Adult Intussusception

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What is Intussusception?

- Telescoping of proximal segment (intussusceptum) of GI tract into an adjacent and distal one (intussuscepiens)
- Commonly seen in pediatric population as ileocolic w/o identifiable lesion (95%)
- Rare cause of obstruction in adults w/ identifiable lesion (5%)

[Diagram of large intestine (colon) and small intestine (ileum) with intussusceptum and intussuscepiens labeled]
What Happens Next?

- As intussusceptum telescopes into intussuscepiens, mesentery containing vascular components is trapped between the two layers of bowel.

- Vascular compression → bowel edema → further vascular compression → ischemic necrosis → peritonitis, aberrant air.

*Fig. 4-11  Schematic representation of an ileocolic intussusception. Courtesy of Dr. Wendy Durgin*
On the left, the intussusceptum has become ischemic. On the right, opening the outer layer reveals the telescoping of the intussusceptum.
Patient R.S.

- **CC:** 25yo male with bilateral upper quadrant “needle-like” pain; presented at clinic

- **PMH:**
  - s/p orthotopic liver transplant one year ago for fulminant liver failure
  - Roux-en-Y hepaticojejunostomy
  - Hepatic artery stenting five months ago

- Admitted for GI series work-up

[Image: www.danaise.com]
Patient R.S.

- **PE @ BIDMC**
  - No acute distress
  - Abdomen soft and nondistended
  - Bilateral upper quadrant tenderness without rebound or guarding
  - Otherwise unremarkable
Differential Diagnosis

- Organ Rejection/Thrombosis
- Adhesions
- Bowel Obstruction
- Intussusception
- Abdominal Hernia
- Abdominal Mass
- GI Bleed
- Cholecystitis
- Constipation
- Ulcer
CTA of Liver

Mesenteric vessels

Dilated proximal jejunal loop with debris

Liver

Kidneys

Lead Point

Aorta

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CTA of Liver

Target Lesion
intussusceptiens
mesenteric vessels
intussusceptum
CTA of Liver

Sausage lesion
intussusceptum
intussusception
mesenteric vessels
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Oblique Reconstruction

- Surgical staples
- Enhancing mesenteric vessels
- intussusceptum
- intussusceptiens
Delayed Imaging

Intussusception has resolved
Barium Swallow with Small Bowel Follow Through

Filling defect consistent with intussuscepted small bowel
In real time, the intussusceptum moved in and out of the intussusceptum.
Diagnosis for Patient R.S.

- Chronic transient intussusception
- Surgical sutures within intussusception suggest involvement as lead point
Intussusception

Adults vs. Children

- 1% of all adult bowel obstxns (only 53 cases @ MGH btw 1964-1993)
- 5% of all intussusception
- Demonstrable etiology in 70-90%
- Acute, intermittent, or chronic (“acute abdomen” is rare)
- Enteric, ileocolic, ileocecral, colonic
- Surgical resection

- 2nd most common abdominal emergency in children
- 95% of all intussusception
- Usually no demonstrable etiology
- Acute presentation
- Ileocolic
- Non-operative reduction
Signs & Symptoms in Adults

- **Intermittent/chronic** abdominal pain (70-90%)
- Vomitting/Nausea (80%)
- Red blood per rectum (30%)
- Abdominal distension/shifting mass (10-40%)
- Weight loss (10%)
- Fever (10%)
- Chronic constipation or diarrhea (<10%)
- Acute (24hr), intermittent, and chronic (5yr)
Etiology in Adults

- Neoplastic Process
- Non-Neoplastic Process
- Idiopathic Process
Neoplastic Intussusception

- **Benign**
  - Lipoma
  - Adenomatous polyp
  - Meckel’s Diverticulum
  - Hamartomatous polyp
  - Hemangioma
  - Leiomyoma
  - Neurofibroma

- **Malignant**
  - Primary - adenoCA, leiomyosarcoma, carcinoid, lymphoma, Kaposi’s
  - Metastatic - melanoma, lymphoma, sarcoma
Non-Neoplastic & Idiopathic Intussusception

- Non-Neoplastic
  - Post-Op: Adhesions, suture lines, edema, dysmotility
  - Inflammatory lesions: Crohn’s, lymphoid hyperplasia (AIDS)
  - Disordered motility
  - May be permanent or transient

