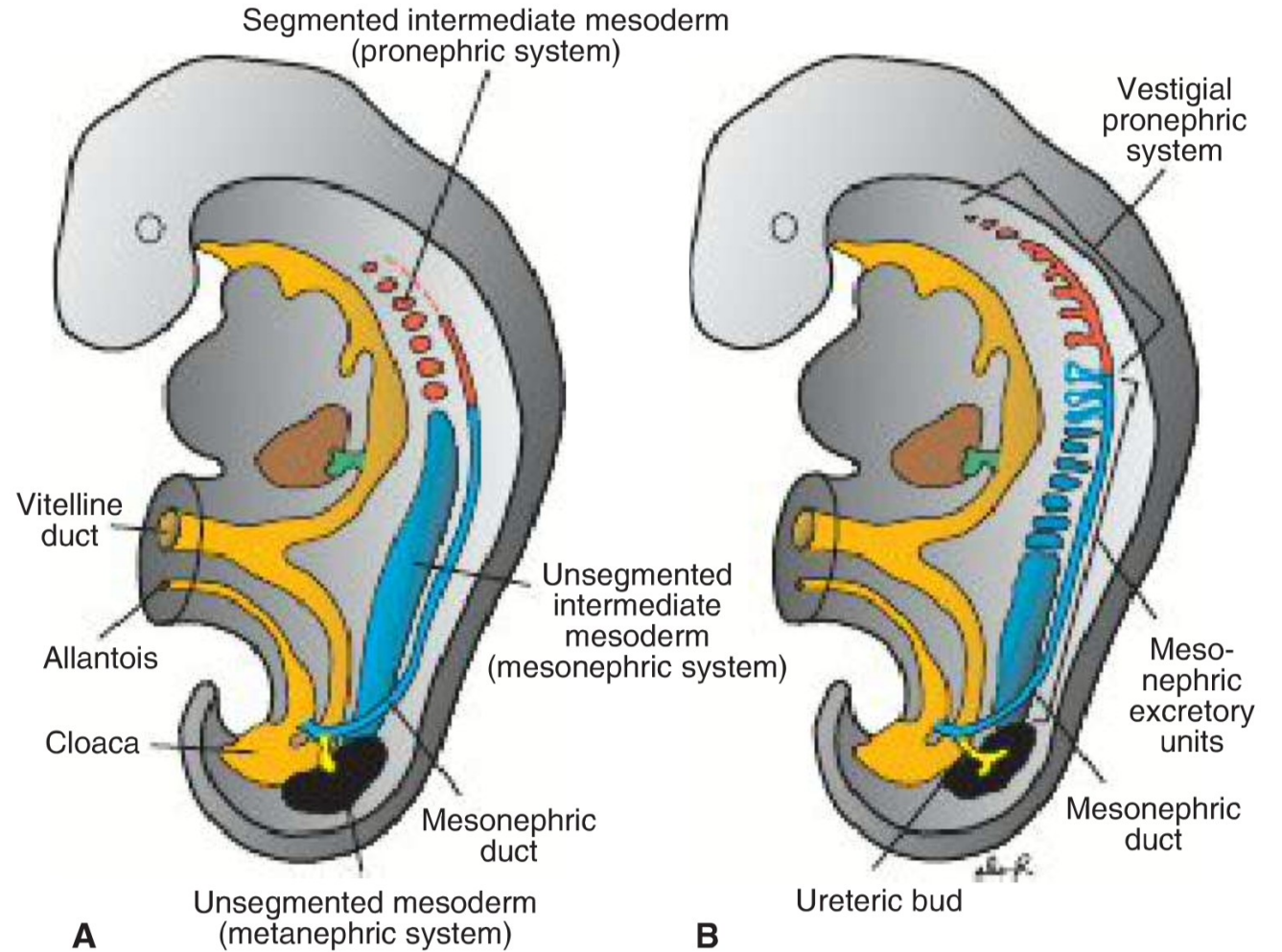


B

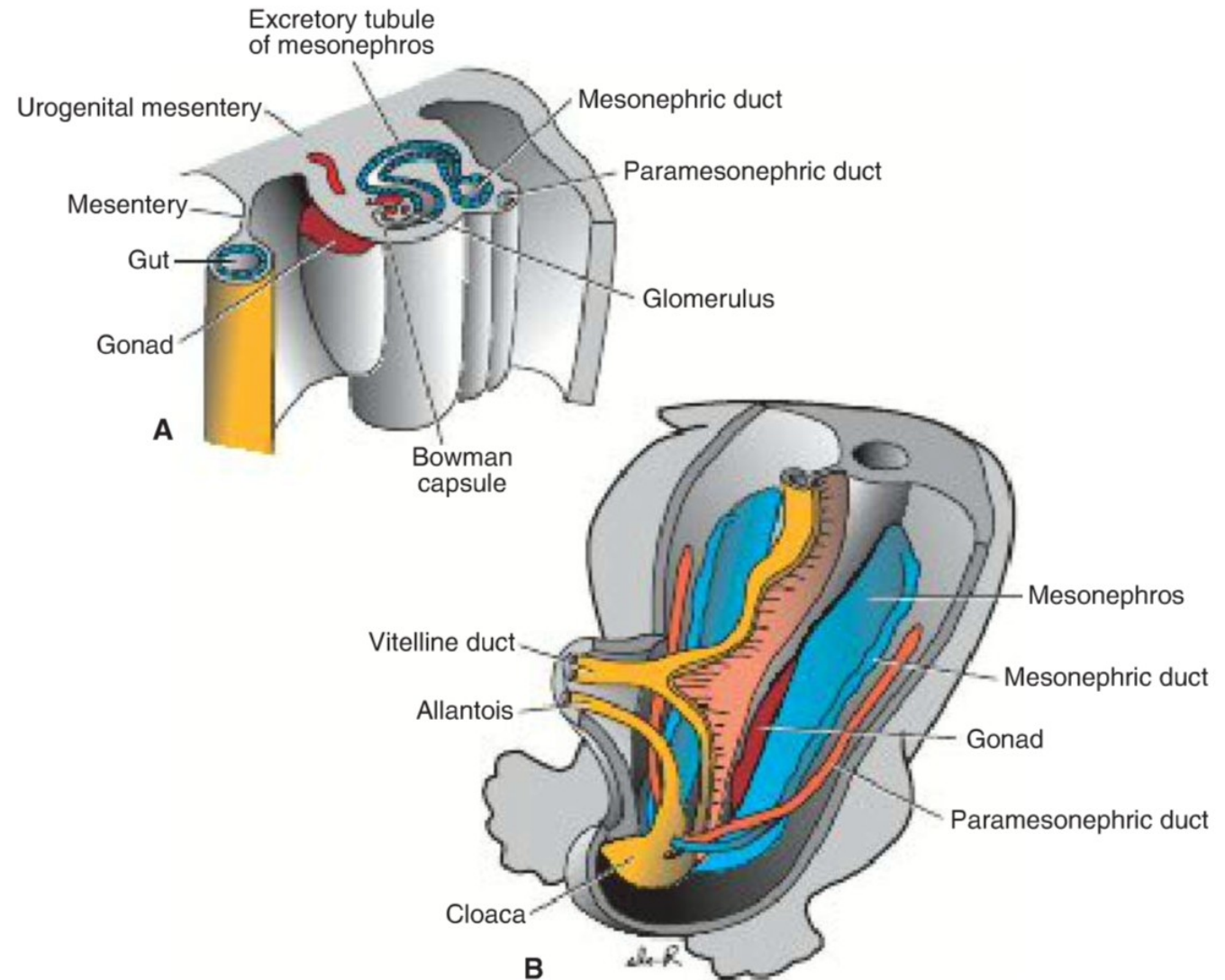
Pronephros: 4th week

Mesonephros: 4th – 10th week (6th – 12th week)

