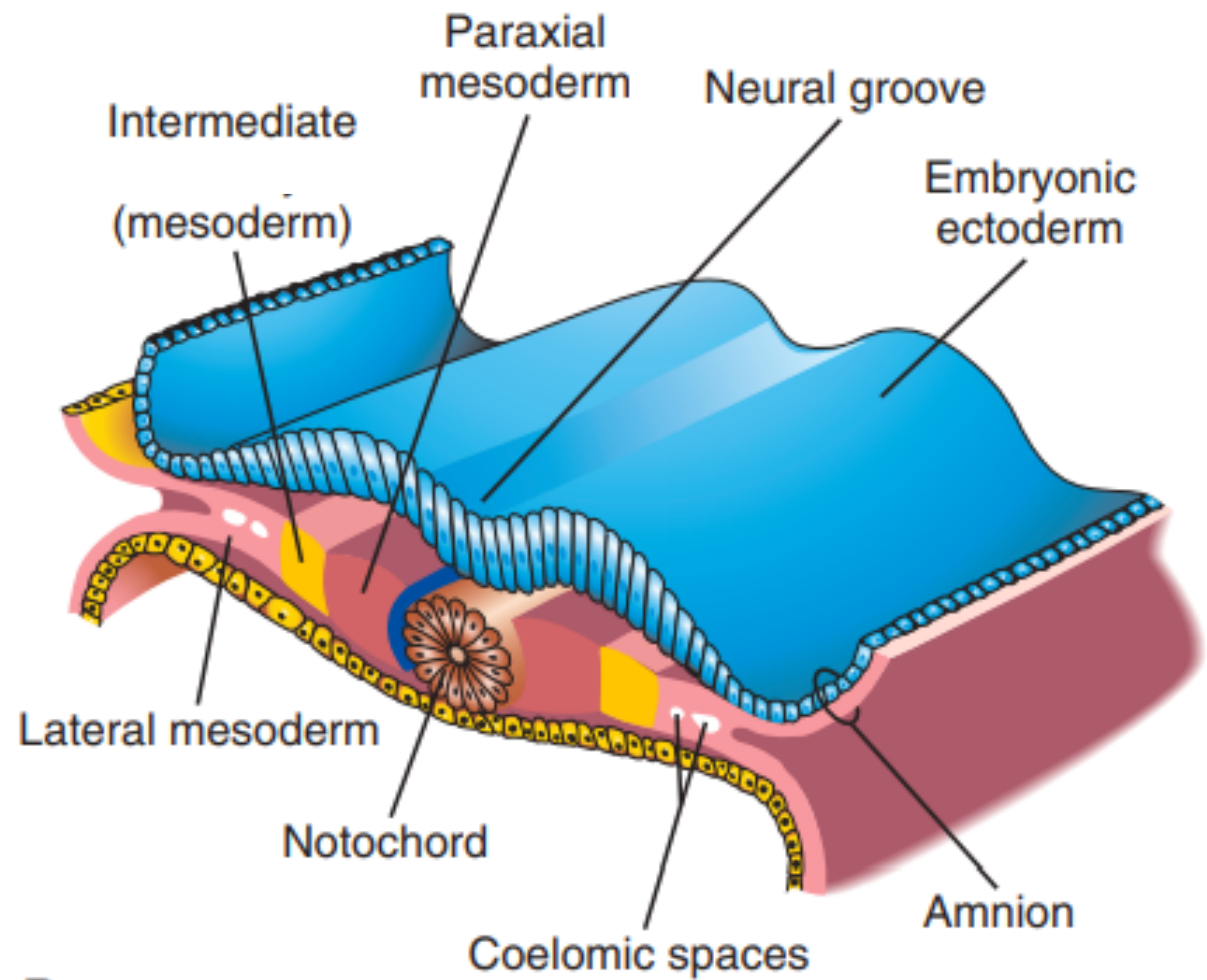


Development and teratology of urinary system

24.4.2023

Anna Mac Gillavry

