

AMSER Case of the Month

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76 y/o female presents with abdominal pain and hypotension

John Wang, MS4

Emory University School of Medicine

Sean Doyle, MD, PhD (R2)

Emory University School of Medicine, Department Of Radiology and Imaging Science

Kiran Maddu, MBBS

Emory University School of Medicine, Department Of Radiology and Imaging Science

Patient Presentation

- **HPI:** 76 y/o female presents to urgent care for acute onset abdominal pain, nausea, and vomiting. She has had no bowel movements or flatus for the past 2 days
- **PMHx:** HTN, CKD III, HLD, hyperparathyroidism, breast and ovarian cancer
- **PSHx:** Hysterectomy with bilateral total salpingo-oophorectomy, bilateral mastectomy
- **PE:** Bradycardia and hypotension. Abdominal tenderness and distension with blue discoloration of abdomen

Pertinent Labs

- **WBC:** Normal
- **Lactate:** ↑ 2.4 mmol/L, (0.5-2.2 mmol/L)
- **Venous Blood Gas:** ↓pH 7.27, ↑ pCO₂ 60 mmHg

What Imaging Should We Order?

ACR Appropriateness Criteria

Variant 1: Suspected small-bowel obstruction. Acute presentation. Initial imaging.

Procedure	Appropriateness Category	Relative Radiation Level
CT abdomen and pelvis with IV contrast	Usually Appropriate	⊕⊕⊕
CT abdomen and pelvis without IV contrast	May Be Appropriate	⊕⊕⊕
MRI abdomen and pelvis without and with IV contrast	May Be Appropriate	○
Radiography abdomen and pelvis	May Be Appropriate (Disagreement)	⊕⊕⊕
Fluoroscopy small bowel follow-through	May Be Appropriate	⊕⊕⊕
MRI abdomen and pelvis without IV contrast	May Be Appropriate	○
CT abdomen and pelvis without and with IV contrast	Usually Not Appropriate	⊕⊕⊕⊕
CT enteroclysis	Usually Not Appropriate	⊕⊕⊕⊕
CT enterography	Usually Not Appropriate	⊕⊕⊕⊕
MR enterography	Usually Not Appropriate	○
US abdomen and pelvis	Usually Not Appropriate	○
Fluoroscopy small bowel enteroclysis	Usually Not Appropriate	⊕⊕⊕
MR enteroclysis	Usually Not Appropriate	○

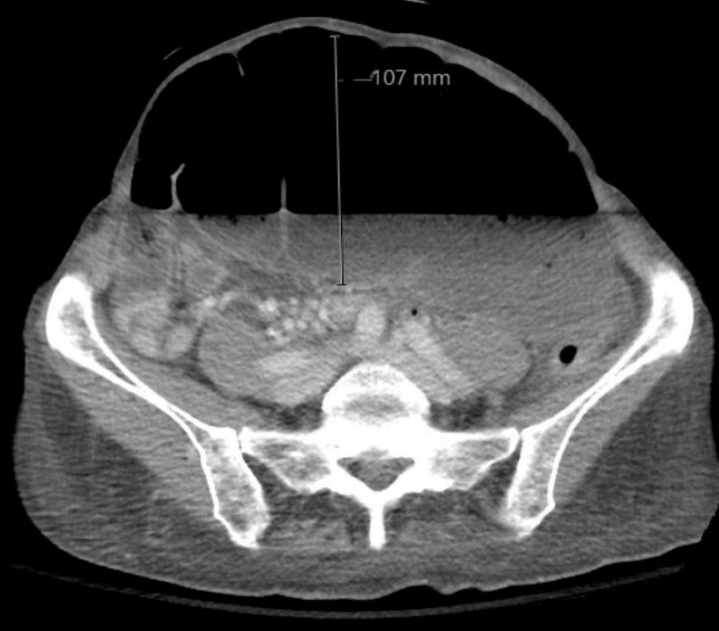
This imaging modality was ordered by the ER physician



