Surgery for IBD - what’s new?

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I have no disclosures
Outline

- Background
- Crohn’s Disease
- Ulcerative Colitis
- Laparoscopic surgery

- Indications for surgery
- Types of procedures
- Outcomes/complications
Pathogenesis of IBD
IBD - the Hygiene Hypothesis

Autoimmune disorders incidence

Helminths infestation incidence

Courtesy of Joel Weinstock
Antibiotics have a prolonged impact on the human gut microbiome

Jernberg et al, *Microbiology* 2010
Crohn, Ginsburg, & Oppenheimer

Burrill Bernard Crohn
(1884-1983)
Progression of Crohn's Disease

Indications for surgery:

**Absolute** - free perforation, cancer

**Relative** - intractable symptoms from obstruction, fistulas, etc.
Management of Crohn’s disease
Crohn’s stricture of the terminal ileum
Ileocecectomy for Crohn's
It’s got to come out, of course, but that doesn’t address the deeper problem.
Post-op recurrence in Crohn’s disease

32 yo female s/p ileocolectomy in 1996

Now with 1 ½ year history of worsening post-prandial RLQ pain

If Crohn’s did not recur, we would operate on everybody. Instead, we generally operate only on patients only who have failed medical Rx and/or have developed complications from the Crohn’s.
Postoperative recurrence rates in Crohn’s disease

Rutgeerts et al. *Gastroenterology* 1990
Is there anything we can do as surgeons to prevent post-op recurrence?

Burrill Bernard Crohn (1884-1983)

In explaining a stenosis which occurred in one of their patients just proximal to a new anastomosis, they wrote: “... the resection had not been carried out sufficiently oral to the lesion completely to eradicate the disease.”
Effect of resection margins on the recurrence of Crohn’s disease in the small bowel

Fazio et.al. (Cleveland Clinic) 1996 Annals of Surgery

131 patients 2 cm vs 12 cm margin from grossly involved bowel. Median f/u = 55.7 months
Recurrence = operation for pre-anastomotic disease

**Conclusion:** Removing extra bowel does not help
Anastomotic techniques

- End-to-end
- Side-to-side stapled
Recurrence of Crohn's disease after ileocolic resection is not affected by anastomotic type: results of a multicenter, randomized, controlled trial.

McLeod et al. *Dis Colon Rectum* 2009

139 pts/group, Colonoscopy at 12 months

- Endoscopic recurrence rate: 42.5 % (end-to-end) vs 37.9 % (side-to-side), $p = 0.55$.
- Symptomatic recurrence rate: 21.9 % (end-to-end) vs 22.7 % (side-to-side), $p = 0.92$. 
Anastomotic techniques

End-to-end  Side-to-side stapled  Kono-S

No evidence at this point of a difference in recurrence rates

Antimesenteric functional end-to-end handsewn (Kono-S) anastomosis. Fichera, Zoccali and Kono *J Gastro Surg* 2012
Infliximab prevents Crohn's disease recurrence after ileal resection
Regueiro et al, University of Pittsburgh *Gastroenterology* 2009

24 pts who had ileocolonic resection were randomized to receive either placebo or IV infliximab, administered within 4 wks of surgery and continued for 1 yr

Outcome: endoscopic recurrence at 1 year

Infliximab group = 1 of 11 patients; 9.1%
Placebo group = 11 of 13 patients; 84.6%

Comparative Efficacy of Pharmacologic Interventions in Preventing Relapse of Crohn's Disease After Surgery: A Systematic Review and Network Meta-analysis
Singh et al Mayo Clinic  *Gastro* 2015 Jan;148(1):64-76.
“I’m going to prescribe something that works like aspirin but costs much much much more”
New drugs and surgical decision-making
*A rapidly moving target*

- Newer and better drugs may be decreasing the need for *initial* surgery
- Some patients may choose to wait for the next drug to come out
- The need for *subsequent* operations may be decreasing
- Getting off drugs was often a reason to do surgery, but not so much now
- Risks of surgical complications may be increased by some medications, impacting the timing of surgery and in some cases the incidence of temporary stomas
Minimal surgery for chronic obstruction in patients with extensive or universal Crohn’s disease

