

Cystic Abdominal Masses



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RADIOLOGY AND IMAGING SCIENCES

1

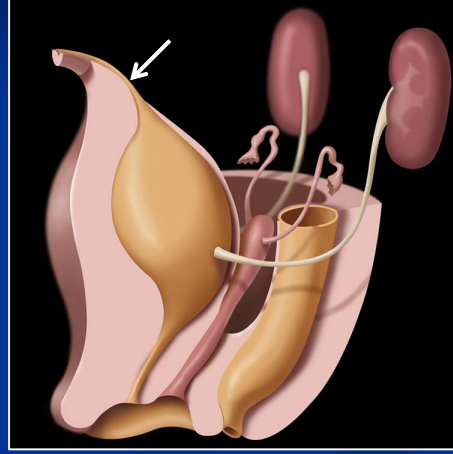
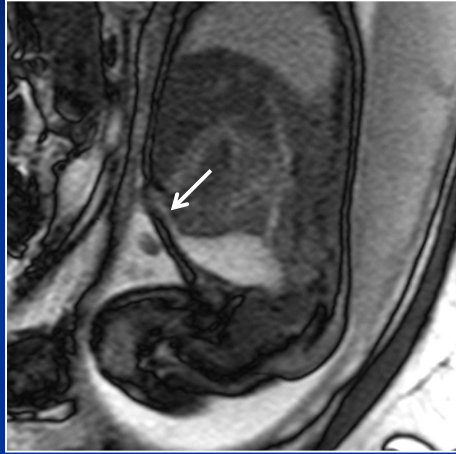


- Urinary tract
- Gastrointestinal tract
- Other organs: Ovary, hepatobiliary, urachal
adrenal, spleen, peritoneal, retroperitoneal



2

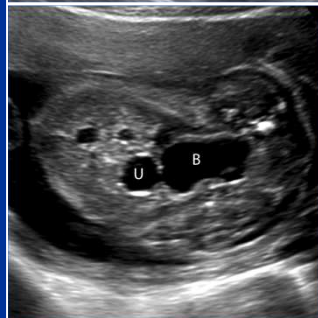
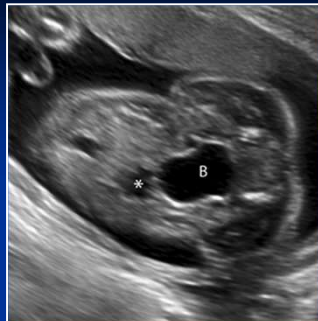
Urachal Anomalies



Urachus extends from dome of bladder to umbilicus

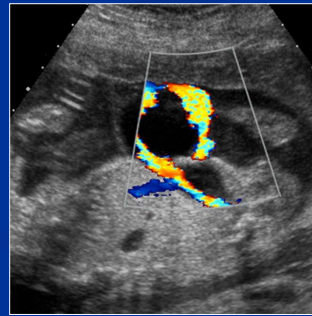
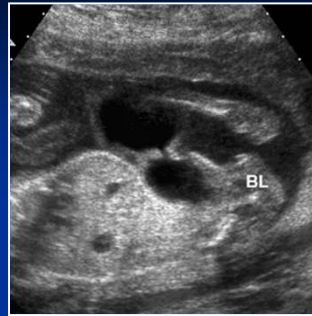
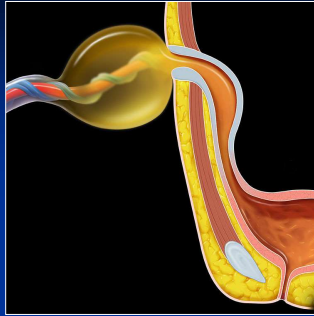
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Patent Urachus and Urachal Cyst



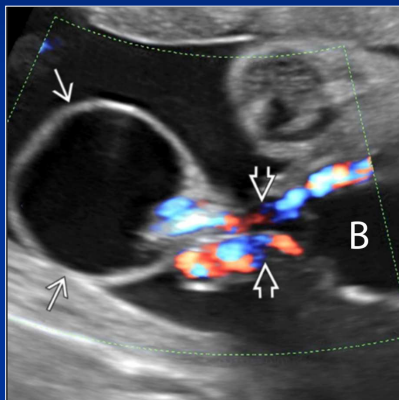
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Patent Urachus and Allantoic Cyst



5

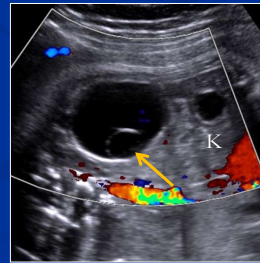
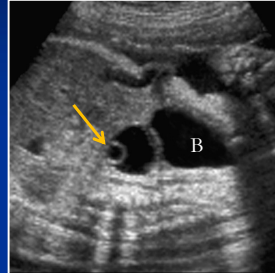
Patent Urachus and Allantoic Cyst



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Ovarian Cyst

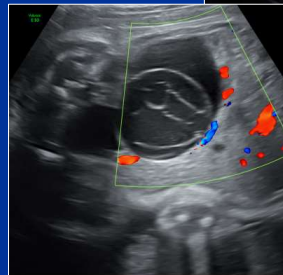
- Most common abdominal cyst in female fetus
- Most occur in 3rd trimester
- Unilateral or bilateral
- “Daughter cyst” diagnostic
- Normal GI and urinary tracts



7

Ovarian Cyst

- Complex
 - Septated
 - Fluid-fluid level
 - Solid-appearing
 - Concern for hemorrhage or torsion

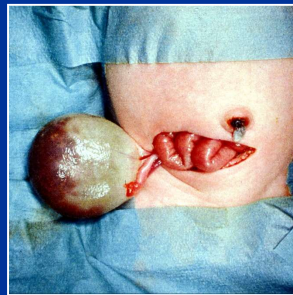
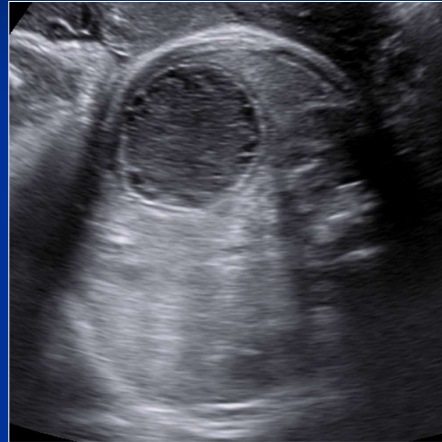