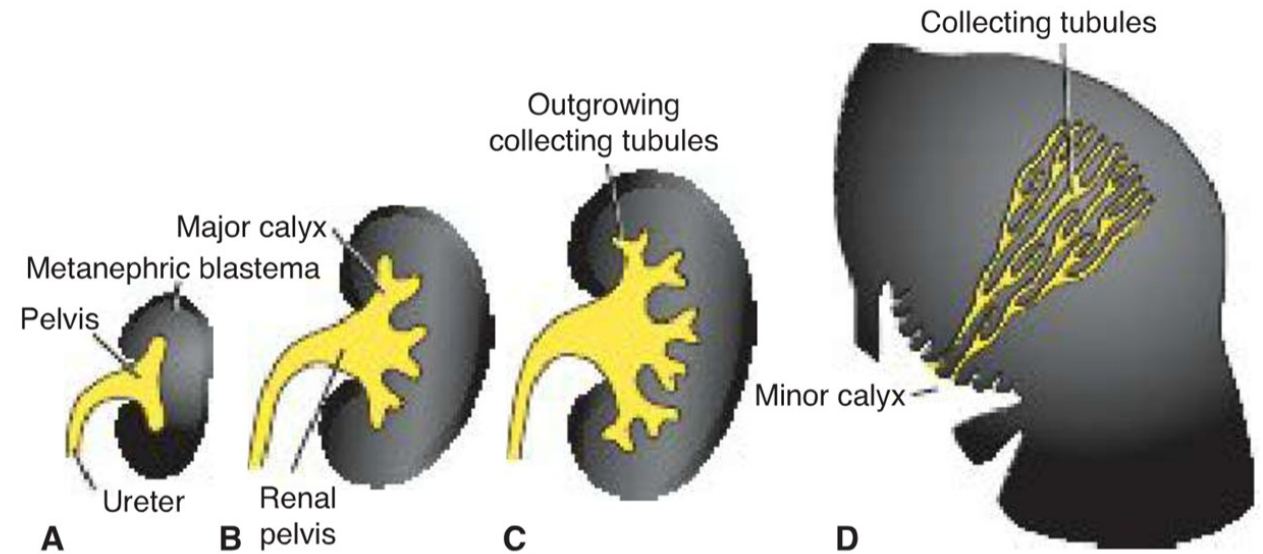
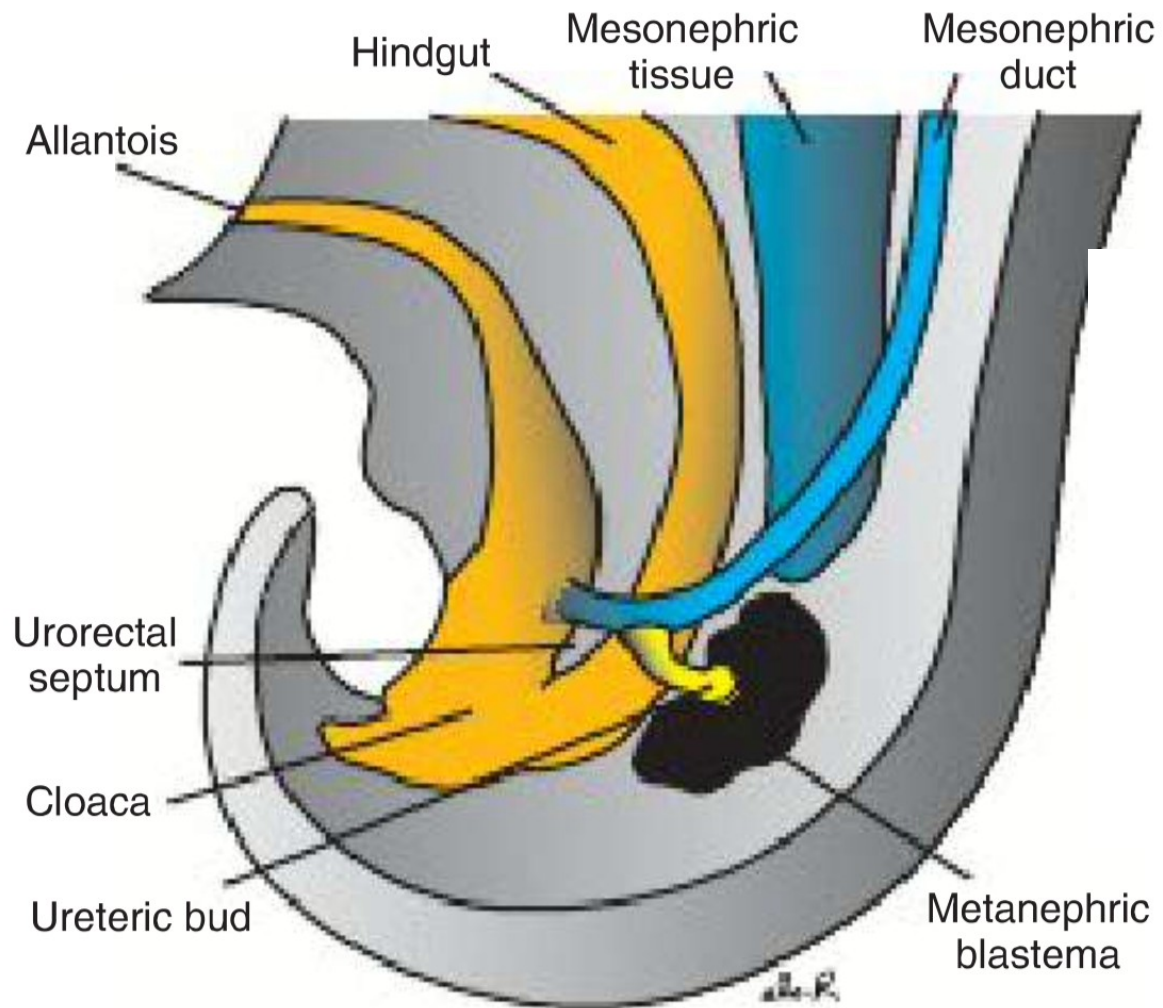
Metanephros: 5th to 9th week (12th week)