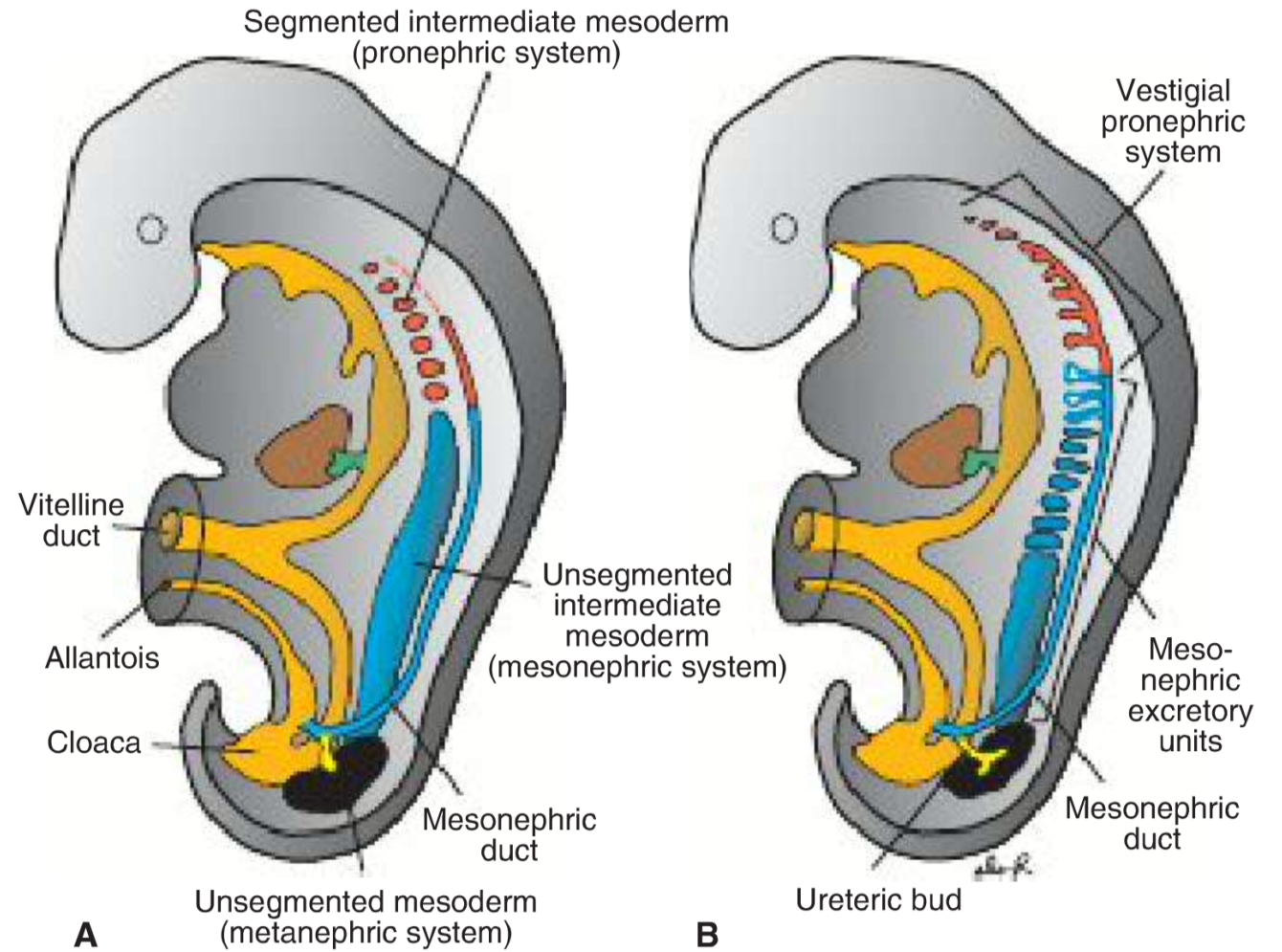


B

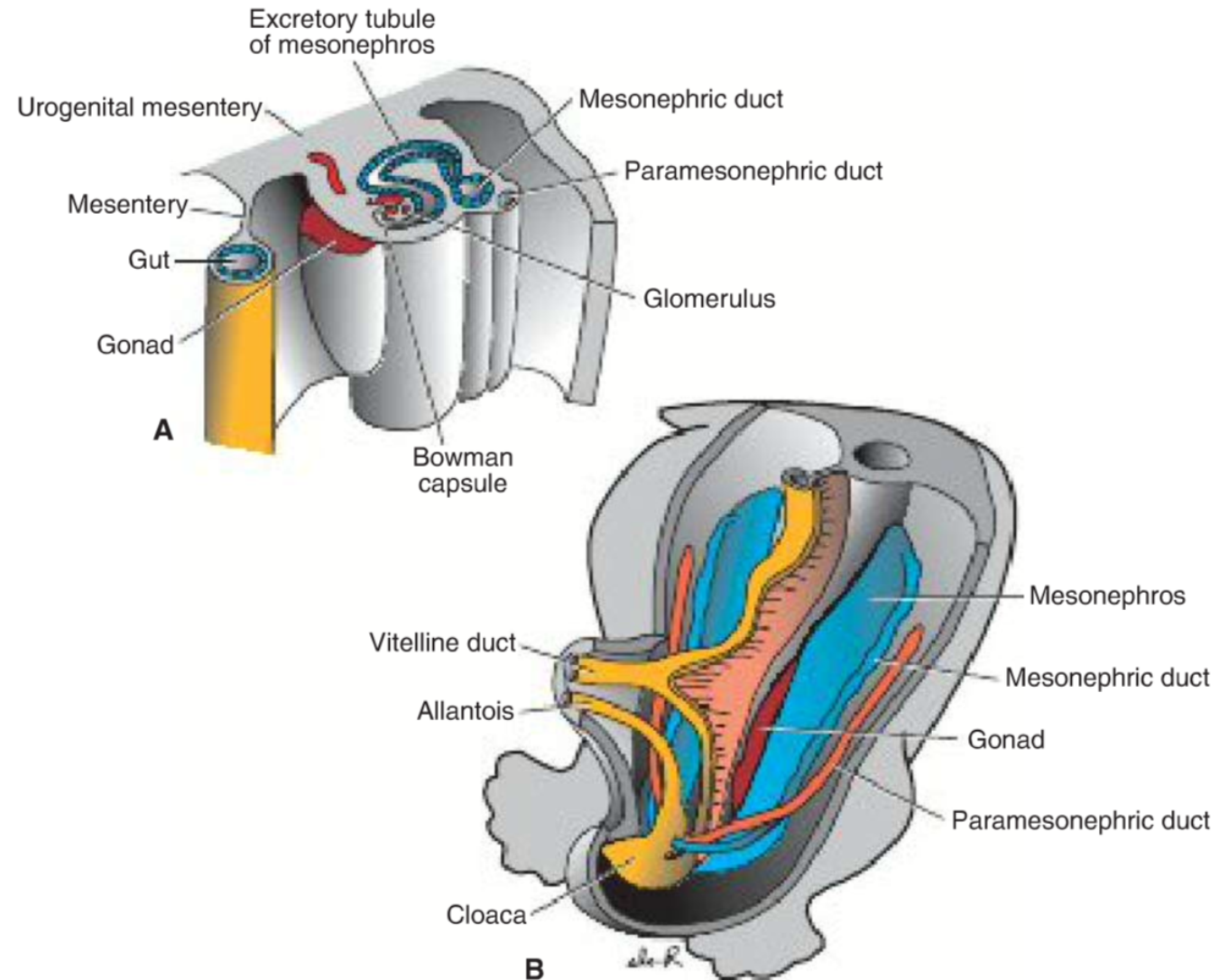
Pronephros: 4th week

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