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Ovarian Cyst

■ Complex

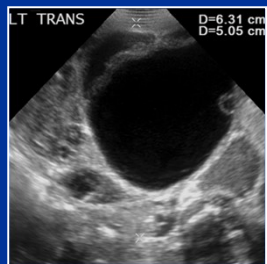
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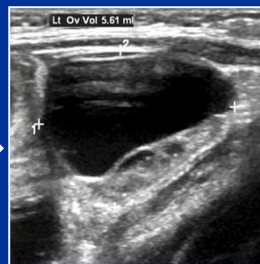
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■ 2016 meta-analysis of 954 fetuses with ovarian cysts

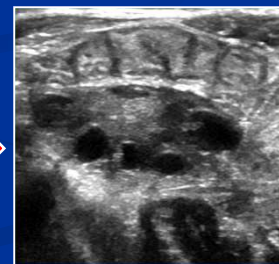
- 53.8% cysts regressed either during pregnancy or after birth
- Likelihood of resolution lower and likelihood of postnatal surgery higher if complex or ≥ 40 mm
- Torsion (10.8%) and intracystic hemorrhage (12.8%)
- 21.8% had surgery after birth



Birth



3 months



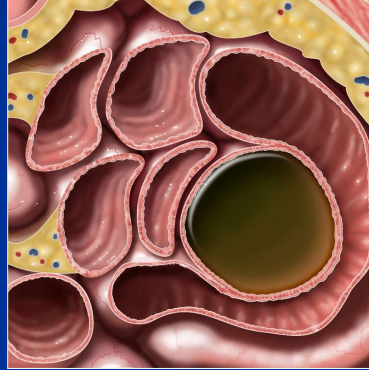
9 months

Bascietto F, et al. Outcome of fetal ovarian cysts diagnosed on prenatal ultrasound examination: systematic review and meta-analysis. *Ultrasound Obstet Gynecol.* 2017 Jul;50(1):20-31.

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Enteric Duplication Cyst

- Solitary, thick-walled cyst
- Look for “gut signature”
 - Layered appearance with echogenic mucosa, hypoechoic muscular layer, echogenic serosa
 - Must use high-frequency transducer
- Rarely bowel dilatation from obstruction



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Enteric Duplication Cyst

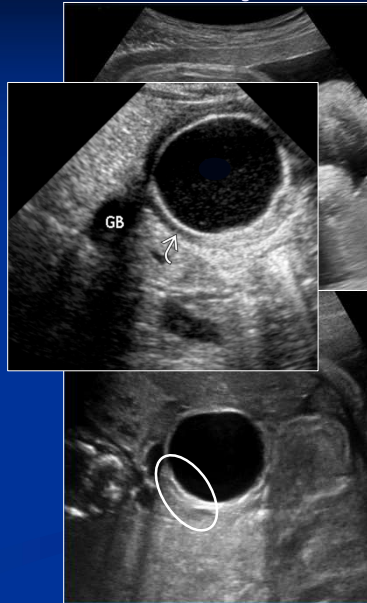
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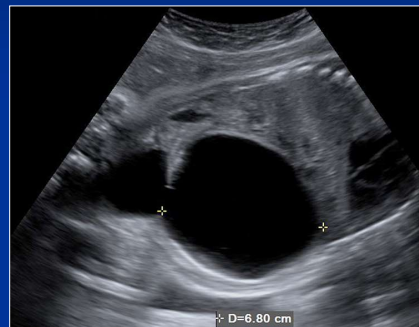
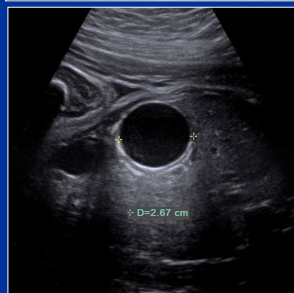
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Enteric Duplication Cyst

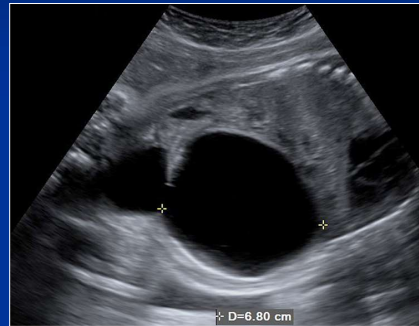
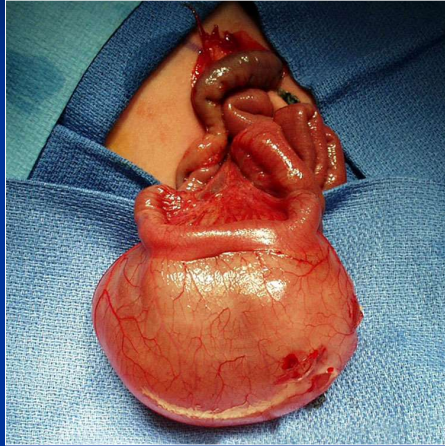
25 wk
4 days



34 wk 4 days

14

Enteric Duplication Cyst



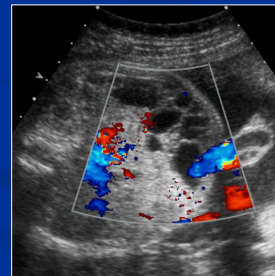
34 wk 4 days



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Lymphangioma

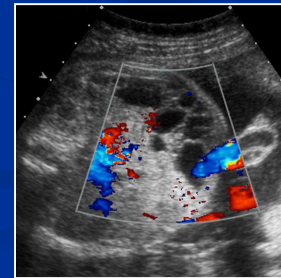
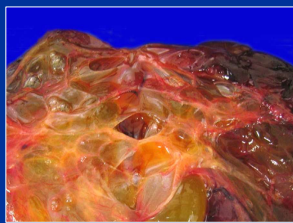
- Lymphovascular malformation
- Sometimes called mesenteric cyst if unilocular
- Typically multiple septations of varying thickness
- Can be very complex, insinuating around organs and extending out of abdomen
- May be intraperitoneal or retroperitoneal



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Lymphangioma

- Lymphovascular malformation
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Fetus-in-Fetu

- Historically regarded as well-differentiated teratomas
- Current thinking is parasitic twin
 - Monochorionic, diamniotic twin incorporated into the body of other twin early in development
 - Anastomoses between vitelline vessels
 - Surrounding capsule formed by amniotic membrane
 - Forms fluid-filled cavity
- Axial skeleton surrounded by synchronous organ development around this axis

