Surgical Management of IBD in the Age of Biologics

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Objectives

• Discuss surgical management of IBD
  – When to operate
  – What operation to do

• Discuss how have biologics changed surgical management
  – Are we operating less?
    • Are we doing different operations?
  – Is there an increase in complications?
Indications for Surgery in IBD

• Intractability (Failure of Medical Management)
• Complications of Disease
  – Obstruction / Stricture
  – Abscess/phlegmon
  – Perforation
  – Fistula
  – Bleeding
• Complications of Medical Management
• Cancer
• Patient preference

Ulcerative Colitis
Emergent / Urgent Surgery for UC

- Indications
  - Perforation
  - Sepsis
  - Bleeding
  - Toxic megacolon

- Procedure
  - Total abdominal colectomy, end ileostomy

UC Surgical Options

- Total abdominal proctocolectomy
- Koch pouch
- Ileal pouch anal anastomosis
Total abdominal Proctocolectomy

- “Gold standard”
- Removes all colonic and rectal tissue
- Permanent ileostomy
- Generally only performed in the older patient population

Koch Pouch

- Removes all colonic and rectal mucosa
- Continent ileostomy
- Pouch intubated several times a day
- Few centers perform Koch Pouch
- 50% complication rate / re-operative rate
Ileal Pouch Anal Anastomosis (IPAA)

- IPAA
  - Cures disease
  - “normal” defecation
  - Essentially no risk of colorectal cancer
  - Ileostomy is temporary
  - 90% + success rate
  - Main complication is pouchitis
IPAA results

- Average Patient
  - 5-6 BM/day, possibly 1/night
  - Continent
  - Takes fiber/anti-motility agent

Who is not a candidate for IPAA?

- Patients with significant incontinence / sphincter disruption
- Morbid obesity
- Patients whose lifestyle won’t allow for frequent bowel movements.
Crohn’s Disease

• Surgical Management Issues
  – Never cured
  – Multiple surgical resections can lead to short gut
  – Perianal disease may require permanent diversion
Ileocolonic disease

- Limited uncomplicated ileocolonic disease
  - Resection and anastomosis
  - Open or laparoscopic
- Phlegmon
  - Resection and anastomosis
  - Open or laparoscopic (depends on size of phlegmon)
- Abscess
  - Percutaneous drainage followed by resection

Intrabdominal Abscess

- Usually in association with ileocolonic disease
  - CT guided percutaneous drainage if possible
  - Intravenous antibiotics 5-7 days
  - High dose steroids
  - Ileocolonic resection
    - Use of ileostomy depends on amount of residual inflammation/infection
Intestinal Complications Of Crohn’s Disease

OBSTRUCTION

String sign
Small Bowel Disease

- Management Issues
  - Tends to be more virulent than ileocolonic disease
  - Recurs more frequently
  - Concern for short bowel

- Surgical options
  - Resection
  - Strictureplasty
  - Bypass (rarely used)
Strictureplasty

- Saves bowel, no resection
- Appropriate for short isolated strictures
- Can perform multiple strictureplasties at one time
- When disease recurs it recurs at a site distinct from the strictureplasty
Heineke-Mikulicz

Finney Stictureplasty
Other Strictureplasty Methods

Jaboulay Strictureplasty

Michelassi Strictureplasty

Fistulas

- Intrabdominal
  - Entero-entero
  - Entero-colonic
  - Entero or colo-vesicle
  - Entero or colo-vaginal
- Enterocutaneous
- Perianal
- Rectovaginal
Intestinal Complications of Crohn’s Disease

FISTULA

Mesenteric
Entero-enteric
Entero-vesical
Retroperitoneal
Entero-cutaneous
Surgical Treatment of Intraabdominal Fistulas

- Resect the diseased intestine
- Rarely need to resect the organ/tissue that has been fistulized to
  - Normal small bowel and colon can be left in situ
  - Rarely resect bladder, vagina
Colonic +/- Rectal Disease

- Sometimes difficult to distinguish from UC
- Limited resection vs total abdominal colectomy
- Options are limited if rectum involved
  - Usually will also have perianal disease
  - Often the patient will need a stoma

Segmental Colonic Disease

Segmental Resection
- Spares bowel
- May need further surgery

Total Abdominal Colectomy
- “once and done”
Segmental Disease

- Right sided disease
  - Ileocolectomy with ileotransverse anastomosis
  - TAC
- Transverse colonic disease
  - Hemicolecotomy vs. TAC
- Left sided disease
  - TAC
  - Left hemicolecotomy