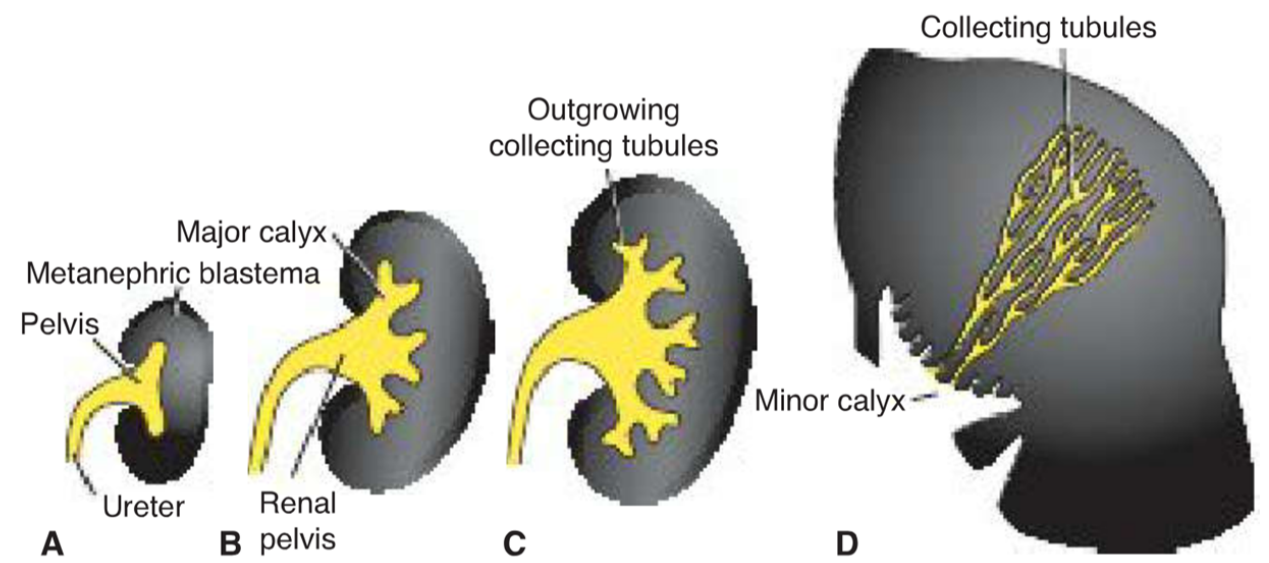
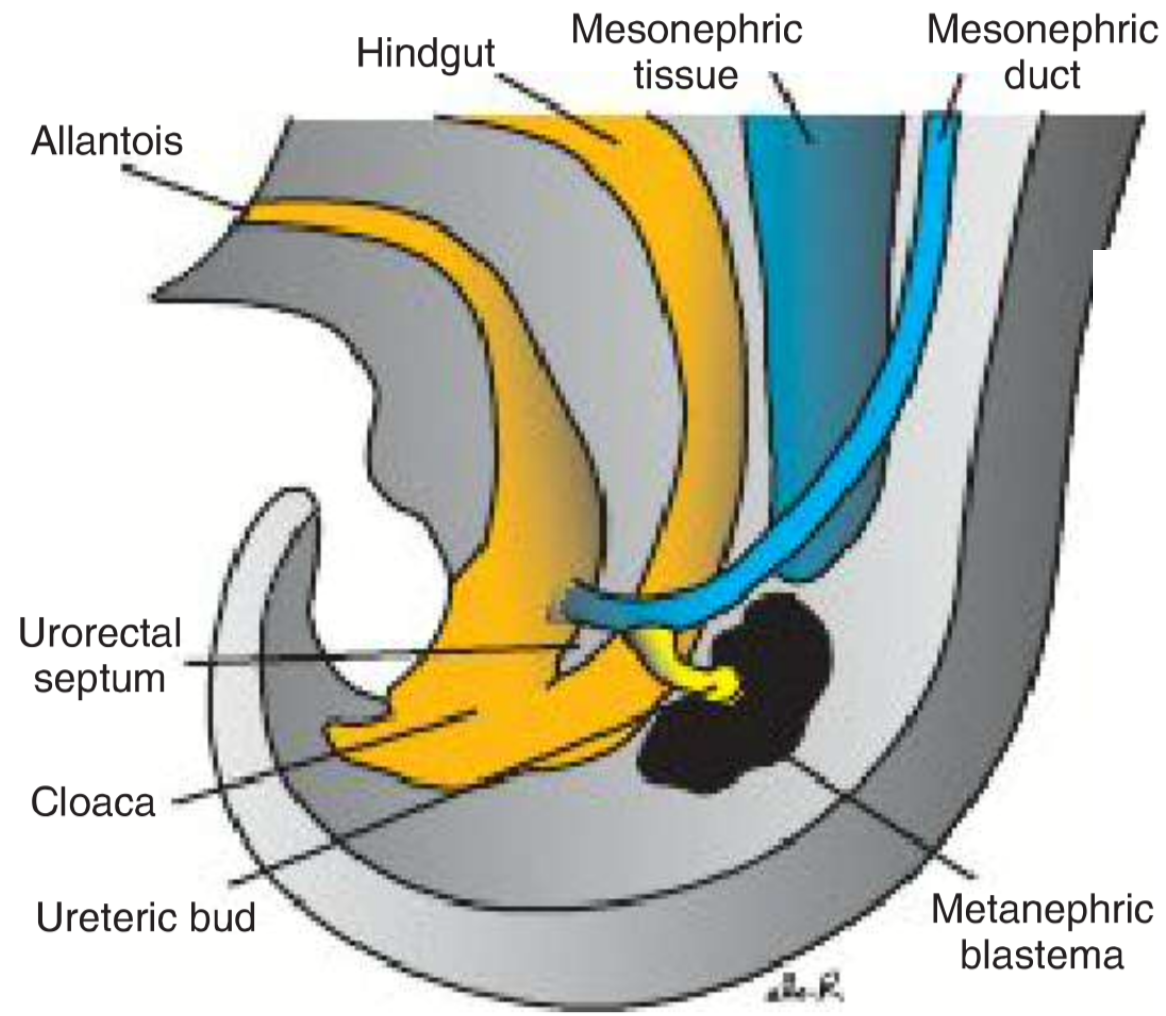
Metanephros: 5th to 9th week (12th week)



Mesonephros



Metanephros



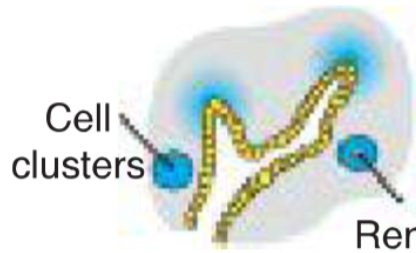
T.W. Sadler, Langman's medical embryology, 12th edition

