GI Surgery Case Presentations

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Disclosures: Nothing to disclose
Case Presentation

- 62 year old woman presents with acute onset of crampy abdominal pain, distention and subsequent nausea and vomiting.
- Last BM was 8 hours ago and no recent flatus
- PSH: hysterectomy 15 years ago
- Afebrile, normal vitals and abdomen is soft, but diffusely tender and distended
Abdominal plain films
CT abdomen and pelvis

bowel wall edema, collapsed colon
small bowel fecalization present
• What is the cause of the patient’s intestinal obstruction?

• When do you need to operate immediately?

• How long should non-operative management be tried in those that do not need immediate operation?

• Can adhesiolysis reduce the risk of recurrent SBO?
What is the cause of the patient’s intestinal obstruction?

<table>
<thead>
<tr>
<th>Etiology</th>
<th>Incidence, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adhesions</td>
<td>60</td>
</tr>
<tr>
<td>20% within 1 month of surgery</td>
<td></td>
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<tr>
<td>30% within 1 year of surgery</td>
<td></td>
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<tr>
<td>25% years 1-5</td>
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<tr>
<td>25% after 5 years</td>
<td></td>
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<tr>
<td>Cancer</td>
<td>20</td>
</tr>
<tr>
<td>Hernia</td>
<td>10</td>
</tr>
<tr>
<td>Inflammatory Bowel Disease</td>
<td>5</td>
</tr>
<tr>
<td>Volvulus</td>
<td>3</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>2</td>
</tr>
</tbody>
</table>
Is the obstruction strangulating or non-strangulating?
Is the obstruction strangulating or non-strangulating?

The “classic signs” of strangulating obstruction are:
* continuous (rather than colicky) pain
* fever
* tachycardia
* peritoneal signs
* leukocytosis

…but alone, or in combination, sensitivity / specificity low


“The results of this study indicate that the clinical differentiation between simple and strangulating obstruction is often impossible.”
Predicting Strangulated Small Bowel Obstruction: An Old Problem Revisited

Tim Jancelewicz • Lan T. Vu • Alexandra E. Shawo • Benjamin Yeh • Warren J. Gasper • Hobart W. Harris


• Retrospectively reviewed 192 cases operated on for a small bowel obstruction (1996-2006) at UCSF Medical Center.
• A predictor model was created based upon operative findings: strangulated (n=44) or non-strangulated (n=148).
• Independent Predictors of strangulation: WBC > 12K, Rebound/Guarding at PE, Reduced Enhancement of SB at CT.
The best initial study is a CT abdomen/pelvis with IV contrast and without (positive) oral contrast.

<table>
<thead>
<tr>
<th>Findings</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>Likelihood ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT: reduced enhancement only</td>
<td>56%</td>
<td>94%</td>
<td>9.3</td>
</tr>
<tr>
<td>Guarding only</td>
<td>39%</td>
<td>86%</td>
<td>2.8</td>
</tr>
<tr>
<td>WBC &gt;12 only</td>
<td>45%</td>
<td>74%</td>
<td>1.7</td>
</tr>
<tr>
<td>WBC &gt;12 and CT: reduced enhancement</td>
<td>20%</td>
<td>100%</td>
<td>Infinite</td>
</tr>
<tr>
<td>WBC &gt;12 and guarding</td>
<td>18%</td>
<td>97%</td>
<td>6.0</td>
</tr>
<tr>
<td>Guarding and CT: reduced enhancement</td>
<td>16%</td>
<td>100%</td>
<td>Infinite</td>
</tr>
<tr>
<td>WBC &gt;12, guarding, and CT: reduced enhancement</td>
<td>4%</td>
<td>100%</td>
<td>Infinite</td>
</tr>
</tbody>
</table>
Can any tests differentiate patients whose obstruction will resolve non-operatively?

OLD: CLINICAL PRESENTATION

Complete obstruction = absence of significant flatus or stool for 12 hours and no colonic gas seen on KUB.