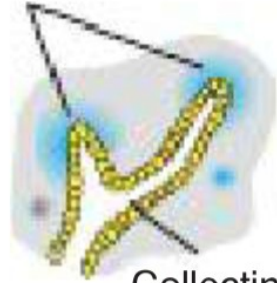
Mesonephros



Metanephros

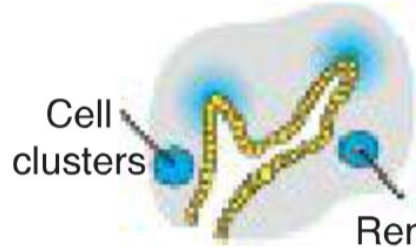


Metanephric
tissue caps



A

Collecting
tubule



B

Cell
clusters

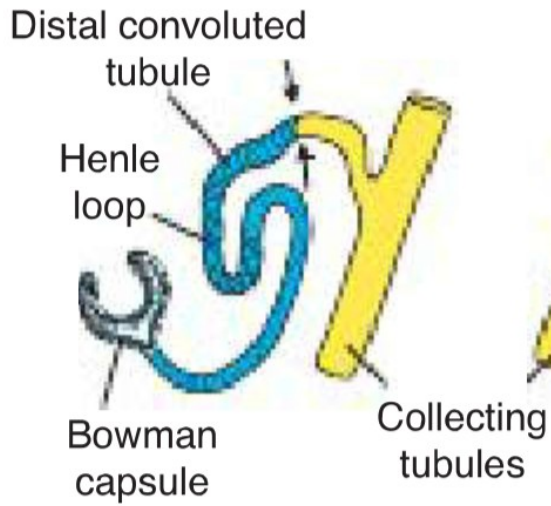
Renal
vesicle



C

Nephron

Bowman
capsule



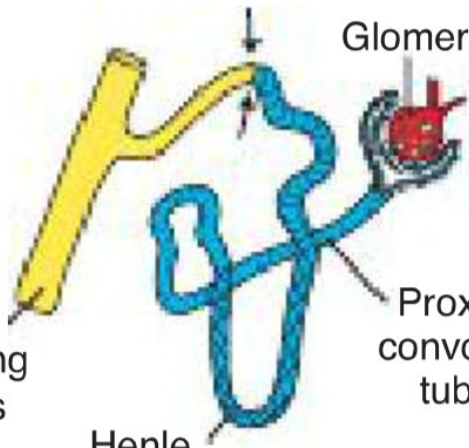
D

Distal convoluted
tubule

Henle
loop

Bowman
capsule

Collecting
tubules



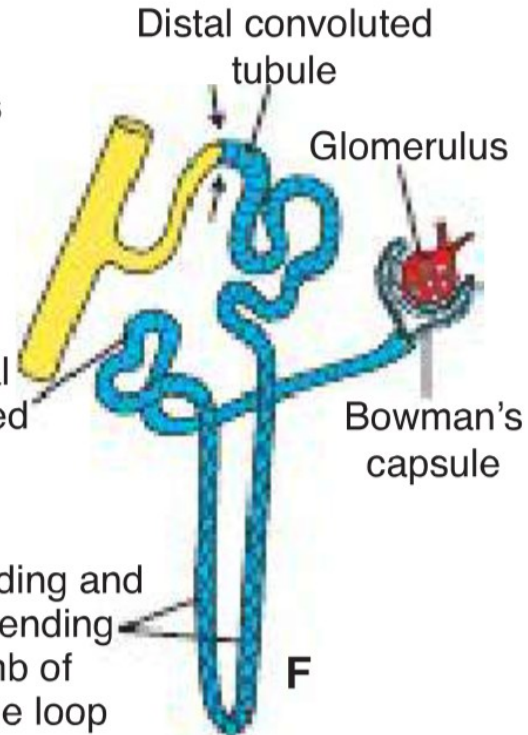
E

Glomerulus

Henle
loop

Proximal
convoluted
tubule

Ascending and
descending
limb of
Henle loop



F

Distal convoluted
tubule

Glomerulus

Bowman's
capsule

Renal defects