Findings (unlabeled) - CT



Topogram



Axial



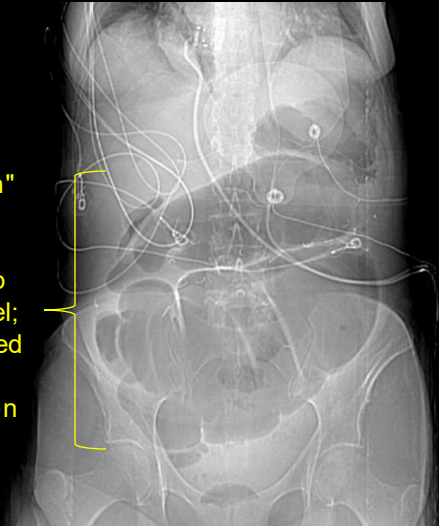
Coronal



Coronal

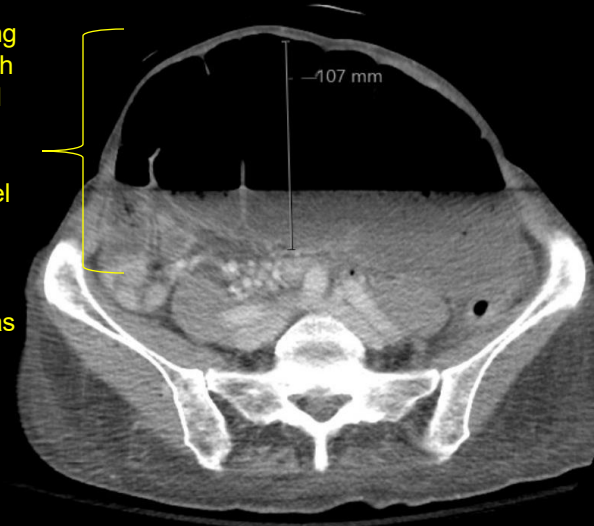
Findings: (labeled) - CT

"Coffee bean" sign:
Dilated C-shaped loop of large bowel; apex angulated toward left hemiabdomen



Topogram

Dilated ascending colon/cecum with internal air-fluid level; relatively normally enhancing bowel wall without pneumatosis intestinalis or portal venous gas



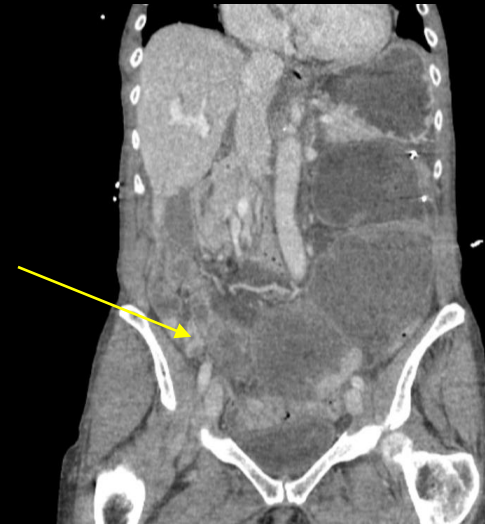
Axial

Mesenteric "whirl" sign:
Counterclockwise mesenteric swirling in the right hemiabdomen with abrupt transition in caliber to the dilated C-shaped loop of ascending colon/cecum



Coronal

"Bird beak" sign:
More distally, the C-dilated C-shaped loop of large bowel tapers back to relatively decompressed ascending colon beyond the same site of mesenteric swirling



Coronal

Final Dx:

Cecal Volvulus

Case Discussion: Pathophysiology

- **Cause:** Rare (1-1.5%) form of intestinal obstruction caused by twisting of the cecum along its long mesenteric axis¹
- **Risk factors:** Congenital abnormal peritoneal fixation (11-25% of pop.), adhesions, abdominal masses²
- **Types:**
 - Clockwise axial twisting of the cecum causes displacement to the right lower quadrant
 - Counterclockwise axial twisting of the cecum and terminal ileum causes displacement to the left upper quadrant
 - Upward folding without axial twisting uncommonly causes a cecal bascule (20% of cecal volvuli)³

Case Discussion: Imaging Findings

- CT is highly sensitive for detecting cecal volvulus and elucidates the location of obstruction⁴
- **Findings on CT:**
 - Distended cecum
 - "Whirl" sign: Created by twisting of collapsed cecum and mesentery
 - Independent predictor of cecal volvulus⁴
 - "Coffee bean" sign: Commonly associated with sigmoid volvulus but can be seen in cecal volvulus as well⁵
 - "Bird beak" sign: Created by tapering loops of obstruction
 - "Double stomach" sign: Created by distention of stomach and proximal colon

Case Discussion: Management

- **Treatment:** Surgical intervention, but approach depends on several factors including evidence of bowel compromise and patient hemodynamic stability
 - Colonoscopy not recommended due to risk of perforation and high recurrence rates²
 - Cecopexy in absence of compromised bowel has a low rate of morbidity and volvulus recurrence²
 - Surgical resection (via right hemicolectomy) is necessary for gangrenous or perforated bowel
- Our patient underwent exploratory laparotomy with successful right hemicolectomy

References

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3. Le CK, Nahirniak P, Qaja E. Cecal Volvulus. [Updated 2022 Sep 12]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK470305/>
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5. Maddu, K. K., Mittal, P., Arepalli, C. D., Shuaib, W., Tewari, A., & Khosa, F. (2014). Colorectal emergencies and related complications: a comprehensive imaging review--noninfectious and noninflammatory emergencies of colon. *AJR. American journal of roentgenology*, 203(6), 1217–1229. <https://doi.org/10.2214/AJR.13.12323>