Case Presentation

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Department of Surgery
Friday, July 15, 2005
Case Presentation

- 52-year-old African American male presenting with a 5-day history of abdominal distention associated with nausea, vomiting, and absence of passage of feces or flatus
  - PMHx: None
  - PSHx: None
  - Meds: None
  - Social: Nonsmoker, occasional drinker
Case Presentation

- **Vitals:**
  - Temp 98.2°F  HR 88  BP 131/70  RR 20

- **Physical exam:**
  - General: Thin male, alert, in mild distress
  - HEENT: NC/AT
  - Heart: Regular
  - Lungs: Clear
  - Abdomen: Grossly distended, tympanic, nontender, absent bowel sounds
  - Rectal: Normal tone, guaiac (+)
Case Presentation

- Labs:

```
3.56  15.8  253
  |     |    
  45.7 |     |
```

```
135  82  22  112
  |  |  |   
  3.1 29 1.0 |
```

Albumin: **5.9**
Case Presentation
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- Diagnosis of large bowel obstruction made
- Resuscitation
  - Intravenous saline
  - Foley catheter
- Taken to OR
  - Exploratory laparotomy through midline approach
  - Prominent small bowel dilatation, ascites
  - Discrete mass in sigmoid colon identified
  - Mass resected
  - Primary stapled anastomosis performed
- Pathology
  - Colonic adenocarcinoma, T3N1
Case Presentation

- Post-op course
  - POD #0: Fever, hypotension
  - POD #6: Enteral feeding initiated
  - POD #12: Extubated
  - POD #22: Discharged home
Obstructing Colon Cancers
Introduction

- Colorectal cancer #2 cause of cancer mortality among men and women in the United States
- Surgery should ideally be elective
- Over 15% of colorectal cancers present as acute colonic perforation or obstruction
- Emergency surgery associated with poorer prognosis
  - Postop mortality rate of 8.2%
  - Lower 5-year survival

Introduction

TX  The primary tumor cannot be assessed.
TO  There is no evidence of primary tumor.
Tis Tis means carcinoma in situ; the cancer cells are localized and superficial, but have no capacity to spread; it is considered high-grade or severe dysplasia.
T1  The tumor has invaded the submucosa.
T2  The tumor has invaded the muscularis propria.
T3  The tumor has invaded through the muscularis propria into the subserosa or into non-peritonealized pericolic or perirectal tissues.
T4  The tumor has invaded other organs or structures.
NX  NX means regional lymph nodes cannot be assessed.
NO  NO means no regional lymph node metastases.
N1  N1 signifies metastasis in 1 to 3 regional lymph nodes.
N2  N2 means metastasis has occurred in 4 or more regional lymph nodes.
MX  MX means distant metastasis cannot be assessed.
M0  M0 signifies no distant metastasis.
M1  M1 means distant metastasis has occurred.

Dukes A  Stage I  T1, N0, M0 and T2, N0, M0
Dukes B  Stage II  T3, N0, M0 and T4, N0, M0
Dukes C  Stage III  any T, N1 or 2, and M0
Dukes D  Stage IV  any T, any N, and M1

<table>
<thead>
<tr>
<th>Stage</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage I</td>
<td>93%</td>
</tr>
<tr>
<td>Stage IIA</td>
<td>85%</td>
</tr>
<tr>
<td>Stage IIB</td>
<td>72%</td>
</tr>
<tr>
<td>Stage IIIA</td>
<td>83%</td>
</tr>
<tr>
<td>Stage IIIB</td>
<td>64%</td>
</tr>
<tr>
<td>Stage IIIC</td>
<td>44%</td>
</tr>
<tr>
<td>Stage IV</td>
<td>8%</td>
</tr>
</tbody>
</table>
Introduction

- Patients presenting as emergencies:
  - More advanced tumors
  - Older
  - Widowed
  - Worse pre-existing cardiopulmonary disease

Physiology of LBO

- **Circulatory changes**
  - Increased intraluminal pressure → decreased venous return → mucosal ischemia

