Fetal/Neonatal GI Surgery Updates

Kenneth W. Liechty, MD
Surgeon-in-Chief
Chair Department of Surgery
Director of Fetal Medicine
Nemours Children’s Hospital
Fetal/Neonatal GI Surgery Updates

Indications for Fetal Surgery
- impending fetal demise (CCAM, SCT, LUTO, Twins...)
- severe morbidity (MMC or spina bifida)
Achilles heel
- preterm delivery
- PROM
Maternal complications
Fetal intervention for GI anomalies is generally limited to complications.

Polyhydramnios
-risk of PTL
Fetal/Neonatal GI Surgery Updates

Fetal management is largely a diagnostic role
- Confirm diagnosis
- Assess for additional anomalies
- Provide proper counseling

- Polyhydramnios
- Absent stomach
- Distal meconium
- Dilated bowel or cyst
- Anatomic relationships
Abdominal Cyst

US @18 weeks
Abdominal Cyst

Fetal MRI @ 23 weeks

Lymphangangioma
Lymphangioma

Postnatal MRI

- Large lymphangioma
- Internal septation
- Right inguinal hernia (RIH)
- Transverse testicular ectopia (TTE)
Lymphangioma

RIH repaired
TTE-orchioopexy
Sclerotherapy x 3
Complete resolution

May provide some natural history of testicular decent
Polyhydramnios

- Absent/small stomach
- Concern for EA/TEF
- Rarely see pouch
Esophageal Atresia/TEF

- Karyotype
- Associated anomalies
  - ECHO
- Management of poly
- Delivery at term
Esophageal Atresia/TEF

**Neonatal Management**

• Minimal Handling to avoid crying
• Decompression of proximal pouch
• Semi-upright position to promote drainage
• NPO
• Avoid bagging
Esophageal Atresia/TEF

Assess for associated anomalies
- Vertebral
- Anorectal
- Cardiac
- TE fistula
- Renal
- Limb
Esophageal Atresia/TEF

CXR
Helpful to assess gap
Esophageal Atresia/TEF

- Long gap
- Lack of distal air
  - Pure atresia

- Fistula ligation
- G-tube
- Overfeed
- Delayed repair
Esophageal Atresia/TEF

Operative Repair

Bronchoscopy

Open repair
• Ligate fistula
• Anastamosis

Thoracoscopic repair?
Polyhydramnios

- Duodenal obstruction
- Mucosal atresia or obstructive web
- 85% distal to ampulla of Vater (bilious emesis)
- “double bubble” sign
Duodenal Atresia
Duodenal Atresia

Association with;

- Down syndrome (30%)
- Malrotation (30%)
- Cardiac disease (30%)
Duodenal Atresia

Neonatal Management
• AXR
  - distal air concerning for volvulus
• NGT
• Associated anomaly w/u
  • ECHO
Duodenoduodenostomy

Diamond anastomosis
• Transverse proximal
• Longitudinal distal

Laparoscopic repair
Polyhydramnios

Intestinal atresia

• Jejunal/ileal
• Vascular accident
• 1:5,000 live births
• 20% will have more than 1
• Distal ileum most common
Jejuno-ileal Atresia
Jejuno-ileal Atresia

Intestinal atresia

• 5 types of atresia
Jejuno-ileal Atresia

Treatment
• NGT
• Resuscitation
• OR

-look for multiple sites
Jejuno-ileal Atresia

Size mismatch
• Resect or taper
• STEP
Serial Transverse Enteroplasty (STEP)
Jejuno-ileal Atresia
Abdominal Cyst

Prenatal US
- hepatic cyst
Postnatal MRI
- choledochal cyst
Choledochal Cyst

- Enlargement of CBD
- Females 4:1
- Concern for biliary atresia
- TX-complete cyst resection
  - Roux-en-Y hepatojejunostomy

Intraoperative cholangiogram
Choledochal Cyst
Choledochal Cyst

Hepaticoduodenostomy

Laparoscopic approach
Abdominal Cyst

Intestinal duplication
TI most common
Mesenteric side
10% communication
Duplication Cyst

Operative resection
• Enucleation
• Bowel resection

Laparoscopic or Lap assisted
Abdominal Cyst

22 week US
- abdominal cysts

23 week MRI
- abdominal cysts c/w bilateral ovarian cysts

Observed at term with flow by US
Serial resolution
Meconium Peritonitis

US 17 week GA fetus

- Calcifications
- Viral infection
- In utero perforation
Meconium Peritonitis

Classified as Simple or Complicated

Simple
• No bowel dilation at birth
• Feeding trial

Complicated
• Bowel dilation
• Study
  - plain films
  - BE
  - UGI with SBFT
• OR for resection
Summary

For GI anomalies:
Fetal management
  - diagnostic
  - treatment of complications
Post-natal
  - resuscitation
  - correction, resection, or observation
  - increased minimally invasive
Pediatric Surgical Urgencies
Imperforate Anus

- 1:5,000 live births
- Spectrum of perineal findings
- Associated anomalies (VACTERL)
  - abdominal distention, emesis, no meconium
- Dx: physical examination, KUB
Abdominal Wall
Cloacal Exstrophy