Metanephric tissue caps



A

Collecting tubule



B

Cell clusters

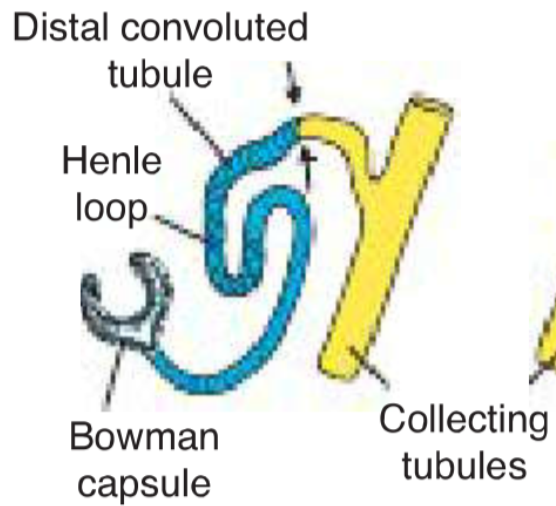
Renal vesicle



C

Nephron

Bowman capsule



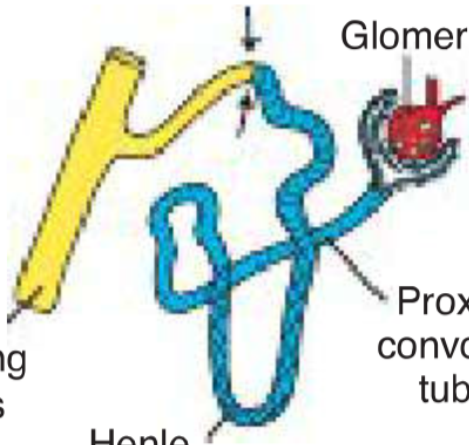
D

Distal convoluted tubule

Henle loop

Bowman capsule

Collecting tubules



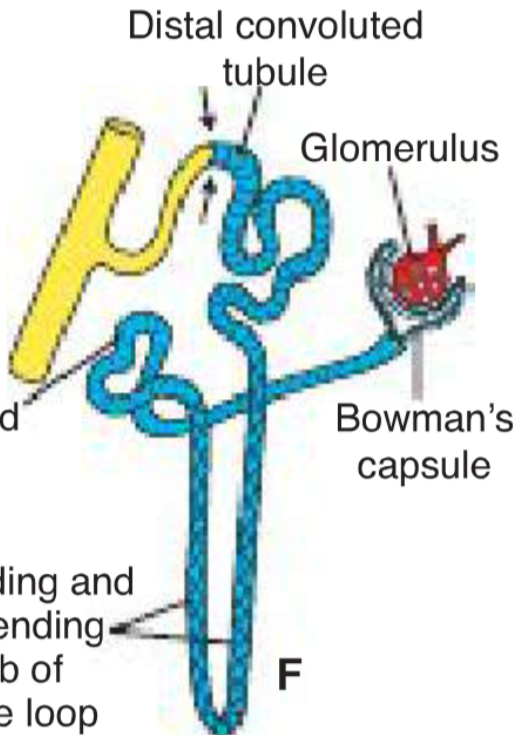
E

Glomerulus

Henle loop

Proximal convoluted tubule

Ascending and descending limb of Henle loop



F

Distal convoluted tubule

Glomerulus

Bowman's capsule

Renal defects

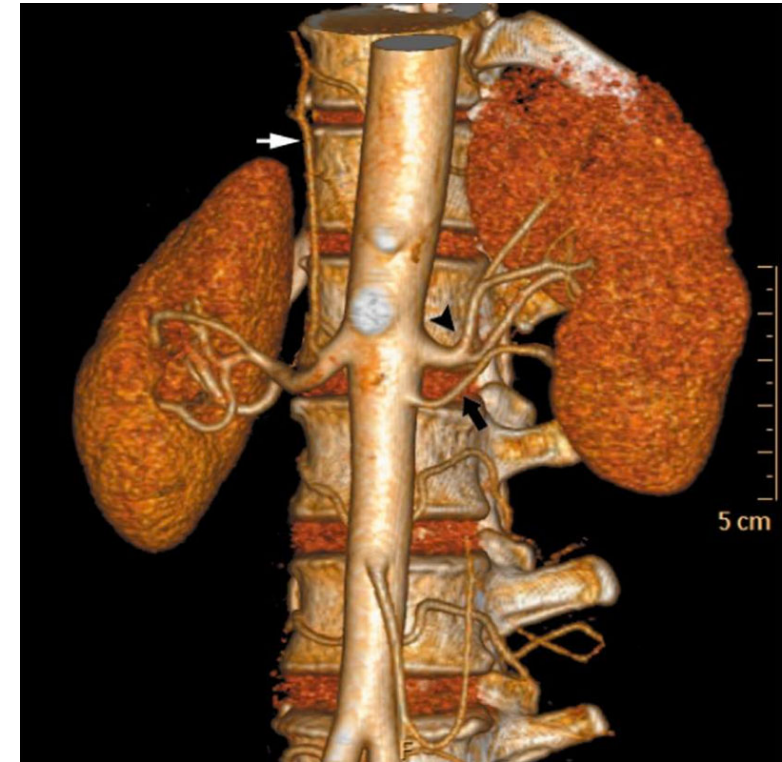
- Renal agenesis: unilateral (1 in 1000 live births);
bilateral (1 in 3000 – 10000); 3:1 males to females; Potter sequence:
anuria, oligohydramnios, pulmonary hypoplasia (Potter face)
- Renal dysplasia
 - Multicystic dysplastic kidney
- Congenital polycystic kidney disease: autosomal recessive (1 in 5000)/
autosomal dominant (1 in 500 to 1000)
 - group of ciliopathies Bardet-Biedl syndrome, Mackel-Gruber
syndrome (lethal)