- Idiopathic – no etiology found
Pathophysiology

- **Lead point seen in >90% of cases**
  - Primarily in small bowel
  - J-J, I-I, I-Co, I-Ce, S-R, Ce-Co

- **Peristalsis**
  - Peristalsis and ingested food push intussusceptum into relaxed and distal intussuscipiens
  - Tends to occur at jnx of free bowel and retroperitoneal/fixed segments (e.g. ileo-cecal)
Post-Surgical Intussusception

- 50% of benign intussusceptions
- Complication of Roux-en-Y limbs
  - Retrograde intussusception (anti-peristaltic) through Roux-en-Y anastomosis
  - Roux-en-Y stasis syndrome
- Lead point may be suture line or adhesion
- Reduction without resection is reasonable if bowel is viable
Transient Intussusception

- Completely resolved on f/u exams
- Accounts for many of non-neoplastic cases
- Commonly seen in Celiac Disease (20%)
  - Loss of normal tone in small bowel due to toxic effects of gluten
  - Flaccid loops are more susceptible to intussusception
- Diarrheal diseases w/ abnormal bowel motility
- Increasingly seen because of CT scans
Management of Transient Intussusception

- Younger pts w/ smaller, shorter intussusceptions
  - length of <3.5cm on CT was independently predictive of transience
  - Likely non-neoplastic
  - These pts treated conservatively and did not have recurrence at f/u > 100 days

- Questionable clinical significance; possibly physiological
Diagnostic Procedures

- Plain Abdominal Films
- Upper GI Series
- Barium Enema
- Ultrasound
- CT
Plain Abdominal Films

- May see air-fluid levels in dilated bowel loops if obstruction is sufficient
- Meniscus sign (leading edge of intussusceptum)
- 0% accuracy in adults in one study
- Used to R/O free air prior to enema reduction

Upper GI Series and Small Bowel Follow Through

- Bowel within bowel
- Filling defect indicating obstruction
- Accuracy of 21% in adults in one study
- Possibly therapeutic when invagination compressed
Barium Enema

- Cup shaped filling defect
- Coil spring
- Accuracy of 54% in adults in one study
- Contraindicated if suspected bowel perforation or ischemia

Air Enema

Intussusception
Air contrast enema showing intussusception in mid-transverse colon (arrow). Courtesy of Nancy Fitzgerald, MD and Taylor Chang, MD.

www.uptodate.com
Ultrasonography

- Modality of choice in pediatrics
- Transverse view – target/donut sign
- Longitudinal view – pseudokidney/sandwich sign
- Limited by
  - presence of air in bowel → poor transmission
  - Operator dependent


Early – target Iz or oblong sausage shaped mass

Later – layering effect

Finally – amorphous mass

Presence of these signs is pathognomonic

+/- dilation and obstxn

Most accurate – 78% Dx in adults

Can identify other pathology
Treatment in Adults

- **Surgical Resection**
  - Caused by neoplasm in up to 50% of cases
  - Colon $\rightarrow$ en bloc resection b/c high likelihood of neoplasm
  - Small Bowel $\rightarrow$ initial resection then resection if not neoplastic or infarcted
  - Selective adhesiolysis, diverticulectomy, polypectomy w/o resection is alternative in small bowel cases
  - With surgery, there is a low incidence of recurrence
Treatment in Adults

- Reduction via colonoscopy, insufflation
  - Conservative Tx reserved for those lesions known to be benign (e.g. lipoma)
  - W/o surgery, hi risk of recurrence

- Transient intussusception resolves on its own
  - May not need therapeutics
  - Chronic transient intussusception – Patient R.S.
Back to our Patient R.S.

- Patient remained in hospital for five days
- Sent home because in stable condition
- Decided to have surgical procedure as outpatient to correct chronic and symptomatic intussusception
Summary

- Intussusception is a rare, yet serious condition in adults
  - May be a marker of pathological lesion
  - Increase use of CT causing increased pick-up of transient intussusception
- CT scan is most accurate method of Dx
  - Visualization is ideal because of non-specific signs and symptoms
  - Target lesion on axial view
  - Sausage shaped lesion on longitudinal view
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