Complete obstruction = 20% success rate with non-operative treatment, 20-40% risk of strangulation

Partial obstruction = 80% success rate with non-operative treatment, low risk of strangulation (3-6%)
Can any tests differentiate patients whose non-strangulating obstruction will resolve non-operatively?

NEW: ORAL WATER SOLUBLE CONTRAST ADMINISTRATION

**Instill 50-150cc of gastrograftin (water-soluble contrast) orally or via NGT. Obtain abdominal plain films at 4, 8, and/or 24 hours**

Presence of gastrograftin in the colon at 8 hours predicts non-operative resolution with 95% sensitivity and 99% specificity. PPV = 99%, NPV = 85%.

At 24 hours, 99% sensitivity, 97% specificity, 99% PPV, 97% NPV
How long should non-operative management be tried?

85-95% of patients with adhesive SBO who are destined to recover without surgery will show marked improvement within 72 hours.

EAST guidelines 2009: 3-5 days

Bologna guidelines 2010: 3 days
Can adhesiolysis reduce the risk of recurrent SBO, readmission, or reoperation?

Natural history of patients with adhesive small bowel obstruction

G. Miller, J. Boman, I. Shrier* and P. H. Gordon

Division of Colorectal Surgery and *Center for Epidemiology and Community Studies, Sir Mortimer B. Davis – Jewish General Hospital and McGill University, Montreal, Canada

Surgery... had no effect on total readmissions (32% vs 34%) but spaced out readmissions over time (median 0.7 vs 2 years) and had no difference in reoperation rate (14% vs 11%)
New Case: 75 year old man with 6 days after hip replacement with progressive abd distention, nausea and vomiting and no BMs for flatus for 3 days.
Management?

- Ambulate
- Narcotics
- NG/Rectal Tube
- Miralax
- Reglan
- Linaclotide (Linzess, guanylate cyclase agonist)
- Relistor or Entereg (peripheral mu opioid receptor antagonists)
Cecal diameter >9 cm
Mechanical obstruction ruled out

Response
Resume standard care

Treat reversible causes
(infection, electrolyte disturbances, medications, volume depletion)
Keep patient NPO

No response after 72 hr

Neostigmine contraindicated*
Consider gentle watersoluble enema
No response
Endoscopic decompression
Gentle saline enema preparation or no preparation
Do not overinflate colon
If a decompression tube is placed, advance at least to transverse colon
Response
Resume standard care
† WBC, fever, abdominal pain, signs of peritonitis or free air
No response
Brief response
Repeat colonic decompression. Use decompression tube if not used initially.

Neostigmine not contraindicated
Infuse neostigmine 1-2 mg over 3-5 min
Monitor cardiac rhythm and vital signs
Repeat neostigmine in 4 hr if no response or dilatation recurs
Give atropine 0.5-1 mg for bradycardia

* Contraindications to neostigmine:
Systolic BP <90 mm Hg
Bradycardia
Bronchospasm
Serum creatinine >3 mg/dL
Perforated bowel
History of intolerance to neostigmine

Surgery
Cecostomy
Endoscopic
Radiologic
Surgical
Case Presentation

• 63 year old woman with several days of progressive LLQ pain, constipation and low grade fever.
• T 38.2, tender LLQ, localized peritoneal signs
• WBC = 15, 000
Modern Treatment of Diverticulitis

- Increasing use of interventional radiology for the treatment of diverticular abscesses
- Resection and primary anastomosis during emergency surgery for complicated diverticulitis
- Laparoscopic approach for sigmoid colectomy
- Better knowledge of the natural history of the disease
Complicated Diverticulitis
Hinchey Classification
Management?

• Hospital admission?
• IV versus oral antibiotics?
• Diet?
• Catheter drainage?
• When to do colonoscopy?
• When to operate?
When to operate?