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



Renal tumors

- Wilms tumor – affects children by 5 years of age incl. fetal period –
WAGR syndrom (microdeletion on chromosome 11 *WT1* and *PAX6* genes)

Wilms tumor

Aniridia

Gonadoblastomas

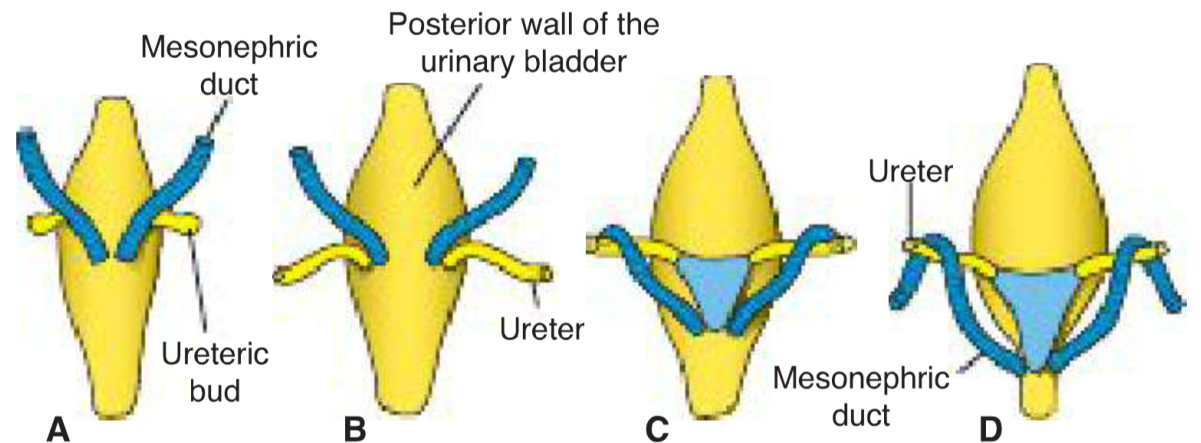
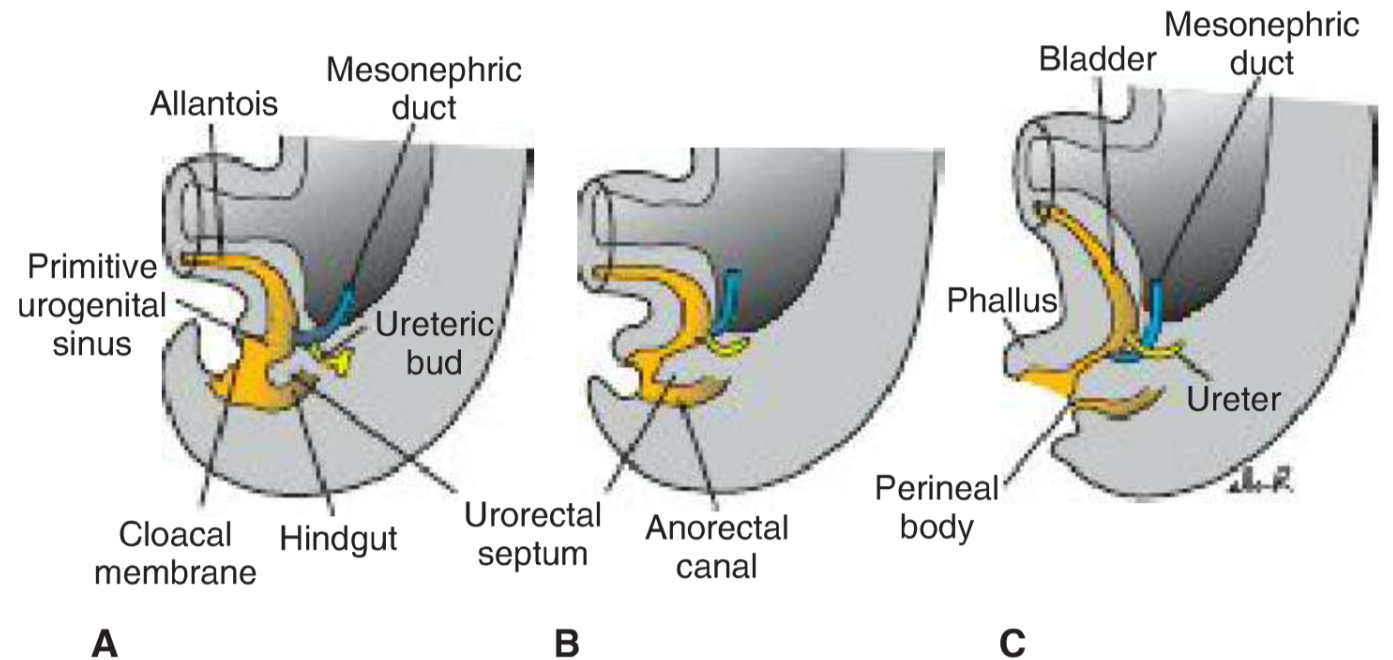
Retardation (intellectual disability)