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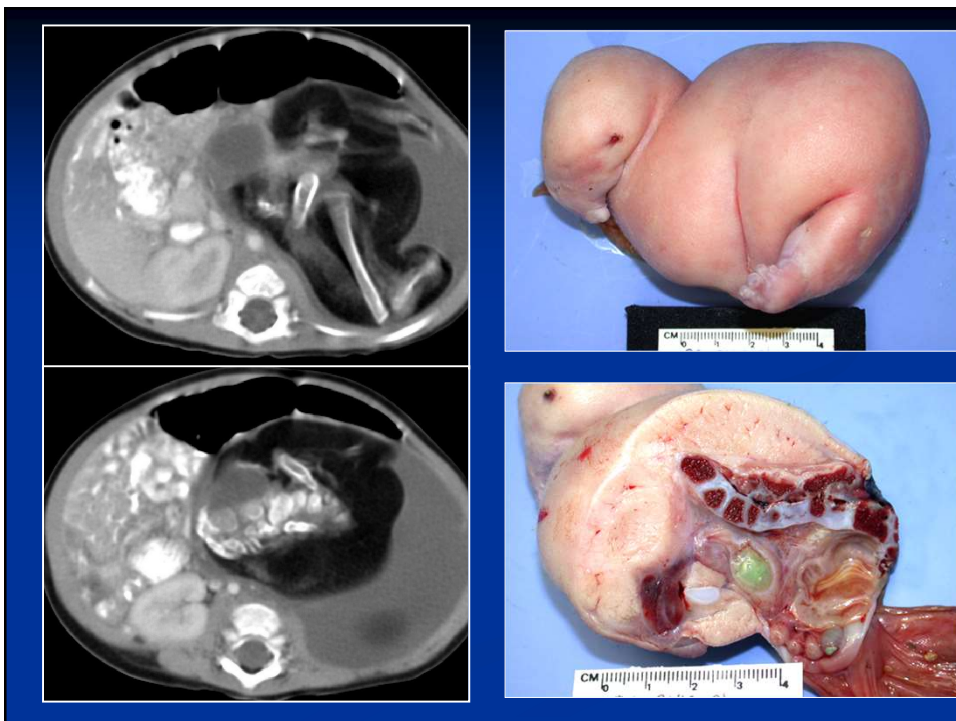
Fetus-in-Fetu

- Complex, with a large solid component encapsulated within a cyst
- Calcifications, including well-formed bones, most specific finding



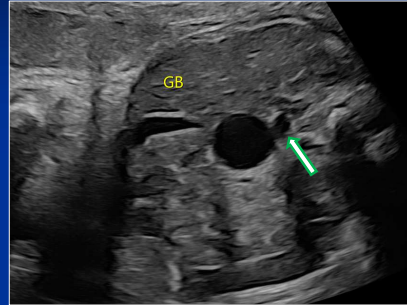
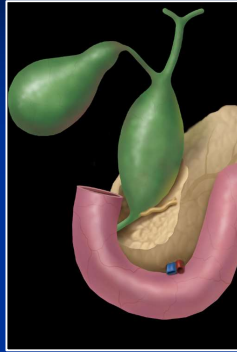


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Choledochal Cyst

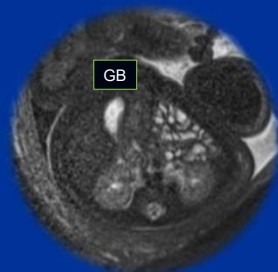
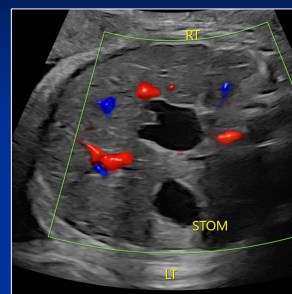
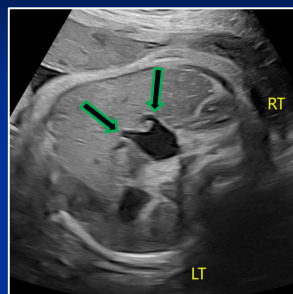


- Cystic dilatation of extrahepatic bile duct
- Unilocular, simple, right upper quadrant cyst separate from gallbladder
- Following bile ducts into cyst confirms diagnosis



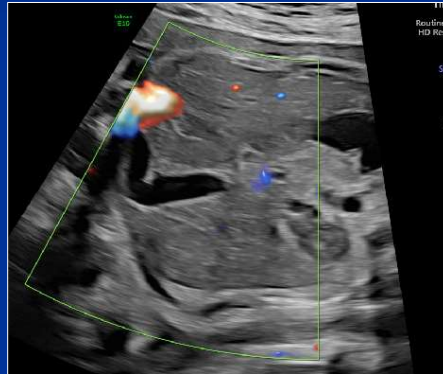
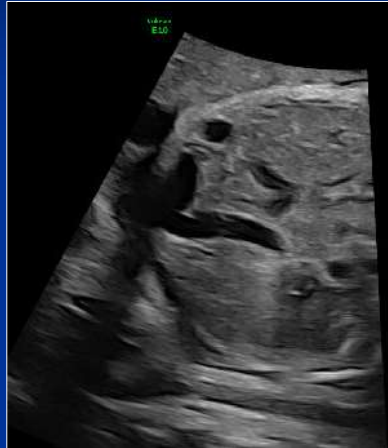
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Choledochal Cyst



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Phrygian cap



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Phrygian empire 1200- 560 BC

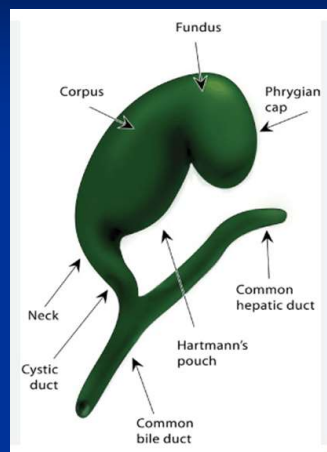


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Cap of liberty – French revolution



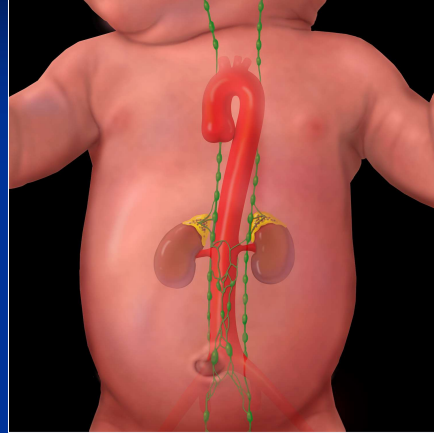
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Neuroblastoma