**Emergency**
- Free Perforation
- Diffuse Peritonitis
- Complete Colonic Obstruction

**Elective**
- Multiple episodes
- Strictures, Fistulas
- Comorbidities

**Relative emergency**
- Fail medical therapy
- Recurrence in the same admission
- Partial colonic obstruction
- Immunocompromised patients
- Unable to rule out carcinoma
Surgical Goals in Complicated Diverticulitis

Removal of diseased colon
Elimination of complications (i.e. abscess/fistula)
Expeditious operation
Minimal morbidity
Minimal hospital stay
Maximal patient survival
Resection and Primary Anastomosis

(Hinchey, Adv Surg, 1978)
Two stage: Hartmann Procedure
## Contraindications to Primary Anastomosis

<table>
<thead>
<tr>
<th>ABSOLUTE</th>
<th>RELATIVE</th>
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</thead>
<tbody>
<tr>
<td>Hemodynamic instability</td>
<td>Unprepared colon*</td>
</tr>
<tr>
<td>Fecal peritonitis</td>
<td>Immunosuppression</td>
</tr>
<tr>
<td>Ischemia or edema</td>
<td>Radiation</td>
</tr>
<tr>
<td></td>
<td>Anemia and malnutrition</td>
</tr>
<tr>
<td></td>
<td>Chronic abscess</td>
</tr>
<tr>
<td></td>
<td>Judgment of surgeon</td>
</tr>
</tbody>
</table>
Reconstruction after Hartmann

Washington, 1987-2002

Primary Anastomosis vs Hartmann (Hinchey III & IV)

Current Status

<table>
<thead>
<tr>
<th></th>
<th>Series</th>
<th>#</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hartmann</td>
<td>54</td>
<td>1051</td>
<td>19% (0-100)</td>
</tr>
<tr>
<td>Primary</td>
<td>50</td>
<td>569</td>
<td>10% (0-75)</td>
</tr>
<tr>
<td>Anastomosis</td>
<td></td>
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</tbody>
</table>

Diverticulitis: Natural History

• 90% can be managed as outpatients
• 20-30% recurrence rate at 10 years
• 30% with chronic recurring symptoms
• After 2nd episode
  – 30-50% chance of 3rd episode
  – Greater chance of complication (abscess, obstruction, fistula)?
  – >75% with some chronic symptoms
Risk of emergency surgery/colostomy

Anaya, Flum Arch Surg 2005

Ritz et al Surgery 2010
Elective Surgery for Diverticulitis

Mortality, Morbidity, Colostomy and Costs of Elective Surgery

Risk of Future Attacks

Mortality, Morbidity, Colostomy and Costs of Emergency Surgery

Salem et al, J Am Coll Surg 2004
Elective Surgery for Diverticular Disease

Factors to consider

• Number and severity of attacks
• Interval between episodes
• Symptoms between episodes
• Age
• Co-morbid conditions
Elective Surgery for Diverticular Disease

All this in the context of

- More effective non-invasive treatment of complicated diverticulitis
- Lower probability of colostomy with emergency surgery
- Advantages of the laparoscopic sigmoid colectomy
Diverticulosis: A chronic medical illness

• 50-70% of adults have diverticulosis
• < 5% will develop acute diverticulitis
• Non operative prevention of acute diverticulitis?
  • SCAD
  • SUDD
• Role of fiber, mesalamine, rifaximin, probiotics
Case Presentation

- 82 year old man presents with acute onset of crampy left lower quadrant abdominal pain, urgency with multiple low volume bloody BMs
- T = 37.8, HR 95, BP 170-80, mild to moderate LLQ tenderness
- WBC = 14,000, Hct = 36
Diagnosis?
Ischemic colitis

• CT often the initial test

• Typical Findings of IC
  – Mural thickening
  – Thumbprinting
  – Pericolonic fat stranding
  – Peritoneal fluid
  – Double halo or target sign
    • Submucosal edema & hemorrhage
  – Lack of bowel wall enhancement
  – No major mesenteric vessel occlusion
Colonoscopy

Colonoscopic findings are suggestive but are not diagnostic of IC

- CT first
- Submucosal hemorrhage
- Ulcerations
- Friability
- Mucosal necrosis
- Segmental distribution
- Rectal sparing

Endoscopy has a diagnostic accuracy of 92% and a negative predictive value of more than 94%

Assadian et al. Vascular 2008
Mucosal Edema, Exudates, and Ulcerations
## Differential Diagnosis

