72-year-old female presents with abdominal pain, N/V. History of abdominal surgery

John J. DeBevits IV, MD
Mechanical small bowel obstruction in setting of a ventral hernia
Air-fluid levels at different heights

Multiple dilated loops of small bowel
Transition point....
Mechanical small bowel obstruction

Obstruction or blockage of ≥1 small bowel (SB) segments by intrinsic or extrinsic narrowing of SB lumen

Identifiable causes:
- Adhesions (~60%)
- Hernias (15%)
- Tumor

Abdominal radiography first step in imaging
- Diagnostic in 50-60% of cases

CT diagnosis of closed loop or strangulated SBO is crucial to guide surgical intervention
Pathogenesis

Obstruction, accumulation of GI secretions and swallowed air

Bowel dilatation stimulates secretory activity resulting in increased fluid accumulation
**Imaging**

**Abdominal radiography**

High-grade vs. low grade?

- Dilated SB loops exceeding 50% of largest visible colon loop
- 2.5 times increase in # of distended loops compared to normal number
- Presence of >2 air-fluid levels, wider than 2.5cm
- Air-fluid levels differing >2cm in height from one another within the same SB loop
- SB-colon diameter ratio >2.5

**MDCT**

- MDCT: start at the end!
  1. Confirm the diagnosis
  2. Characterize the severity of the obstruction
  3. Identify the transition point
  4. Identify the cause of the obstruction
  5. Look for complications

*Useful primarily when CT is unavailable*
Clinical issues

- **Closed loop obstruction**: SB segments markedly distended (>4cm) with fluid, little gas
  - Whirlpool sign due to twisting mesenteric vessels
  - “Balloons on strings”: dilated SB loops “hanging” by stretched mesenteric vessels

- **Strangulating SBO**: blood supply is impaired
  - Bowel wall thickening (edema/hemorrhage)
  - Ischemic bowel may show increased, decreased, or absent bowel wall enhancement
  - Interloop edema
  - Ascites
  - Congested vessels
Differential diagnosis

- Adynamic or paralytic ileus
- Strangulated SBO (if involving hernia)
- Aerophagia
- Large bowel obstruction
- DIOS: distal intestinal obstruction syndrome in CF
References

http://pubs.rsna.org/doi/full/10.1148/radiol.15131519

Review of Small-Bowel Obstruction: The Diagnosis and When to Worry

http://pubs.rsna.org/doi/pdf/10.1148/rg.292085514