- **Microorganisms**
  - Increased intraluminal microbiomass
  - Translocation to mesenteric nodes common
    - In 43% of patients with post-op sepsis, cultures of mesenteric nodes and peripheral blood grow out the same organism
Physiology of LBO

- **Motility**
  - Initial increase proximal to obstruction followed by decrease

- **Fluids and electrolytes**
  - Intraluminal fluid sequestration
  - Vomiting if ileocecal valve incompetent
Presentation

- Symptoms of large bowel obstruction:
  - Abdominal pain
  - Distention
  - Constipation
  - Vomiting
- Symptoms may occur acutely or chronically
- May present in extremis:
  - Severe dehydration
  - Massive abdominal distention
  - Peritonitis
    - Perforation at either at tumor site or at cecum
Presentation

- **Etiology:**
  - Colorectal cancer (50%)
  - Volvulus
  - Diverticular disease
  - Hernia
  - Fecal impaction
Diagnosis

- CBC
  - May reveal leukocytosis
  - Hemoglobin may be low or high
- X-ray
  - May demonstrate LBO
  - Cannot exclude pseudo-obstruction
- CT
  - May elucidate nature of obstruction
  - ± Contrast enema
- OR
Treatment: Resuscitation

- Physiologic status upon presentation is primary determinant of outcome
- Colonic obstruction is associated with volume depletion, electrolyte imbalances
  - Administration of crystalloid or colloid, Foley, central line
- Blood transfusion?
  - More than two units may be associated with increased death from colorectal cancer
- Extended resuscitation not helpful
  - No significant difference between those having immediate surgery and those in whom it was delayed 24 hours

Treatment: Surgery

Leon Ginzburg (1955)

- “Opinion almost unanimously favors preliminary decompression for acute obstruction.”
- However, “in the right colon, indications for elective staging arise very rarely… in my opinion the only indication for such a procedure would be free perforation…”
- For left-sided lesions, on the other hand, only “three types of stage operations are available”.

References: None

Ginzberg L. The role of stage procedures in resection or carcinoma of the large bowel. Surg Clin of NA 1955 October:1307-1314
Treatment: Surgery

- Questionnaires sent to 500 US-based surgeons to assess prevailing practices for obstructing cancers of the left colon
  - For “good-risk” patients:
    - 47% staged resection
    - 26% segmental resection with on-table lavage
    - 18% segmental resection without on-table lavage
    - 10% subtotal colectomy
  - For “poor-risk” patients
    - 94% staged resection

Tradition
Treatment: Surgery

- Right-sided lesions
  - 25% of colorectal cancers are right-sided
  - Multiple nonrandomized, noncontrolled case series demonstrated right hemicolecctiony with anastomosis is safe and effective
    - Anastomotic leakage rate ~5%
  - Performing anastomosis dependent on the patient's general condition

Treatment: Surgery

- Left-sided lesions
  - Surgical management subject to debate
    - 3-stage
    - 2-stage
    - Subtotal colectomy with ileo-rectal anastomosis
    - Segmental resection with primary anastomosis
      - With or without on-table lavage
Treatment: Surgery

- 3-stage procedure
  - Proximal diversion, then resection, then reversal
  - Of historic interest only
  - High cumulative mortality (up to 31%)
  - Worse long-term survival due to delay in resection

Treatment: Surgery

- 2-stage procedure
  - Advantage:
    - No risk of anastomotic leak at initial operation
  - Disadvantages:
    - 2 stages
    - Restoration of intestinal continuity inconsistent (17 to 70%)
    - Complications of colostomy

Complications of colostomy

- Skin excoriation
- Necrosis
- Retraction
- Stenosis
- Prolapse
- Parastomal hernia
Treatment: Surgery

- 1-stage: Subtotal colectomy
  - Advantages:
    - Remove synchronous tumors
    - Prevent metachronous tumors
    - Good results (mortality 3 to 11%; leak rate 5%)
  - Disadvantages:
    - Increased bowel dysfunction (diarrhea)