<table>
<thead>
<tr>
<th></th>
<th>Clinical</th>
<th>Radiologic/Endoscopic</th>
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</thead>
<tbody>
<tr>
<td><strong>Ulcerative colitis</strong></td>
<td>Bloody diarrhea</td>
<td>Extends proximally from rectum; mucosal ulceration, chronic changes on bx</td>
</tr>
<tr>
<td><strong>Crohn’s colitis</strong></td>
<td>Perianal lesions common; frank bleeding less frequent than in ulcerative colitis</td>
<td>Segmental disease; rectal sparing; strictures, fissures, ulcers, fistulas; small bowel involvement</td>
</tr>
<tr>
<td><strong>Ischemic colitis</strong></td>
<td>Older age groups; vascular disease; sudden onset, often painful</td>
<td>Segmental; “thumb printing”; rectal involvement rare, acute inflammation, hemorrhage</td>
</tr>
<tr>
<td><strong>Infectious colitis</strong></td>
<td>+ stool cultures or C-dif toxin</td>
<td>Diffuse colon wall thickening involves the rectum, acute inflammation on bx</td>
</tr>
</tbody>
</table>
Differential Considerations

• Atypical features for inflammatory bowel diseases
  – Segmental distribution of the disease, infrequent rectal involvement
  – High rate of spontaneous recovery, low rate of recurrence
  – Lack of adequate response to usual inflammatory bowel disease therapy
  – Frequent progression to fibrotic stenosis with delayed obstruction

• Always consider the diagnosis of ischemic colitis whenever contemplating the diagnosis of inflammatory bowel disease in an elderly patient
Pathophysiology

- Intestinal blood flow is inadequate to meet the metabolic demands of a region of the colon
- IC can be occlusive or non-occlusive
  - almost always non-occlusive
- Compromised blood flow may be secondary to changes in systemic circulation or local mesenteric (micro) vasculature
- Most cases involve watershed areas
- The rectum is usually spared due to dual blood supply
  - Inferior mesenteric artery
  - Internal ileac branches
Predisposing Conditions

- Age
- High blood pressure
- Cardiovascular disease
- Diabetes
- Chronic renal failure
- Chronic pulmonary disease
- Recent cardiovascular surgery
- Constipation
## Classification of Ischemic Colitis

<table>
<thead>
<tr>
<th>Gangrenous 10-15%</th>
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<tbody>
<tr>
<td>Complete loss of arterial flow causes bowel wall infarction and gangrene, which can progress to perforation, peritonitis, and death.</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Non-Gangrenous 85-90% (&gt; 90% in the ambulatory)</th>
</tr>
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<tbody>
<tr>
<td><strong>Transient 80%</strong> (recurrence is 10%/year)</td>
</tr>
<tr>
<td>Transient, reversible impairment of the arterial supply, with accompanying reperfusion injury. Leads to partial mucosal sloughing that heals by mucosal regeneration in a few days.</td>
</tr>
<tr>
<td><strong>Chronic 10%</strong></td>
</tr>
<tr>
<td>Gross impairment of the arterial supply, leading to hemorrhagic infarction of the mucosa. Can lead to chronic segmental colitis</td>
</tr>
<tr>
<td><strong>Stricturing 10%</strong></td>
</tr>
<tr>
<td>Heals by fibrosis, and can lead to stenosis</td>
</tr>
</tbody>
</table>
Management

• Depends on clinical severity
• Most cases are transient and resolve spontaneously
• Mild cases require only supportive care
  – NPO?
  – Broad spectrum antibiotics?
  – Optimize cardiac function and oxygen delivery
  – Serial abdominal exams
Indications for Surgery

- Acute Ischemia
  - Pneumoperitoneum
  - Significant gangrenous IC on endoscopy
  - Clinical deterioration despite conservative measures
    - Peritonitis
    - Sepsis without other source
    - Persistent fever or leukocytes
  - Persistent pain, urgency, rectal bleeding or protein-losing colopathy for more than 14 (?) days
Long term outcomes after operation: poor

37% in hospital mortality rate
25% readmission rate
24% had ostomy reversal
80% mortality at 10 years