Denys-Drash syndrom

Bladder and urethra

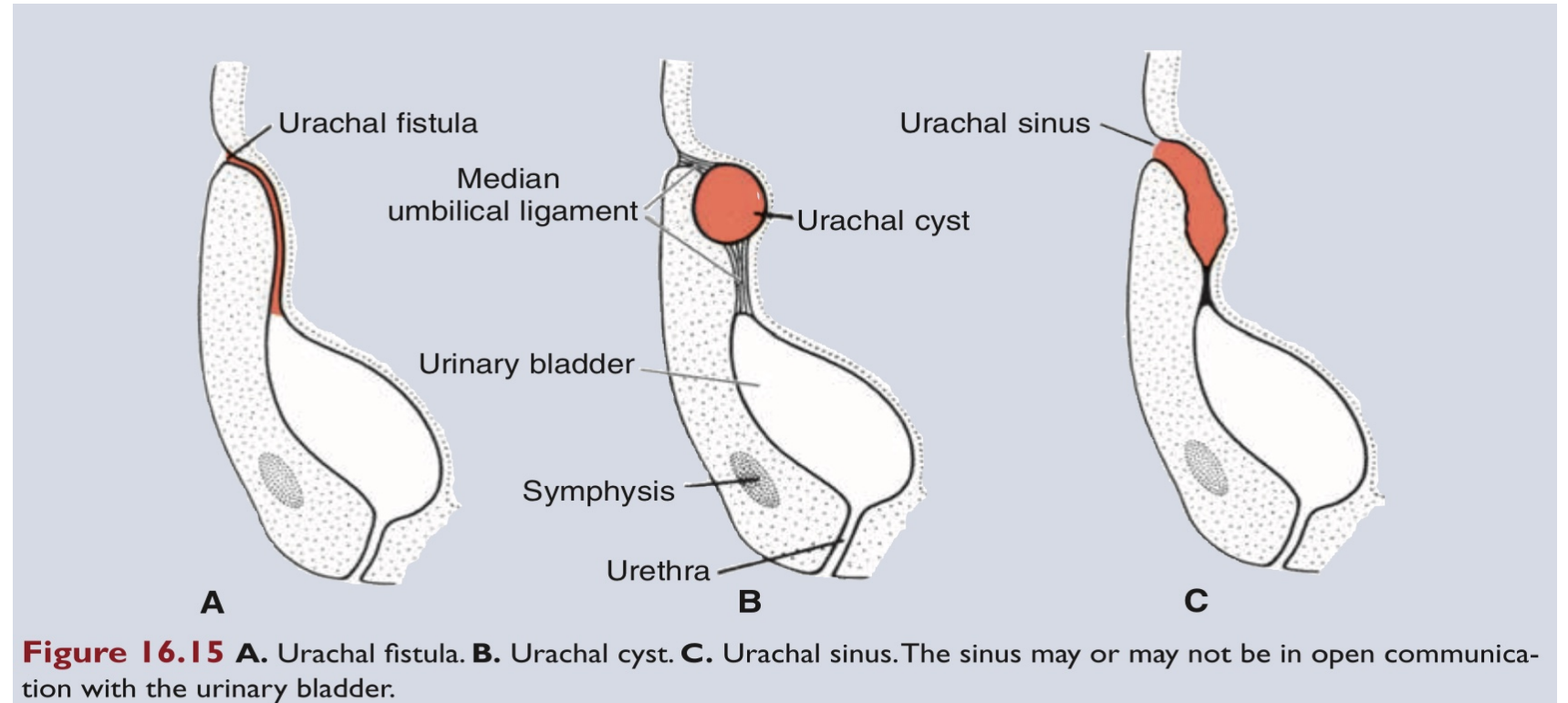
Urogenital sinus:

- vesical part
- pelvic part
- phallic part



Urachal abnormalities:

- urachal fistula
- urachal cyst
- urachal sinus

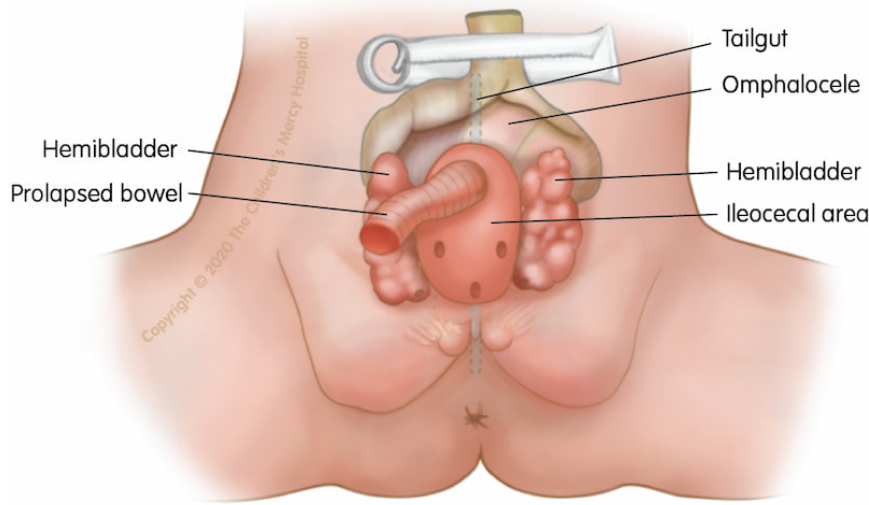


Ventral body wall defects

- Extrophy of the bladder:
(1 in 50000)
- Extrophy of the cloaca:
(1 in 200000)

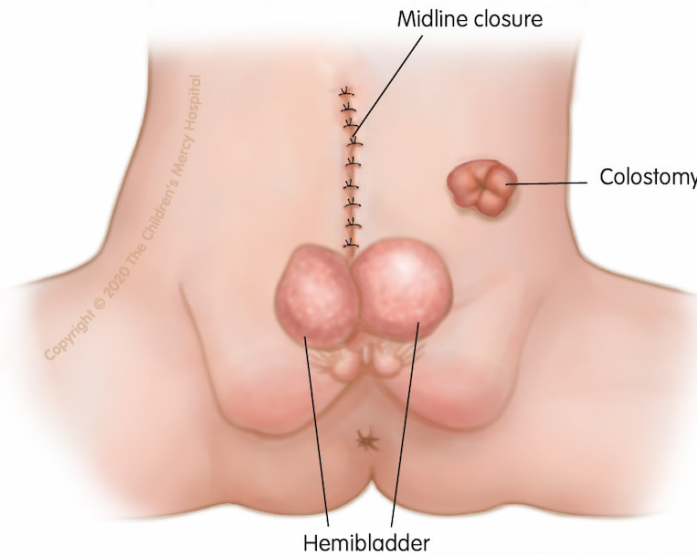


CLOACAL EXSTROPHY



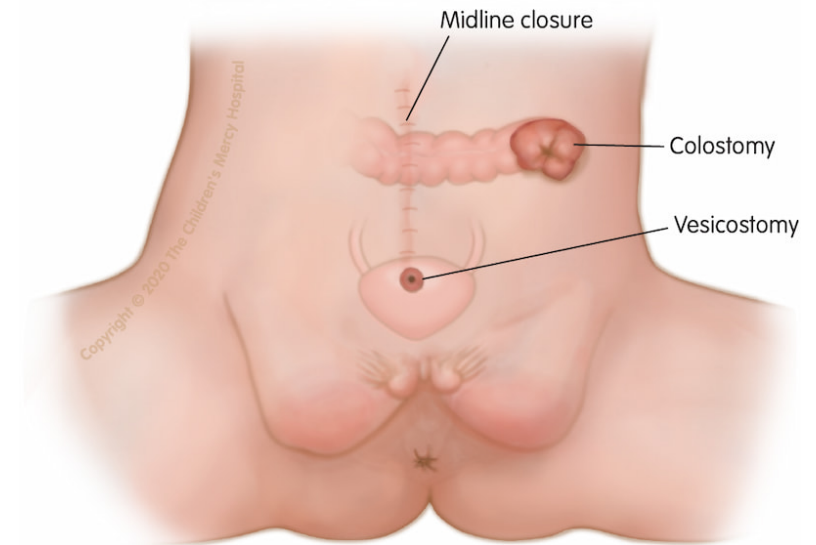
COMPREHENSIVE COLORECTAL CENTER

PRIMARY OMPHALOCELE CLOSURE



COMPREHENSIVE COLORECTAL CENTER

**COMPLETE CLOSURE WITH
COLOSTOMY AND VESICOSTOMY**



COMPREHENSIVE COLORECTAL CENTER