Perianal Disease

- Skin tags
- Abscess
- Fistula
- Fissures
- cancer
Perianal Disease

- Abscess
- Fistula
Abscess Sites

Perianal Abscess Treatment

- Treatment goal: Control Sepsis
- Simple
  - incision and drainage
- Complex
  - incision and drainage
  - catheters
  - irrigation
  - Cipro / Flagyl
**Perianal Fistulae**

- Epithelialized tract from anal canal to skin
- Source
  - Infected gland in anal canal
  - Ulceration of the rectal wall or anal canal erodes through the sphincters
- Location
  - Only 1/3 are “simple”
  - Usually multiple openings, complex fistulae: rectovaginal and rectourethral
  - Open onto: scrotum, labia, thighs, buttocks
- Watering Can Perineum
- Often minimally symptomatic
  - Pain suggests underlying abscess

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**Fistulas**

- Evaluation
  - Exam under anesthesia (EUA)
    - gold standard
    - can diagnose and treat simultaneously
  - Fistulgram
  - MRI
  - US
- Treatment goals
  - control sepsis, prevent recurrent abscesses
  - preserve function if possible
Setons

- Soft, non-cutting
- Provide drainage
- Control sepsis
- Often “permanent”

Complex Fistulas

- Setons to control fistulae
- Drains to control and irrigate abscess cavities
- Maximal medical therapy
- Often require proctectomy
Rectovaginal Fistulas

- 5-10% of patients with CD proctitis
- usually an indication of severe rectal disease
- Poor prognosis for retaining rectum
- Local repairs are possible with quiescent rectal disease
  - high recurrence rate with flares

Perianal Fistula Management With Infliximab

- Placement of prophylactic setons in patients with perianal fistulae prior to Infliximab therapy
  - 3 doses of Infliximab at 0, 2, 6 weeks
  - Removed between 2nd and 3rd infusions
- Placement of all patients on prophylactic antibiotics during treatment
- High index of suspicion for development of abscesses.
Ileostomy

• Used to protect anastomosis when disease or tissues are poor, long term steroids
• Also used to divert the fecal stream from proctitis or perianal disease
  – Symptomatic relief
  – Recurs when stoma closed

Are biologics decreasing the number of surgical procedures in IBD patients?

• Yes?
  – Increase?
  – Decrease?
• No?
• Different?
Decrease in Surgery

• Meta-analysis
  – Decrease in major surgery for CD
  – Unclear in UC
  – Is follow-up long enough?
    • Maybe it just delays surgery

Costa et al, Inflamm Bowel Dis 2013: 19:2098-2110

Increase in surgery / no change in resections

• Nationwide Inpatient Sample (CD: 1993-2004)
  – Resections
    • No change in Right hemicolecotomy
    • Slight decrease in left colon and rectal resections
  – Fistulas
    • Increase in small intestinal fistula surgery by 60%
    • No change at other sites
  – Perianal disease
    • Number of perianal abscess drainages tripled
  – Overall: no change in bowel resections, c/w other studies

Is the Surgery Different?

- Penn State Hershey IBD Center Data
- 2 Studies
  - 1998-2000
  - 1989-2009

Purpose

To evaluate the role of Infliximab in supplanting surgery for fistulizing Crohn’s disease
Methods

• Retrospective chart review of all patients who received Remicade at the Milton S. Hershey Medical Center from 9/98-10/00 for fistulizing Crohn’s disease
• Fistulae were divided into 5 categories
  – perianal (PA)
  – enterocutaneous (EC)
  – peristomal (PS)
  – intraabdominal (IA)
  – rectovaginal (RV)

Fistula Response to Remicade

• 23% of patients had a complete response to Remicade
• 46% of patients had a partial response to Remicade
• 31% of patients had no response to Remicade
Surgical procedures in 14 patients

<table>
<thead>
<tr>
<th>PROCEDURE</th>
<th># PERFORMED</th>
</tr>
</thead>
<tbody>
<tr>
<td>EUA, abscess drainage ± seton</td>
<td>2</td>
</tr>
<tr>
<td>Anal dilatation</td>
<td>2</td>
</tr>
<tr>
<td>Bowel resection with stoma revision</td>
<td>4</td>
</tr>
<tr>
<td>Ileocolic resection</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14</strong></td>
</tr>
</tbody>
</table>

Post-Remicade Surgical Intervention

<table>
<thead>
<tr>
<th>RESPONSE</th>
<th>TOTAL</th>
<th>SURGERY</th>
<th>NO SURGERY</th>
<th>PERSISTANT FISTULA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete</td>
<td>6</td>
<td>0</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Partial</td>
<td>12</td>
<td>6</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>None</td>
<td>8</td>
<td>8</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>26</strong></td>
<td><strong>14</strong></td>
<td><strong>12</strong></td>
<td><strong>6</strong></td>
</tr>
</tbody>
</table>
Remicade treatment results by fistula site

