SURGICAL MANAGEMENT OF ULCERATIVE COLITIS

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AGENDA

- Background
- Diagnosis/Work-up
- Medical Management
- Surgical Management
- Surgical Controversies
INFLAMMATORY BOWEL DISEASE

Spectrum of Disease

- Ulcerative Colitis
- Indeterminate Colitis
- Crohn’s Disease

Inflammatory Bowel Disease
BACKGROUND

• **IBD** is a complex and chronic condition
  - Affects approximately 500,000 people in the US
  - 30%-40% of UC patients require surgery

• **Etiology is unclear (multifactorial)**
  - UC is thought to result from a dysregulated mucosal immune response in genetically susceptible individuals
    - Appendectomy & smoking protective for UC

• **Bimodal Distribution**
  - Peak incidences between 15-30 years & 50-70 years
Clinical Presentation:

• Ulcerative colitis is a dynamic disease that can be characterized by exacerbations and remissions

• Signs & symptoms include:
  - Bloody diarrhea
  - Tenesmus
  - Crampy abdominal pain
  - Toxicity: fever, tachycardia, leukocytosis
Extraintestinal Manifestations:

- **Primary sclerosing cholangitis**
  - characterized by fibrosis of the bile ducts
- **Arthritis**
- **Ankylosing spondylitis & sacroiliitis**
- **Erythema nodosum**
  - most common cutaneous manifestation of IBD
  - tender, subcutaneous, red, raised nodules
- **Pyoderma gangrenosum**
  - An ulcerated, necrotizing wound with ragged edges
- **Ophthalmologic conditions (uveitis, iritis, scleritis)**
ULCERATIVE COLITIS

- Diagnosis is based on the combination of clinical presentation, endoscopic appearance, and biopsies of the colonic mucosa

- Symptoms:
  • Bloody diarrhea, tenesmus, crampy abdominal pain

- Endoscopy:
  • Continuous mucosal inflammation always has rectal involvement

- Histology:
  • Crypt architecture distortion
  • Cryptitis & crypt abscesses
  • Basal plasmacytosis
  • No granulomas
ULCERATIVE COLITIS

- Diagnosis is based on the combination of **clinical presentation, endoscopic appearance, and biopsies of the colonic mucosa**

- Radiographic Studies:
  - CT/MR Enterography
  - Small bowel follow through

- Labs:
  - CBC, BMP, ESR, CRP
  - Stool studies—to rule out other infectious colitides
  - Biopsy to rule out CMV
  - Perinuclear anti-neutrophilic cytoplasmic antibody (pANCA)
## Inflammatory Bowel Disease

<table>
<thead>
<tr>
<th>Ulcerative Colitis</th>
<th>Crohn’s Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confluent erythema</td>
<td>Patchy, asymmetric erythema</td>
</tr>
<tr>
<td>Granularity</td>
<td>Linear, serpiginous ulcers</td>
</tr>
<tr>
<td>Loss of vascular markings</td>
<td>Deep ulcerations (&quot;cobblestone&quot; appearance)</td>
</tr>
<tr>
<td>Mucopurulence</td>
<td>Mucopurulence</td>
</tr>
<tr>
<td>Pseudopolyps</td>
<td>Pseudopolyps</td>
</tr>
</tbody>
</table>
Ulcericative Colitis

Medical Management:

• Medications remain the primary treatment of ulcerative colitis
  - Goals: Induce and maintain remission of symptoms and mucosal inflammation
  - The approach to therapy is determined by the extent of involvement and the severity of the disease at the time of presentation
<table>
<thead>
<tr>
<th>Classification of Severity of Ulcerative Colitis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activity</strong></td>
</tr>
<tr>
<td># of bloody stools per day</td>
</tr>
<tr>
<td>Temperature</td>
</tr>
<tr>
<td>Heart Rate</td>
</tr>
<tr>
<td>Hemoglobin</td>
</tr>
<tr>
<td>ESR</td>
</tr>
</tbody>
</table>
**Mayo Score**

<table>
<thead>
<tr>
<th>Frequency of bowel movements</th>
<th>Rectal Bleeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 = Normal for the patient</td>
<td>0 = No blood</td>
</tr>
<tr>
<td>1 = 1-2 stools/day in addition to the usual</td>
<td>1 = Blood streaks in less than half of evacuations</td>
</tr>
<tr>
<td>2 = 3-4 stools/day in addition to the usual</td>
<td>2 = Evidence of fresh blood in most of the evacuations</td>
</tr>
<tr>
<td>3 = &gt;5 stools/day beyond the usual</td>
<td>3 = Bowel movements with fresh blood</td>
</tr>
</tbody>
</table>