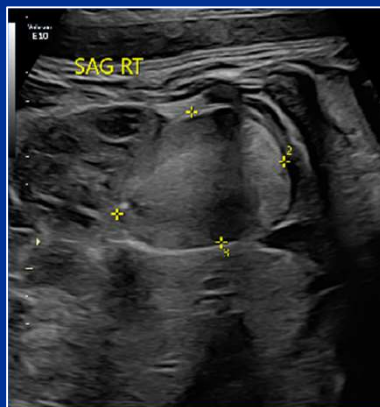
- Most common congenital malignancy
- 30% of fetal tumors
- Derives from primordial neural crest cells
- 90% occur in fetal adrenal
- Most diagnosed > 32 wks



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Neuroblastoma

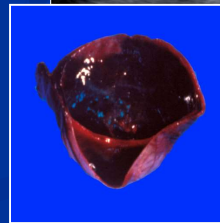
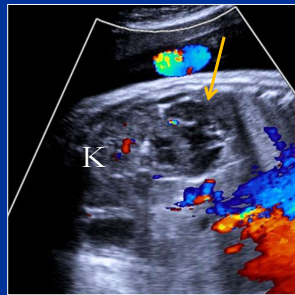
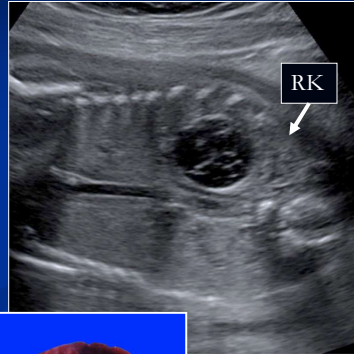
- Solid
 - Variable echogenicity



30

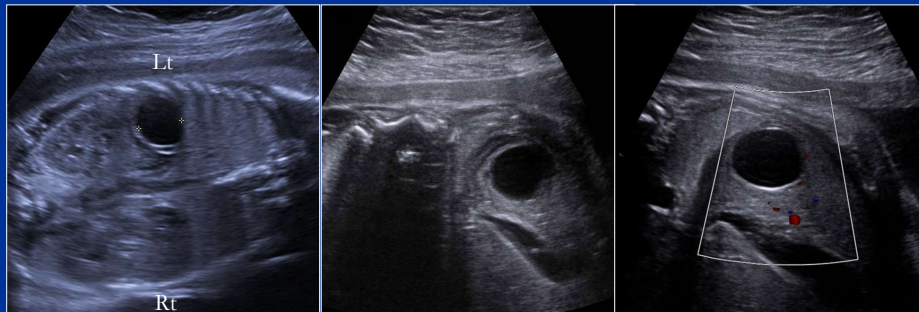
Neuroblastoma

- Solid
 - Variable echogenicity
- Partially or completely cystic
 - Probably involuting
 - Excellent prognosis



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- Splenic Cyst
 - Uncommon benign cysts which generally involute postnatally



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Cloacal Fun Facts

- Cloaca is Latin for sewer
 - Cloaca maxima is sewer system of ancient Rome



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Cloacal Fun Facts

- Cloaca is Latin for sewer
 - Cloaca maxima is sewer system of ancient Rome

Cloacina - Goddess of the Sewers

There are no known images of Cloacina except on coins. Based on her association with sewers and possibly with Venus, she probably looked much like other representations of Venus. (Observe here: Augustus' Venus!) Cloacina seems to rather derived from the Latin, albeit in such partly or wholly or from the Latin above (correct).

The Shrine of Cloacina

The world to the right shows the Basilica Atrium (BA) in the Roman Forum with the circular shrine of Venus Cloacina in front. The shrine stood at the place where the Cloaca Maxima entered the Forum (see map below) and may have included a household entrance into the sewer. Its placement in the forum indicates an important status for Cloacina.

Cloacina

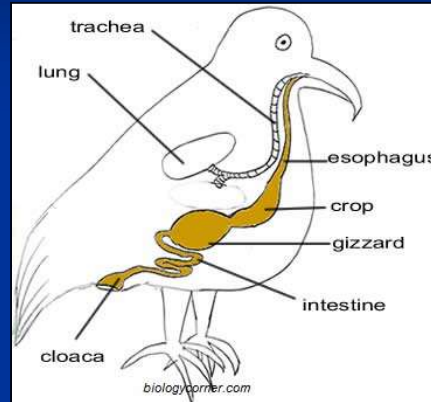
Rome was partly paved at its ancient urban system and excluded the public to a goddess - Cloacina, the patron goddess of the Cloaca Maxima and the city's sewer system and workers. She is thought to have been initially adopted from Etruscan culture. Over time, Cloacina became identified with Venus, the goddess of love. She was celebrated as a deity in the Roman Forum (see map above).



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Cloacal Fun Facts

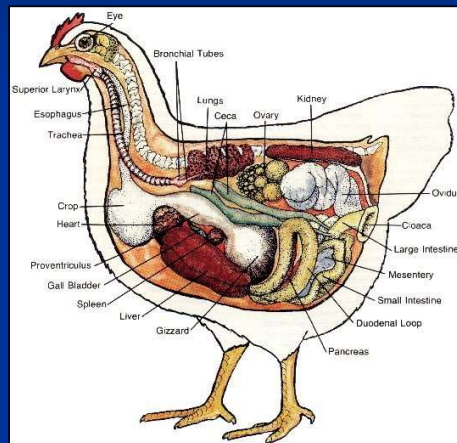
- Single orifice draining urinary, genital, and GI tract
- Birds are most common animal to have a cloaca



35

Cloacal Fun Facts

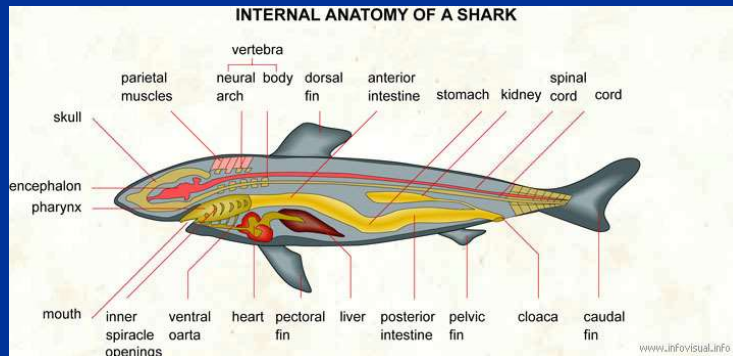
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36