Treatment: Surgery

1-stage: Antegrade colonic lavage

- Advantages:
  - Duplicates bowel prep of elective surgery
  - Mortality compares favorably with 2-stage procedure
  - Animal studies reveal higher anastomotic bursting pressures and higher hydroxyproline content

- Disadvantages:
  - Extends procedure by 30-45 minutes
  - Not feasible in all patients

Treatment: Surgery

- Lee, et al. (2001)
  - Retrospective review of 243 consecutive patients
  - 81% treated with 1-stage resection
  - No difference in mortality for right- and left-sided obstruction
  - In line with historic controls

<table>
<thead>
<tr>
<th>Site of tumor</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right side</td>
<td></td>
</tr>
<tr>
<td>Right hemicolecotomy/extending right colectomy</td>
<td>85</td>
</tr>
<tr>
<td>Transverse colectomy/left colectomy</td>
<td>6</td>
</tr>
<tr>
<td>Subtotal colectomy</td>
<td>5</td>
</tr>
<tr>
<td>Resection without anastomosis</td>
<td>2</td>
</tr>
<tr>
<td>Staged resection</td>
<td>1</td>
</tr>
<tr>
<td>Ileocolonic/colocolonic bypass</td>
<td>8</td>
</tr>
<tr>
<td>Left side</td>
<td></td>
</tr>
<tr>
<td>Segmental resection with primary anastomosis</td>
<td>75</td>
</tr>
<tr>
<td>Subtotal colectomy</td>
<td>26</td>
</tr>
<tr>
<td>Resection without anastomosis</td>
<td>24</td>
</tr>
<tr>
<td>Temporary stoma (staged resection)</td>
<td>5</td>
</tr>
<tr>
<td>Palliative colostomy</td>
<td>6</td>
</tr>
</tbody>
</table>

Treatment: Surgery

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<table>
<thead>
<tr>
<th>Tumor/anastomosis</th>
<th>Incidence of anastomotic leakage (%)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site of tumor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right</td>
<td>5/96 (5.2)</td>
<td></td>
</tr>
<tr>
<td>Left</td>
<td>7/101 (6.9)</td>
<td>0.77</td>
</tr>
<tr>
<td>Type of anastomosis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ileocolic</td>
<td>7/116 (6.0)</td>
<td></td>
</tr>
<tr>
<td>Colocolic</td>
<td>5/81 (6.1)</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Treatment: Surgery

- Segmental resection without lavage
  - Naraynsingh, et al. (1999) reported 58 consecutive patients with obstructing left-sided lesions
    - 1 anastomotic leak
    - 1 death secondary to MI

Treatment: Surgery

- Segmental resection without lavage

  - Patriti, et al. (2005):
    - 44 consecutive patients
    - Exclusion criteria were haemodynamic instability, ASA > 3, or unresectable tumor
    - Leak rate 4.5%
    - Mortality rate 2.3% (MI)

Treatment: Endoscopy

- **Indications:**
  - Palliation
  - “Bridge to surgery”

- **Techniques:**
  - Pneumatic or mechanical dilatation
  - Electrocoagulation
  - Nd-YAG laser

- **Effective palliation**
  - 92% have symptoms relieved by Nd-Yag; 88% of survivors continue to experience relief at follow-up

Treatment: Endoscopy

- Self-expanding metallic stents
  - Definitive for palliation
  - Otherwise temporizing

- Efficacy:
  - “Technical success” rate 94%
  - “Clinical success” rate 91%
    - Drops to 72% when used as bridge to surgery

- Complications:
  - Perforation (4%)
  - Stent migration (12%)
  - Reobstruction (7%)

Conclusions

- Large bowel obstruction is a disease entity frequently encountered by the general surgeon.

- The choice of operation, particularly for malignant left-sided obstructions remains controversial.

- A single-stage operation with primary resection and anastomosis can be performed in many patients with obstructive colonic cancers; however, the judgment of the surgeon is integral to the management of this entity.