Unique Case of Infant Bowel Obstruction

David Kashan, M.D.
PGY-3, General Surgery
Kings County Medical Center
HPI

• 40 day old male born to term via normal vaginal delivery, presented with 3 days of obstipation, decreased PO intake, vomiting NBNB
• No fevers, chills, diarrhea, sick contacts
• One Episode of bilious vomiting in the ER
• No PSHx
• NKDA
• PMHx: Prenatal U/S: Intra-abdominal cystic mass, etiology unknown. Not visualized on antenatal U/S
Physical Examination

- Afebrile, tachycardic to 180-190s
- Abdomen: soft, *distended*, no masses palpated, no hernias B/L
- Rectal: Soft brown stool in vault, *Guaiac Positive*
- ER Bedside ultrasound negative for intra-abdominal pathology
Differential Diagnosis?
Differential Diagnosis

• Intestinal malrotation
• Intussusception
• Incarcerated Hernia
• GERD
• Gastroenteritis
• Necrotizing enterocolitis
• High clinical suspicion for malrotation, so upper GI series was requested...
• Ultrasound consistent with intussusception with cystic mass as lead point
Operative Findings

- Exploratory laparotomy via upper transverse incision
- Distal ileal mass
- Dilated loops of small bowel with small caliber cecum 2/2 almost complete obstruction
- No intussusception noted intraoperatively
- Ileocecectomy with appendectomy and primary anastomosis
- Ran small bowel proximally to evaluate for Meckel’s
• Pathology consistent with ileal duplication cyst
Post-Operative Course

• POD#0-2: Admitted to PICU, NPO, IVF, OGT to suction
• POD#2: + bowel movement
• POD#6: OGT output minimal/no longer bilious> removed OGT> diet advanced to goal over next 2 days
• POD# 7-11: Abdominal films consistent with persistently dilated loops of small bowel
• POD #13-14: Upper GI series with small bowel follow through
www.downstatesurgery.org
POD#13-14
• Discharged home: afebrile, abdomen soft, tolerating feeds, continues to have multiple daily bowel movements
Outline

1. Enteric Duplication cysts
   - Background/History
   - Embryology
   - Epidemiology
   - Diagnosis

2. Intussusception
   - Epidemiology
   - Presentation, Diagnosis, Management, Treatment
Enteric Duplication Cysts

- 1733: First reported case by Calder
- 1937: Ladd termed duplication of the alimentary tract
  - Identified developed smooth muscle
  - Epithelial lining
  - Intimately associated with some portion of the GI tract
Split Notochord Theory

- 1960: Bentley and Smith
- Normal growth: 21 days gestation, notochord grows cephalad with endoderm and subsequent separates
- Endoderm becomes the foregut
- Gap between notochord and endoderm allows for possible fusion with endoderm and ectoderm allowing for cyst formation
Persistent or accessory neurenteric canal with split notochord
Abnormal splitting of the notochord with endodermal-ectodermal adhesions
Incomplete excalation of the notochord
Ectopic endoderm
Epidemiology

• Can be found anywhere in the alimentary tract; Mouth, esophagus, small bowel, colon, rectum, anus
• Slight predominance in Males: Females (3:2)
• Most commonly found in terminal Ileum
• Increased incidence of vertebral and GI anomalies
• Diagnosis can usually be made on prenatal/postnatal ultrasound

- Combined 12 series
- 580 Patients
- **Incidence:**
  - 1: Small bowel (Ileum#1): 44%
  - 2. Colon: 15%
  - 3. Gastric 7%
  - 4. Duodenal/Rectal 5% Each
  - 5. Thoracic 4%
Esophageal Duplication
Gastric Duplication

www.downstatesurgery.org
Presentation

• Can be seen on prenatal/postnatal ultrasound
• Palpable mobile abdominal mass
• Shortness of breath, bowel obstruction, jaundice, fevers, lethargy, GI bleed, obstipation
• Important to operate early, small percentage can have cancer present or ectopic tissue
Intussusception

- Definition: Invagination of any portion of bowel into a more distal portion of bowel
- Intussesceptum: proximal portion
- Intussuscipiens: receiving/distal portion
- Incidence: 56 per 100,000 children/year in the United States
- Most common cause of SBO in infants/children (Pyloric Stenosis #1 in Neonates)
- Male to Female 3:2
- Age range: 2 months to 3 years of age
Etiology