<table>
<thead>
<tr>
<th>FISTULA SITE</th>
<th>TOTAL</th>
<th>COMPLETE RESPONSE</th>
<th>SURGERY</th>
<th>PERSISTANT FISTULA*</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA</td>
<td>9</td>
<td>4 (44%)</td>
<td>4 (44%)</td>
<td>1 (12%)</td>
</tr>
<tr>
<td>EC</td>
<td>6</td>
<td>0</td>
<td>3 (50%)</td>
<td>3 (50%)</td>
</tr>
<tr>
<td>RV</td>
<td>3</td>
<td>1 (33%)</td>
<td>0</td>
<td>2 (66%)</td>
</tr>
<tr>
<td>PS</td>
<td>4</td>
<td>0</td>
<td>4 (100%)</td>
<td>0</td>
</tr>
<tr>
<td>IA</td>
<td>4</td>
<td>1 (33%)</td>
<td>3 (75%)</td>
<td>0</td>
</tr>
</tbody>
</table>

*These patients failed Remicade but refused surgery for their persistent fistulae.
PA=perianal fistula, EC=enterocutaneous fistula, RV=rectovaginal fistula, PS=peristomal fistula, IA=intraabdominal fistula

Study Conclusions

- Our overall complete fistula response rate was 23% of which perianal fistulae responded the best with a 44% healing rate.
- In spite of this success, over half the patients in this series still required surgical intervention.
- However, there appeared to be a higher percentage of patients operated on for abscess and stricture formation, presumably as a consequence of rapid healing, in the context of Infliximab therapy.
1989-2009 Study

- Patients who underwent ileocolectomy for CD from 1989-2009
  - Retrospective Chart Review
    - Divided into Infliximab and No Infliximab groups
    - Surgical index: number of ileocolectomies / duration of disease
    - Length of bowel resected

Results

<table>
<thead>
<tr>
<th></th>
<th>Infliximab</th>
<th>No Infliximab</th>
<th>p value</th>
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<tr>
<td>Total Patients</td>
<td>83</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>Age at Diagnosis</td>
<td>24.9 ± 9.3</td>
<td>29.8 ± 13.6</td>
<td>0.01</td>
</tr>
<tr>
<td>Number of ileocolectomies</td>
<td>1.4 ± 0.5</td>
<td>1.5 ± 0.7</td>
<td>0.2</td>
</tr>
<tr>
<td>Time to first ileocolectomy</td>
<td>6.8 ± 6.6</td>
<td>7.5 ± 7</td>
<td>0.4</td>
</tr>
<tr>
<td>Surgical Index</td>
<td>0.12 ± 0.09</td>
<td>0.12 ± 0.01</td>
<td>0.8</td>
</tr>
<tr>
<td>Extent of Resection (TI)</td>
<td>24.17 ± 13.7</td>
<td>25.2 ± 12.7</td>
<td>0.6</td>
</tr>
<tr>
<td>Extent of Resection (Cecum)</td>
<td>6.2 ± 3</td>
<td>9.4 ± 1.0</td>
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Summary

- Study 1
  - No decrease in surgery
  - Increase in strictures
- Study 2
  - No change in time to ileocolectomy
  - No change in surgical index
  - Decreased length of cecum resected

Are Surgical Complications Increased in patients who are treated with biologic therapy?
Are Surgical Complications Increased in patients who are treated with biologic therapy?

- Yes, but it depends on what you read.

Surgical complications with Biologic Therapy

- Infectious complications
  - OR 1.56
  - Rate of complications: 21.7% vs 14.5%
  - Absolute risk increase 7.2%
  - Number needed to harm 14
- Non-Infectious complications
  - OR 1.57
  - Rate of complications: 27.9% vs 18.8%
  - Absolute risk increase 9.1%
  - Number needed to harm 11
- Total Complications
  - OR 1.73
  - Rate of complications: 43.8% vs 28.8%
  - Absolute risk increase 15%
  - Number needed to harm 7

Narula et al, Aliment Pharmacol Ther 2013, 37: 1057-1064
Surgical complications with Biologic Therapy

- CD only
  - Increase in infectious complications
  - Increase in total complications
  - Trend toward increase in non-infectious complications
- UC only
  - No significance

Increase in complications?

Yes
- Narula et al
  - Meta-analysis

No
- Mukta et al
  - UC/CD, laparoscopy
    - 142 / 376 (yes / no biologic)
- Waterman et al
  - Retrospective case control
    - 195 / 278 (yes / no biologic)
Objectives

• Discuss surgical management of IBD
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    • Are we doing different operations? **YES**…
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  – Are we operating less? **NO**
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  – Is there an increase in complications? **DEPENDS**