Cloacal Fun Facts

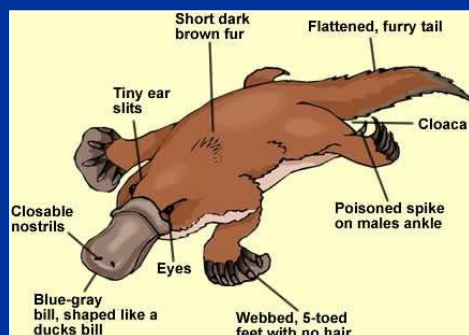
Sharks and rays have a cloaca



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Cloacal Fun Facts

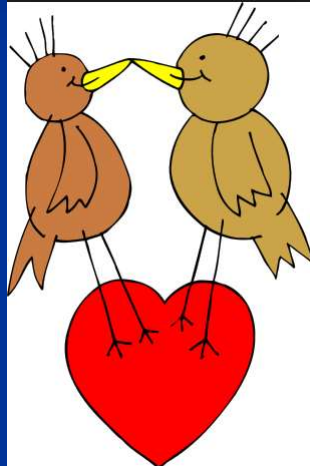
Monotremes (Greek for single hole) have a cloaca
platypus and spiny anteater



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Cloacal Fun Facts

Birds mate by a cloacal kiss



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Cloacal Fun Facts



Band's list • Progressive Metal • Cloacal Kiss

Style

Progressive Metal

Status

Active

Country

USA  (Raleigh, North Carolina)

Popularity

★

Formed In

2006

Fans

2 Fans



Logo

1

2

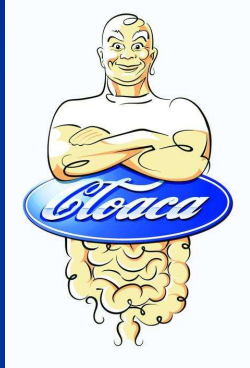
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Cloacal Fun Facts

Wim Delvoye - Cloacal Collection



Cloaca Factory - a defecating machine
Museum of Contemporary Art in Antwerp, Belgium



"It took Wim Delvoye eight years of consultation with experts in fields ranging from plumbing to gastroenterology to construct the poo machine."

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Cloacal Fun Facts

Do birds pee?? I have never seen one do so, just wondering?

Bird urine and poop come out of the same area - it's mixed together, which explains the liquidy, gooey mess. Even more annoying, the eggs that are laid come out of the same hole...

Luckily, eggs are washed off before they get to the store.



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NOT SO FUN FACT

- In only 6% of prenatal cases with a cloaca was the diagnosis suspected
- Retrospective review showed suspicious findings in 62%

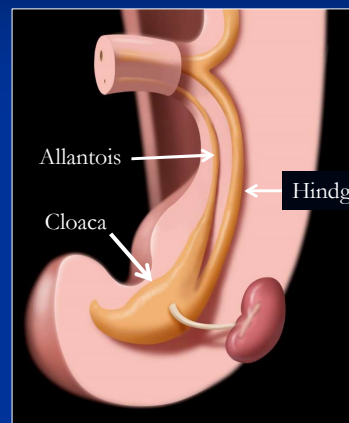
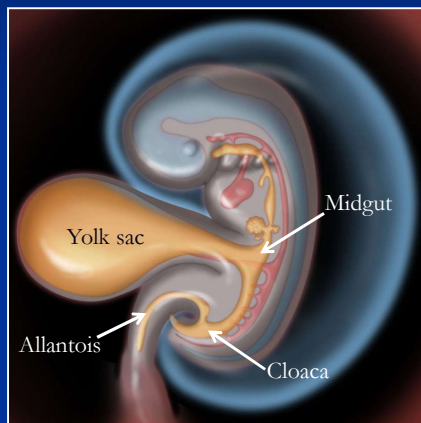
Bischoff A et al. Prenatal diagnosis of cloacal malformations. *Pediatr Surg Int.* 2010 Nov;26(11):1071-5.

Livingston JC et al. Persistent cloaca: a 10-year review of prenatal diagnosis. *J Ultrasound Med.* 2012 Mar;31(3):403-7



43

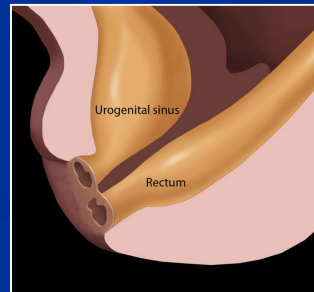
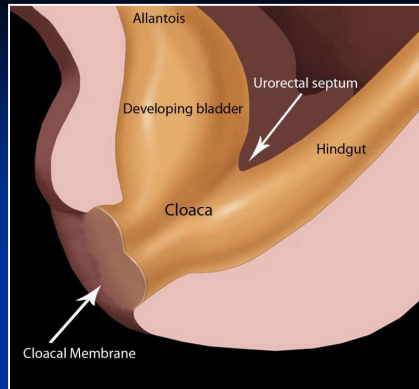
Embryology



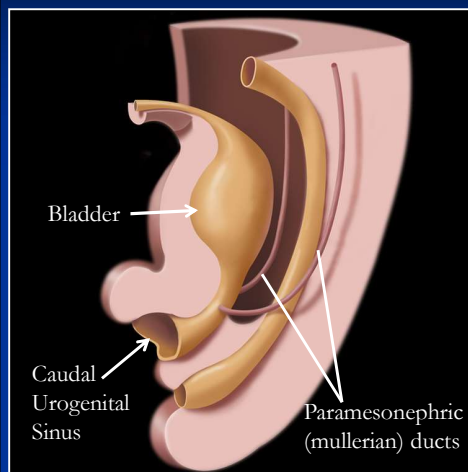
By 5 weeks the cloaca is a common chamber receiving the intestinal, urinary and genital tracts