- Renal agenesis: unilateral (1 in 1000)/bilateral (1 in 3000 – 10000; 3:1 males to females; Potter sequence: anuria, oligohydramnios, pulmonary hypoplasia)
- Renal displasia
- Multicystic displastic kidney
- Congenital polycystic kidney disease: autosomal recessive (1 in 5000)/autosomal dominant (1 in 500 to 1000) – group of cilliopathies Bardet-Biedl syndrome, Mackel-Gruber syndrom
- Wilms tumor – affects children by 5 years of age incl. fetal period – WAGR syndrom, Denis-Drash syndrome

Renal defects

- Duplication of the ureter – splitting of the uretric bud
- Ectopic ureter – development of two uretric buds
- Supernumerary kidney

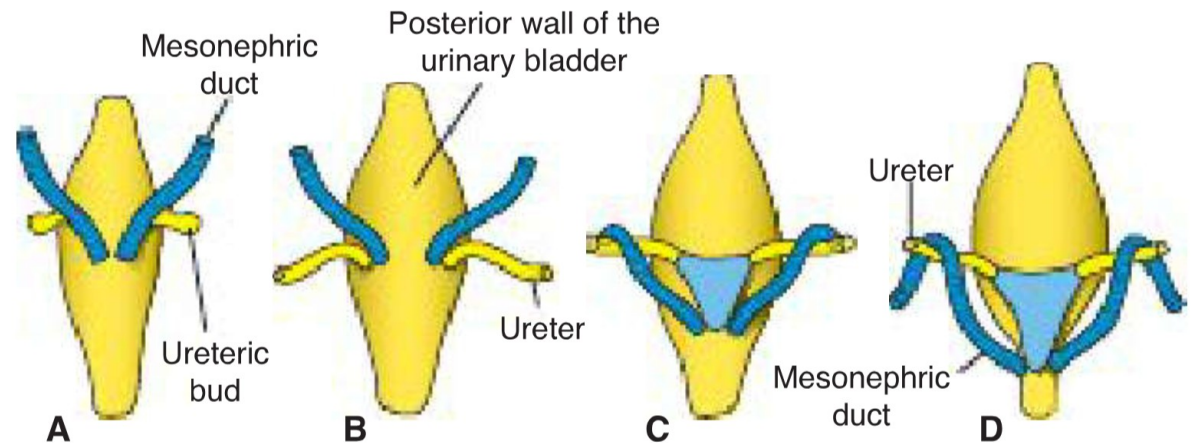
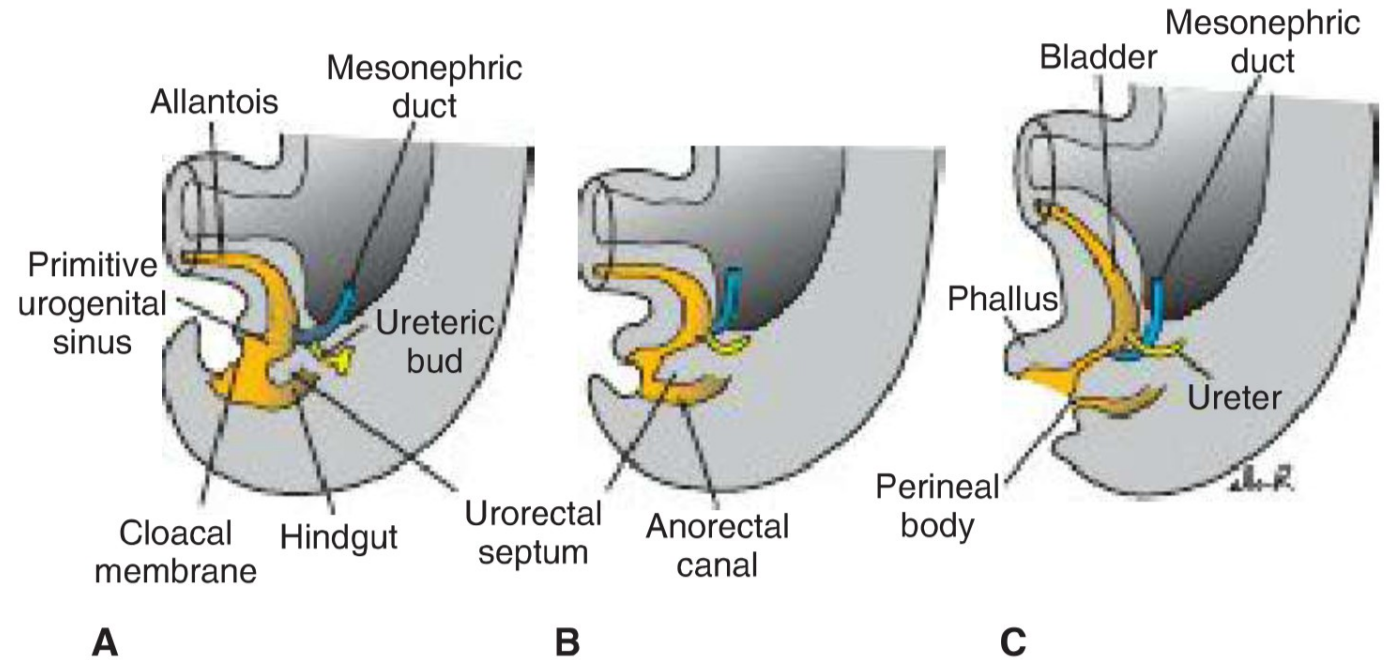
Abnormal location:

