Advanced Fetal GI Evaluation
(When Is MRI Useful?)

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Objectives:
- Review scope of Fetal GI anomalies
- When is US enough?
- When is MRI useful?
- Imaging approach
- Case examples
Scope of Fetal GI anomalies

- esophageal atresia
- gastric / pyloric atresia
- duodenal atresia
- jejunal / ileal atresia
  (meconium ileus)
  (volvulus)
- colonic atresia
- anal atresia
Scope of Fetal GI anomalies

- esophageal atresia
- gastric / prepyloric atresia
- duodenal atresia
- jejunal / ileal atresia (meconium ileus)
- colonic atresia
- anal atresia
Scope of Fetal GI anomalies

- esophageal atresia
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  (meconium ileus)
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- jejunal / ileal atresia (meconium ileus) (volvulus)
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- anal atresia

The farther down the intestinal tract the initial level of obstruction is located, the more useful MRI becomes in diagnosis and counseling.
Scope of Fetal GI anomalies

- esophageal atresia
- gastric / pyloric atresia
- duodenal atresia
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  (meconium ileus)
  (volvulus)
- colonic atresia
- anal atresia
Fetal GI anomalies

- esophageal atresia
dilated pharynx & pouch,
small stomach, poly
high rate of false positive dx
difficult dx MRI & US

- duodenal atresia
high rate associated anomalies
Down syndrome
lower than expected prenatal dx
Fetal GI anomalies
- esophageal atresia
Fetal GI anomalies
- duodenal atresia
Fetal GI anomalies

- pyloric atresia - rare (1% atresias)
Scope of Fetal GI anomalies

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- gastric / pyloric atresia
- duodenal atresia
- jejunal / ileal atresia
  (meconium ileus)
  (volvulus)
- colonic atresia
- anal atresia
Rules of the Road for the Fetal Colon

- meconium: digestive juices, intestinal epithelium, hair, bile, amniotic fluid
- by 20 weeks in the rectum
- rectum below the bladder
- colon narrow in SBO, but present
- look at the rectum and colon
Fetal GI anomalies
- jejunal atresia - proximal
Scope of Fetal GI anomalies

- esophageal atresia
- gastric / pyloric atresia
- duodenal atresia
- jejunal / ileal atresia
  (meconium ileus)
  (volvulus)
- colonic atresia
- anal atresia
Rules of the Road for the Fetal Colon

- meconium: digestive juices, intestinal epithelium, hair, bile, amniotic fluid
- by 20 weeks in the rectum
- rectum below the bladder
- colon narrow in SBO, but present
- look at the rectum and colon
- rectum should be well filled, plump
Fetal GI anomalies
- jejunal atresia, distal
Fetal GI anomalies
- ileal atresia
Fetal GI anomalies
- other entities: CF
Fetal GI anomalies
- other entities – jejunal/anal atresia
  with multiple anomalies
Dilated fetal bowel – Flow chart

T1 rectal column present

Simple fluid in bowel; US anechoic
US moderate debris
MRI low T1

Intermediate complexity of bowel fluid;
MRI intermediate T1

Complex fluid in bowel;
US echogenic
MRI high T1

Consider upper jejunal atresia
Consider distal jejunal atresia
Consider ileal atresia, screen for CF

T1 rectal column absent

Screen for CF

Consider anal atresia and/or
VACTERL
Jejunal atresia
28 weeks fetus with multiple anomalies
Imaging approach

- more distal/complex → MRI
- know the Rules of the Road
  - rectum below the bladder, filled
- T2 W imaging in 2-3 planes
- T1 W imaging in 2-3 planes (sagittal!)
  (polyhydramnios)
  - 5 mm all GA
- Polyhydramnios more likely with
  *proximal* obstruction than *distal*
Counseling approach
- Limited prediction of short bowel syndrome
- Cannot predict multiple atresias
- High likelihood good outcome
- Predict early delivery
Sometimes US is all you need, but...

The farther down the intestinal tract the initial level of obstruction is located, the more useful MRI becomes in diagnosis and counseling.

- by 20 weeks in the rectum
- rectum below the bladder
Thank you...
SAMs Q #1

By what GA should meconium be seen in the distal rectum?

a. 12 weeks
b. 16 weeks
c. 20 weeks
d. 30 weeks
SAMs Q #2

A fetus presents with findings of a distal bowel obstruction. Which of these findings is most likely to be seen?

a. Oligohydramnios
b. Normal amniotic fluid
c. Severe polyhydramnios
d. Ascites