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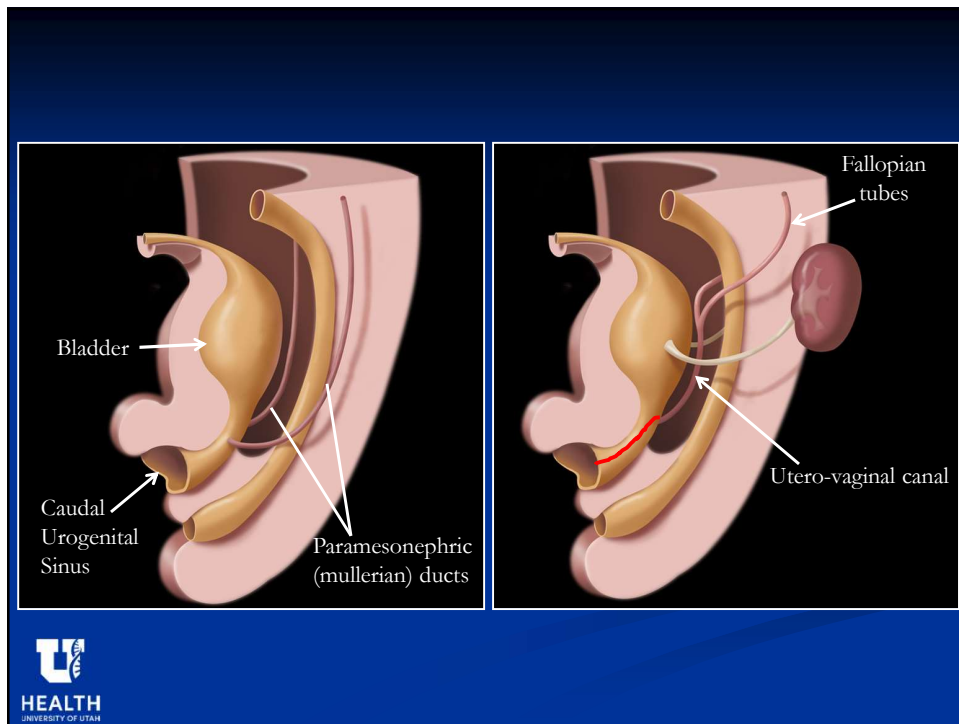
- Cloaca is then divided by the urorectal septum (URS) into
 - Urogenital sinus anteriorly
 - Anorectum posteriorly
- Cloacal membrane dissolves once it comes in contact with the urorectal septum



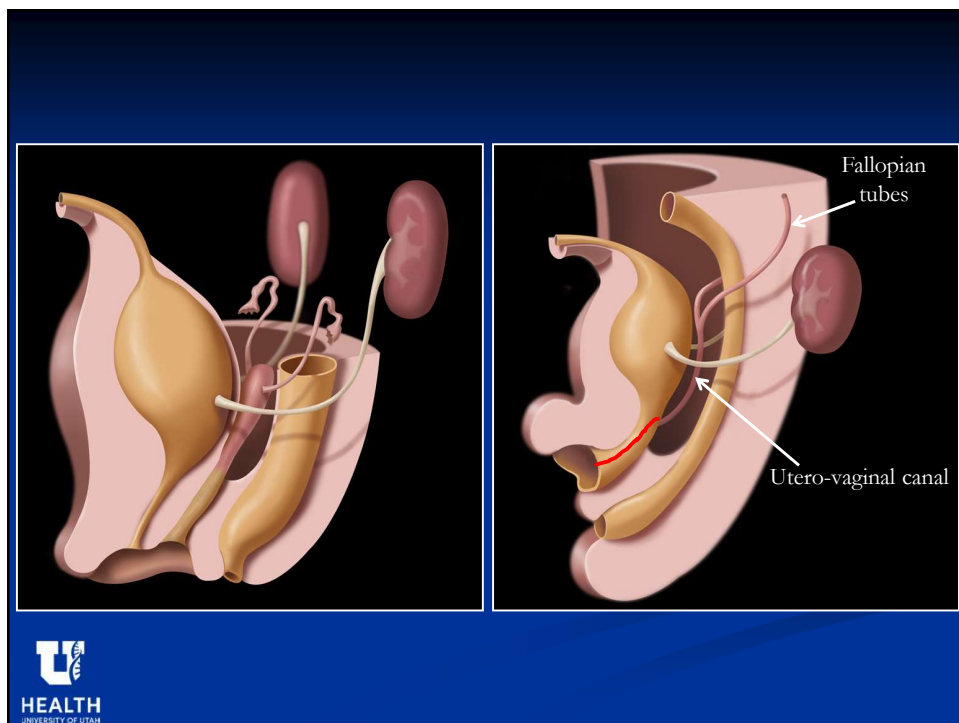
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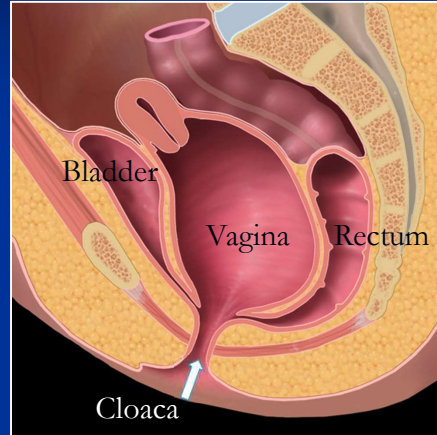
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Cloacal malformation

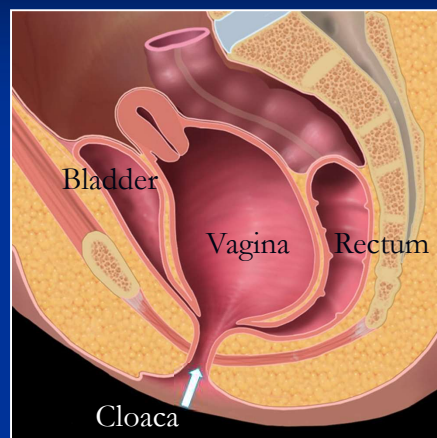
- Failure of cloacal division
- Classic cloaca
 - 1 perineal orifice: common channel connecting the urethra, vagina and rectum
 - May have variants
- Seldom isolated finding
 - Other GU/GI tract and lumbosacral anomalies common



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Cloacal malformation

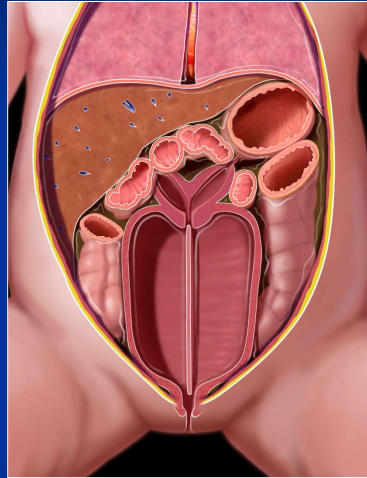
- Cystic pelvic mass with fluid-debris level
 - Result of mixing urine with vaginal secretions or meconium
- Vagina often most distended structure
- Uterine and vaginal duplication in 60%
 - Creates longitudinal septated cystic mass
- Oligohydramnios common



