Small Bowel Obstruction

Overview
• Epidemiology
• Practice management guidelines from the Eastern Association for the Surgery of Trauma (EAST) presented at 2012 annual meeting
• Current practice patterns in U.S.
• Prevention

Epidemiology
• Incidence of SBO unchanged despite laparoscopy
  – 12-16% of surgical admissions
  – 300,000 operations/yr in U.S.
• ~70% due to postoperative adhesions
  – 1/3 manifest within 1 year after initial laparotomy
• Hernia
• Neoplasms (i.e., advanced colorectal cancer)
• Inflammatory bowel disease
  Maung et al. J Trauma Acute Care Surg 2012

Never let the sun rise or set on a small bowel obstruction

Postgraduate Course in General Surgery
Small Bowel Obstruction

Eric K. Nakakura
San Francisco, CA
May 18, 2013
Small Bowel Obstruction

**Epidemiology**
- ~25% patients need operation for index admission
- ~40% risk of recurrent SBO within 10 years after initial SBO
  - ~30% recurrence if treated surgically
  - ~50% recurrence if treated nonoperatively

**Key factors**
- **History**
  - Nausea, vomiting, distension, abdominal pain (crampy, periumbilical), decreased flatus/bowel movements, diarrhea (partial obstruction)
  - Prior abdominal operations, radiation, neoplasm
- **Physical**
  - Abdominal exam
  - Check for hernias (incisions, umbilicus, groins)
- **Laboratory tests**
  - Metabolic derangements
  - Leukocytosis
  - Lactic acidemia

**Presentation and diagnosis**

**Diagnosis (continued)**
- **Radiographic evaluation**
  - Plain films of abdomen (supine/erect)
    - Air-fluid levels
    - Dilated loops of intestine
    - Absence of colonic gas
  - Upright chest
    - Pneumoperitoneum
    - Aspiration
Small Bowel Obstruction

Diagnosis (continued)
- Computed tomography (CT) scan
  - Accurate in diagnosing obstruction (83-94%)
    - CT has replaced small bowel series
    - Transition point
    - Decompressed colon
    - Degree of obstruction
    - Etiology (hernia, abscess, mass, volvulus...)
  - Sensitive in detection of ischemia (85-100%)
    - Bowel ischemia
      - Wall thickening, reduced wall enhancement, mesenteric venous congestion, free fluid, pneumatosis intestinalis

Maung et al. J Trauma Acute Care Surg 2012

Small Bowel Obstruction

Contrast studies and enteroclysis
- Fluoroscopic, CT, and MRI enteroclysis
- May detect low-grade SBO not seen on CT
- Unclear which is superior
- Water-soluble contrast might:
  - Help predict need for surgery (diagnostic)
  - Improve time to bowel movement (therapeutic)
  - Consider if SBO not resolved in 48 hours

Maung et al. J Trauma Acute Care Surg 2012

Small Bowel Obstruction

Diagnosis (continued)
- Computed tomography (CT) scan

Small Bowel Obstruction

Systematic review and meta-analysis of the diagnostic and therapeutic role of water-soluble contrast agent in adhesive small bowel obstruction
- 14 prospective studies
- Predicting resolution of SBO
  - Contrast appearing in colon in 4-24 h
    - 96% sensitive; 98% specific
- Reduce need for surgery (OR 0.62; P = 0.007)
- Shortened hospital stay (mean -1.87 days; P<0.001)

Branco et al. Br J Surg 2010
Adhesive Small Bowel Obstruction

NIS (2009), n = 27,046

- 82% recover without surgical intervention
- For patients managed nonoperatively, mean LOS = 4d
- For patients who underwent surgery:
  - 25% required bowel resection
  - 32% spent > 7 days in hospital postoperatively
  - 2.86% died
- Delay of 4 or more days until surgery increased chance of death (OR 1.64, P = 0.01)

Schraufnagel et al. J Trauma Acute Care Surg 2012

Adhesive Small Bowel Obstruction

NIS (2009), n = 27,046

- Length of stay for patients managed nonoperatively
- Number of days before surgery

Schraufnagel et al. J Trauma Acute Care Surg 2012

The role of laparoscopy in the management of acute small-bowel obstruction: a review of over 2,000 cases

Review of over 2,000 cases

- 29 studies
- 29% conversion rate to open laparotomy
  - Dense adhesions, resection for ischemia, inability to identify pathology, iatrogenic injury, inadequate field of view, malignancy
- Single band adhesion in ~50%
  - 73% success completing it laparoscopically
- 6.6% enterotomy rate

O’Conner et al. Surg Endosc 2012
Adhesive Small Bowel Obstruction

Prevention?
- Lifetime risk of bowel obstruction after abdominal or pelvic surgery
- Surgery below the transverse mesocolon is of particular risk
- 7-30% risk of SBO after colorectal resection for benign disease
- Seprafilm (Genzyme, MA)
  - Sodium hyaluronate and carboxymethylcellulose

Fazio et al. Dis Colon Rectum 2006

Randomized controlled trial (N = 144)
- Seprafilm did not reduce rate of SBO
- Only 1 patient in the control group required surgery for SBO

9.5% 5.7%

Fazio et al. Dis Colon Rectum 2006

Randomized controlled trial (N = 1,701)
- Seprafilm reduced rate of adhesive SBO requiring surgery
- Overall, SBO rate = 12%

3.4% 1.8%

Fazio et al. Dis Colon Rectum 2006

Small Bowel Obstruction

Summary
- CT of abdomen/pelvis in all patients
- Consider water-soluble contrast study after 48 hours
- Timely surgery for patients with generalized peritonitis or fever, leukocytosis, tachycardia, metabolic acidosis, or continuous pain
- Otherwise, initial nonoperative management safe
- Prevention (patient selection)

Small Bowel Obstruction

CT scan of abdomen

Bioresorbable Membrane to Reduce Postoperative Small Bowel Obstruction in Patients With Gastric Cancer
A Randomized Clinical Trial

- Movies filmed in Kauai
  - The Descendants (2011)
  - Jurassic Park (1993)
  - Lord of the Flies (1990)
  - Raiders of the Lost Ark (1981)
  - King Kong (1976)