**Endoscopic findings**

0 = Normal mucosa or inactive disease
1 = Mild disease (enanthema, loss of vascular pattern, mild friability)
2 = Moderate disease (obvious enanthema, loss of vascular pattern, friability, erosions)
3 = Severe disease (spontaneous bleeding, ulceration)

**Global Medical Assessment**

0 = Normal
1 = Mild disease
2 = Moderate disease
3 = Severe disease

<table>
<thead>
<tr>
<th>Scores (Points)</th>
<th>Disease severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 2 and no subscore &gt;1</td>
<td>Clinical remission</td>
</tr>
<tr>
<td>3-5</td>
<td>Mild activity</td>
</tr>
<tr>
<td>6-10</td>
<td>Moderate activity</td>
</tr>
<tr>
<td>11-12</td>
<td>Severe activity</td>
</tr>
</tbody>
</table>
# Ulcerative Colitis

## Therapy for Ulcerative Colitis (Inducing Remission)

<table>
<thead>
<tr>
<th>Mild Disease</th>
<th>Moderate Disease</th>
<th>Severe Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Sulfasalazine OR mesalazine OR topical therapy</td>
<td>• Sulfasalazine and prednisone</td>
<td>• Admission with IV steroids</td>
</tr>
<tr>
<td>• Oral course of prednisone</td>
<td>• Addition of an immunomodulator if recurrent flares (azathioprine or 6-MP)</td>
<td>• Immunomodulator</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Escalation of therapy with addition of either IV cyclosporin or 3 doses of IV infliximab</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Surgery may be indicated if above fails</td>
</tr>
</tbody>
</table>
Indications for Surgery:

- **Acute**
  - Perforation
  - Hemorrhage
  - Fulminant Colitis/Toxic Megacolon

- **Chronic**
  - Intractability (failed medical management)
  - Neoplasia/Dysplasia
  - Growth Retardation
**Surgical Approaches:**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proctocolectomy with ileostomy</td>
<td>1940’s</td>
</tr>
<tr>
<td>Ileorectal anastomosis</td>
<td>1950’s</td>
</tr>
<tr>
<td>Proctocolectomy with Kock pouch</td>
<td>1960’s/70’s</td>
</tr>
<tr>
<td>Colectomy with ileoanal anastomosis</td>
<td>1980’s</td>
</tr>
</tbody>
</table>
Ulcereative Colitis

Pouch Configurations:

J-pouch  S-pouch  W-pouch
Making the internal pouch

Ileum

Ileostomy

Internal pouch

Anal sphincter muscle

Anal canal

Ileal Pouch Anal Anastomosis
Ileal Pouch Anastomosis

Double-stapled Anastomosis
ILEAL POUCH ANASTOMOSIS

Hand-sewn Anastomosis (Mucosectomy)
## Hand-sewn vs. Double-stapled

### Summary

<table>
<thead>
<tr>
<th>Hand-Sewn Anastomosis</th>
<th>Double-Stapled Anastomosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Excellent long-term function</td>
<td>• Excellent long-term function</td>
</tr>
<tr>
<td>• No disease recurrence</td>
<td>• Higher resting &amp; squeeze pressures</td>
</tr>
<tr>
<td>• Higher rates of anastomotic stricture</td>
<td>• Improved nocturnal continence</td>
</tr>
<tr>
<td>• Possible cancer risk</td>
<td>• Possibility of disease recurrence</td>
</tr>
<tr>
<td>• Surveillance required</td>
<td>• Possible cancer risk</td>
</tr>
<tr>
<td></td>
<td>• Surveillance required</td>
</tr>
</tbody>
</table>
## 2-Stage vs. 3-Stage IPAA

Patient selection is key!!!!