50

Cloacal malformation

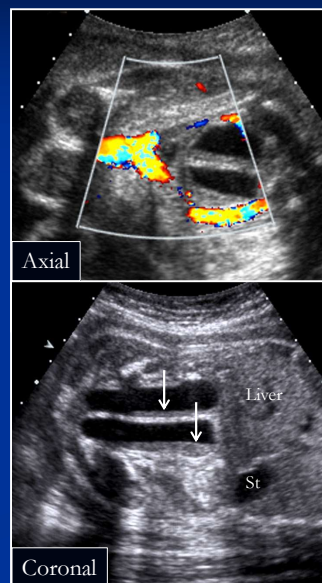
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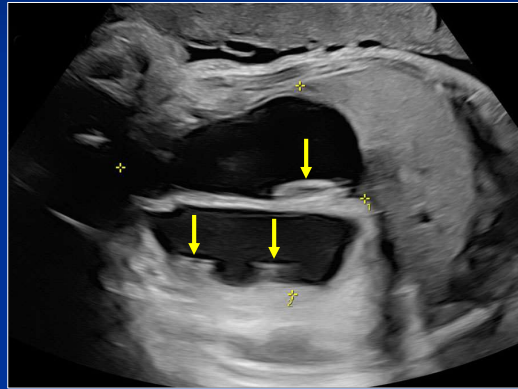
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Cloacal malformation

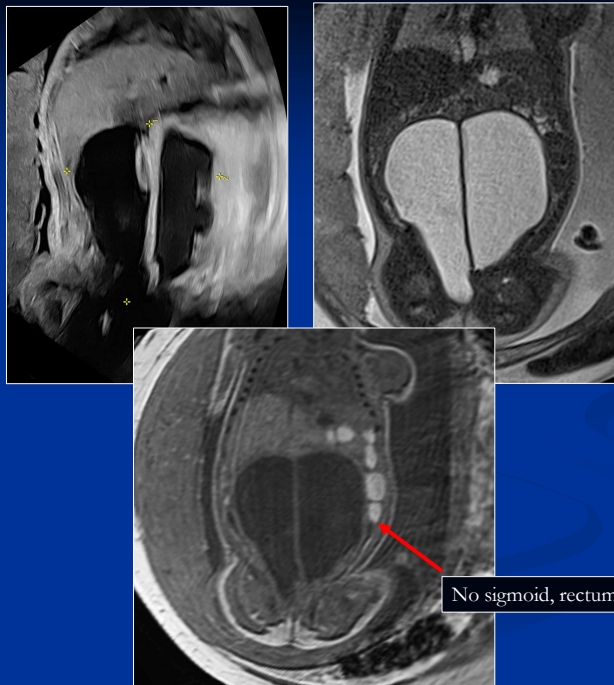
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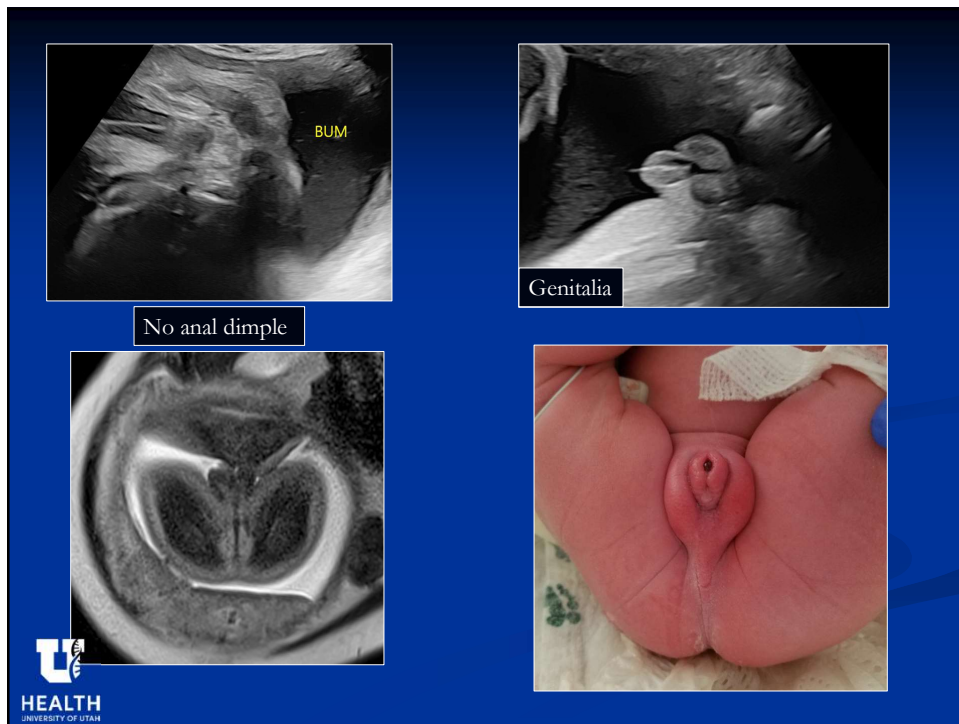
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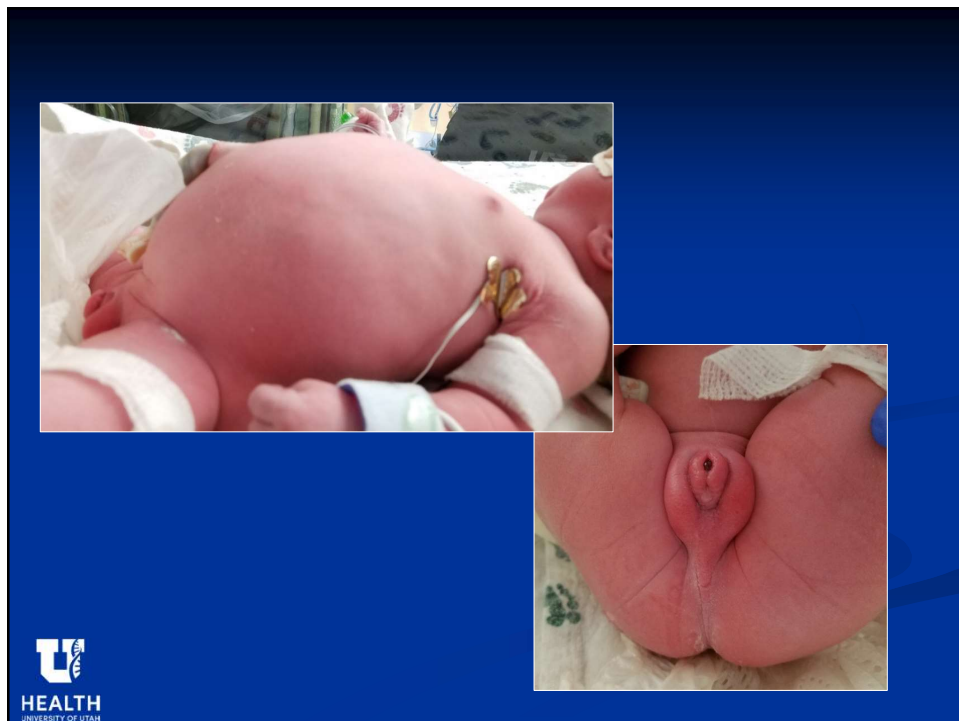
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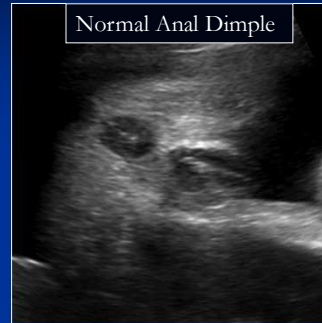
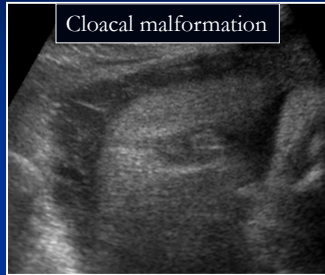