- pelvic kidney
- horseshoe kidney (1/600)
- unilatelar fused kidney
- accessory (suprenumeral) renal arteries – 25 of kidneys have 2 to 4 arteries

Bladder and urethra

Urogenital sinus:

- vesical part
- pelvic part
- phallic part



- Urachal abnormalities:
 - urachal sinus
 - urachal cyst
 - urachal fistula

Extrophy of the bladder
(1-2/10000-40000)

Extrophy of the cloaca

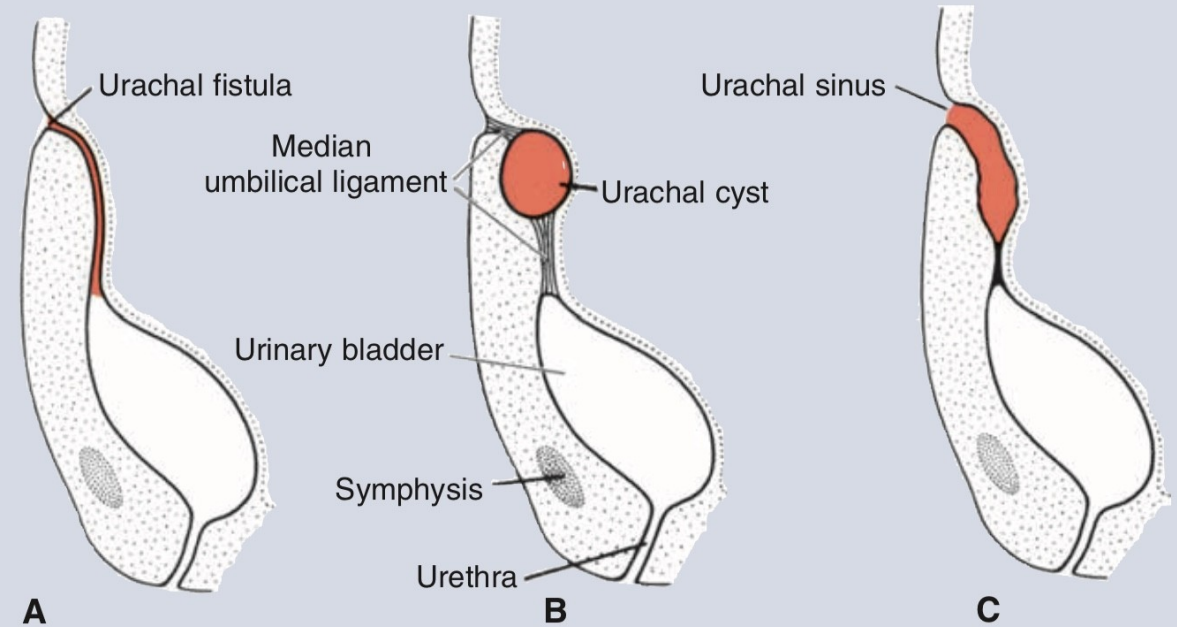


Figure 16.15 **A.** Urachal fistula. **B.** Urachal cyst. **C.** Urachal sinus. The sinus may or may not be in open communication with the urinary bladder.



Figure 16.16 **A.** Extrophy of the bladder. **B.** Cloacal extrophy in a newborn.