<table>
<thead>
<tr>
<th>2-Stage IPAA</th>
<th>3-Stage IPAA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. TPC with IPAA &amp; diverting loop ileostomy</td>
<td>1. TAC with end ileostomy</td>
</tr>
<tr>
<td>2. Ileostomy closure</td>
<td>2. Completion proctectomy with IPAA &amp; diverting loop ileostomy</td>
</tr>
<tr>
<td>3. Ileostomy closure</td>
<td>3. Ileostomy closure</td>
</tr>
</tbody>
</table>

TPC = Total proctocolectomy  
TAC = Total abdominal colectomy  
IPAA = Ileal pouch anal anastomosis
### INFLIXIMAB & INFECTIOUS COMPLICATIONS

<table>
<thead>
<tr>
<th>Institution</th>
<th>Year</th>
<th># of patients (IFX pts)</th>
<th>IFX Window (Median )</th>
<th>IFX increased complications?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cedars Sinai</td>
<td>2007</td>
<td>151 (17)</td>
<td>2 months</td>
<td>No</td>
</tr>
<tr>
<td>Mayo Clinic</td>
<td>2007</td>
<td>301 (47)</td>
<td>2 months</td>
<td>Yes</td>
</tr>
<tr>
<td>Cleveland Clinic Ohio</td>
<td>2008</td>
<td>523 (85)</td>
<td>13.5 weeks</td>
<td>Yes</td>
</tr>
<tr>
<td>Mass General Hospital</td>
<td>2008</td>
<td>413 (101)</td>
<td>12 weeks</td>
<td>No</td>
</tr>
<tr>
<td>Mt. Sinai (Canada)</td>
<td>2016</td>
<td>758 (196)</td>
<td>Up to 180 days</td>
<td>No</td>
</tr>
</tbody>
</table>
Outcomes of TPC & IPAA

Early complications:
- Small bowel obstruction (7%)
- Anastomotic leak/Pelvic sepsis (5-10%)
- Wound infection (5-10%)
- Sexual dysfunction (2%)
- DVT & Portal vein thrombosis

Late complications:
- Small bowel obstruction (18-22%)
- Infertility (up to 30%)
- Anastomotic stricture (5%)
- Pouchitis (30-50%)
Outcomes of TPC & IPAA

Functional outcome

- Frequency: 5-8 stools/day (1-2 stools/night)
- Nocturnal seepage: 20-30%
- Medication use: 30%
- Pouch loss: 5-8%
- Quality of life comparable to general population
IPAA—Outcomes @ 20 Years

Hahnloser et al., BJS 2007
AGE AT THE TIME OF IPAA

• Cleveland Clinic Data:
  1,895 patients: (mean follow up 4.6 ± 3.7 years)
  - Younger than 45 years (n=1,410)
  - 46–55 years (n=289)
  - 56–65 years (n=154)
  - Older than 65 years (n=42)

• Incontinence and night time seepage were more common in older patients

• No difference in pouch failure (4.1%), 24-hour bowel frequency, or quality of life

Delaney CP et al., DCR 2003
AGE AT THE TIME OF IPAA

- **Mayo Clinic Data:**
  
  2,002 patients: (mean follow up 10.1 ± 5.7 years)
  
  - Younger than 45 years (n=1,688)
  - 46–55 years (n=249)
  - Older than 55 years (n=65)

- Day- and nighttime incontinence were increased in the older group (>55 years)

- No difference in pouch failure (5.9% @ 10 yrs.), stool frequency, or quality of life

Chapman JR et al., DCR 2005
UC and Dysplasia

- UC patients are at increased risk of developing CRC
- High-grade dysplasia (HGD) and adenocarcinoma are clear indications for proctocolectomy
- The optimal management of low-grade dysplasia (LGD) is more controversial
  - 20% risk of HGD or cancer when immediate TPC is performed for LGD
  - Multifocal LGD is associated with ~6-fold increased risk of progression to advanced neoplasia

Zisman T. et al., Inflammatory Bowel Disease 2012
**Fig. 1** Management of dysplasia in inflammatory bowel syndrome (IBD). *LGD*, low-grade dysplasia; *HGD*, high-grade dysplasia; *DALM*, dysplasia-associated lesion or mass

LOW-GRADE DYSPLASIA

• Indications for Colectomy in LGD:
  - Patients who developed HGD
  - Patients with an unresectable dysplastic mass
  - Patients with 3 biopsies with LGD at a single colonoscopy
  - Patients who had sufficient (inflammatory) polyposis to make surveillance risky
  - Patients unwilling to undergo surveillance

Zisman T. et al., Inflammatory Bowel Disease 2012
Penn Colorectal Surgery

# 1 in the Region