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Perineum



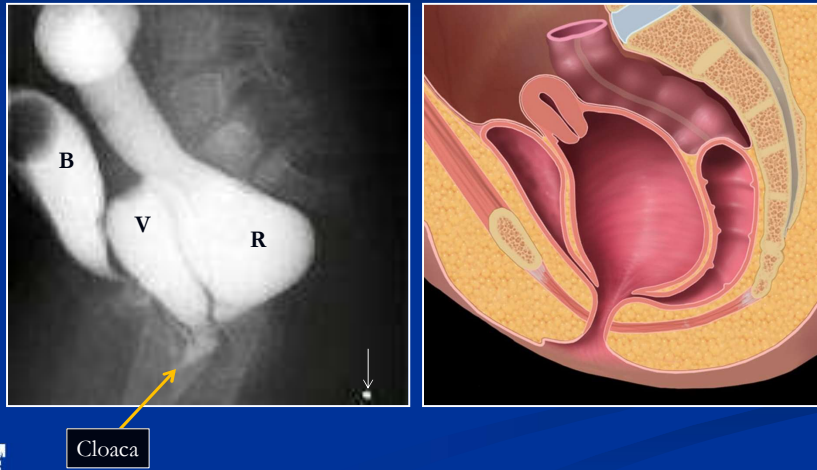
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Perineum

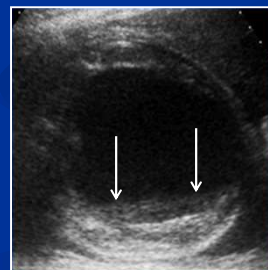
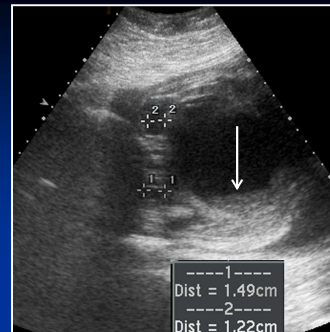
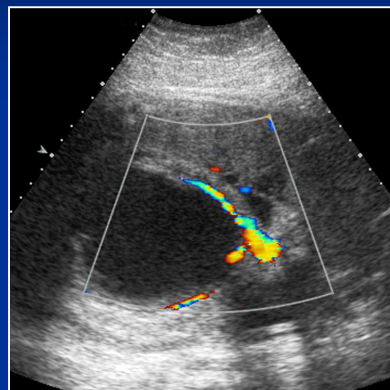


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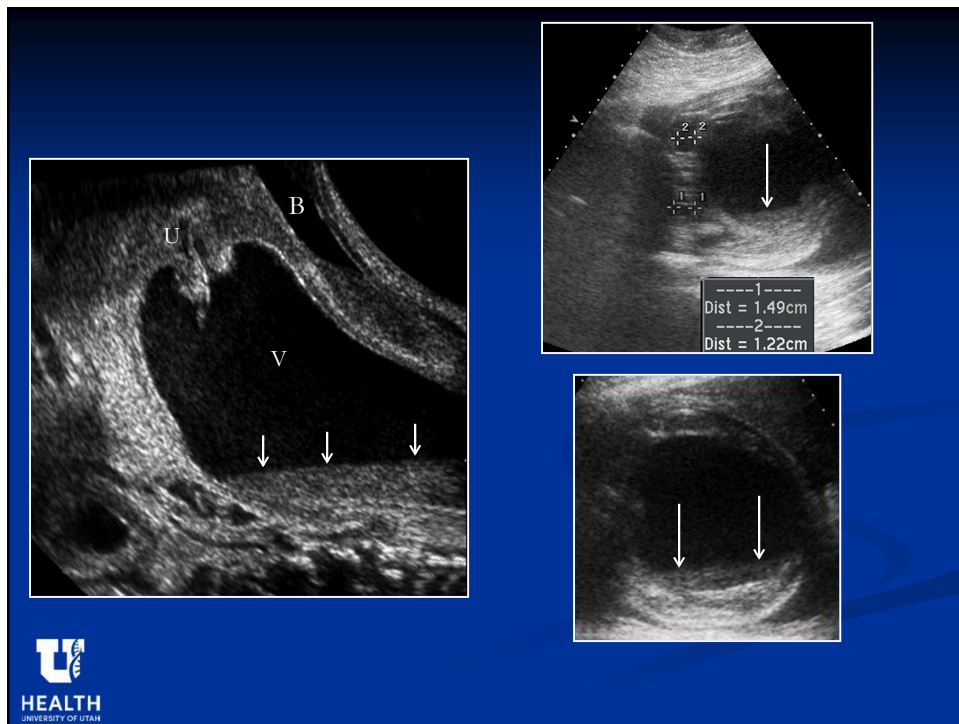
Cloacal malformation



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Key Findings

- Cystic pelvic mass *especially if vertical septum and/or fluid-debris level*
 - Midline location
 - Funnels to perineum
- No anal dimple, abnormal genitalia
- Oligohydramnios
- Urinary tract abnormalities
- +/- ascites, bowel dilation, spine/cord anomalies

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- Urinary tract
- Gastrointestinal tract
- Other organs: Ovary, hepatobiliary, urachus
adrenal, spleen, peritoneal, retroperitoneal



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