• Usually idiopathic/viral causes
• Viral: **Adenovirus**, enterovirus, echovirus, HSV 6
• Can be due to mass in 5-6% of cases in children, usually in children that fall out of normal age range
• Most common lead point: Meckel’s Diverticulum
• Polyps or adhesions
• Attributed to hypertrophy of lymphoid tissues/ **Peyer’s patches**
Presentation

• Intermittent/colicky abdominal pain (58-100%)
• Lethargy
• +/- “Currant Jelly Stools” (75%)
• +/- Vomiting (85%)
• Preceding viral infection
• Dehydration/Diarrhea/Electrolyte abnormalities
Physical Examination

- Abdominal distension
- Tachycardia
- Dry mucous membranes
- Lethargic baby, not feeding well
- Rectal examination: minimal/no stool in vault, Guaiac positive
Diagnosis

- Abdominal XR: Request two views: Absence of stool/air in colon, r/o pneumoperitoneum
- SURGICAL CONSULT PRIOR TO REDUCTION
- Abdominal U/S
- UGIS with follow through if recurrent
- Consider repeat U/S if high clinical suspicion
Treatment

• NPO, IVF, replete electrolytes, serial abdominal exams
• If no pneumoperitoneum, proceed with air enema reduction
• Pneumoperitoneum/peritoneal signs/hemodynamic instability/lead point proceed with emergent surgery
• If not ileo-colic, likely to proceed with surgery if doesn’t spontaneously reduce
• If recurs, repeat air enema
• Can continue to have bloody bowel movements
Meta-analysis, comparing pneumatic for contrast reduction of intussusception

Shorter fluoroscopic time

Greater reduction rates: 81.3% vs 68.6% (P<0.006)

Lower perforation rates

Less intraperitoneal contamination with perforations
• Radiation exposure as little at 5 seconds, average 41.8 vs 94.8s
• Easier to perform by pediatric radiologist, no spillage on table
• Higher rates of reduction : 80-90% vs 55-70%
• Less rates of perforation, can be as low as 10-15 mmHg of pressure
Conclusion

• Importance of early diagnosis
• Focused but thorough physical examination with H&P
• Know when to operate vs conservative management
• Always have a surgeon aware that a reduction is going to take place
What is the most common location for enteric duplication cyst?

A. Colonic
B. Ileum
C. Esophagus
D. Anus
What is the most common location for enteric duplication cyst?

A. Colonic
B. Ileum
C. Esophagus
D. Anus
True or False: Duplication cysts can contain ectopic tissue not related to the organ it is fused with.
TRUE
The most common type of intussusception is:

A. ileoileal
B. colocolic
C. ileocolic
D. ileo-ileocolic
The most common type of intussusception is:

A. ileoileal
B. colocolic
C. ileocolic
D. ileo-ileocolic
Contraindications for non-surgical reduction of an intussusception include all of the following **except:**

A. symptoms for longer than 24 hours
B. shock
C. intestinal perforation
D. peritonitis
Contraindications for non-surgical reduction of an intussusception include all of the following except:

A. symptoms for longer than 24 hours
B. shock
C. intestinal perforation
D. peritonitis
Which is the most common pathological lead point found with intussusception?

A. neoplasm  
B. appendicitis  
C. polyps  
D. intestinal duplication  
E. Meckel's diverticulum
Which is the most common pathological lead point found with intussusception?

A. neoplasm  
B. appendicitis  
C. polyps  
D. intestinal duplication  
E. Meckel's diverticulum
The "classical triad" of symptoms of intussusception include: (Hint: there are THREE right answers)

A. diarrhea  
B. vomiting  
C. fever  
D. bloody stools  
E. abdominal pain
The "classical triad" of symptoms of intussusception include: (Hint: there are THREE right answers)

A. diarrhea  
B. vomiting  
C. fever  
D. bloody stools  
E. abdominal pain
www.downstatesurgery.org

Special Thank You

• Dr. Velcek
• Dr. Shraga
• Dr. Pivec