They were the first to apply strictureplasty to short, narrow segments of fibrotic Crohn’s disease.
Surgery for Crohn’s Disease: Strictureplasty

An alternative to resection in “stenosing” disease


- 698 strictureplasties in 162 patients
- Cumulative 5 year re-operative recurrence = 28%
- Re-stricture at previous strictureplasty site = 5%
- Most re-operations performed for new sites of disease
Finding small intestinal strictures at surgery
Balloon dilation of Crohn’s disease strictures

237 dilatations in 138 patients (84% anastomotic). Immediate success = 97%, 5% serious complication rate. F/U = 5.8 yrs:

-- new dilatation = 46%
-- surgery = 24%

Thienpont et al. Gut 2010
Progression of Crohn's disease

- Stricture formation
- Free perforation
- Contained abscess
- Fistula

mild Crohn’s
Crohn’s intra-abdominal abscess

Pre-operative drainage (surgical vs IR)

vs

Early surgical resection
Does IR drainage work for Crohn’s intra-abdominal abscesses?

For a contained, CD-related intra-abdominal abscess, percutaneous IR drainage almost always works to treat or get control of the abscess, at least in the short run.

Gervais et al MGH  Radiology 2002
96% success rate
Outcomes of Crohn's disease presenting with abdominopelvic abscess.
Da Luz Moreira et al  Cleveland Clinic  *Dis Colon Rectum* 2009

Retrospectively reviewed 94 patients presenting with CD-related intra-abd abscesses. They compared percutaneous drainage followed by elective surgery vs. initial surgery.

**CONCLUSION:** When feasible, percutaneous drainage is the most effective strategy from the perspective of patients and third-party payers.

Approx 50% of patients will need surgery with one yr.
Intra-abd Abscess

location matters

Resection with primary anastomosis

Resection with temporary stoma
Percutaneous drainage - controlled fistula. Delayed surgery once the infection was well controlled.
Internal fistulas

- Entero-entero fistula
- Ileo-sigmoid fistula
- Ileo-vesicle fistula
- Bladder
Fistula from ileum to sigmoid colon
Enteric fistulas

General Principles

- Underlying disease is usually very severe.
- Diseased bowel erodes into tissues that are “innocent bystanders” – normal loop of adjacent small bowel, sigmoid colon, bladder.
- Surgery is not mandatory, but is often indicated due to severity of symptoms.
- They may temporarily heal over, but probably never go away completely.
Enterocutaneous fistulas in Crohn’s disease
Enterocutaneous fistulas
Principles of management

- Control sepsis
- Replete fluids, electrolytes
- Manage/control open wound – skin protection
- Make a plan – etiology is key: post-op vs spontaneous
- Timing of surgery
  - weeks for spontaneous process
  - > 3 months for post-operative fistula
- Nutrition
Enterocutaneous fistula
To feed or not to feed?

There is no evidence that “artificially” changing the amount of fistula output will affect whether or not it will heal. In other words, there is no need to starve your patient or to use Somatostatin Rx.

NPO/TPN +/- Somatostatin should only be used in cases where wound/skin problems cannot otherwise be effectively controlled.

Torres et al, Rochester, NY Arch Surgery 1992
Scott et al, Salford, UK Acta Gastro Belg. 1993
Use the gut
Enterocutaneous fistula

Surgical approach

- Pre-op management
- Timing – if possible, delay for at least 3-4 months in post-op setting
- “minimal/direct” approaches ALWAYS fail
- Must fix the bowel problem and deal with the abdominal wall
Jejunal loops entering and leaving fistula site
Midline fascial closure

Left-sided component separation

Midline fascial closure

Right-sided component separation
Peri-anal Crohn’s Disease

Principles of treatment

- Approx. 1/3 of Crohn’s patients
- Pain = un-drained pus until proven otherwise - EUA
- Beware of sphincter function
- Liberal use of setons – combined surgical/medical approach
- Last resort – divert the fecal stream
Ulcerative Colitis

- 250,000 - 500,000 affected in the USA
- 30 - 40 % will have surgery at some point
- Indications for surgery:
  - intractable symptoms
  - intolerance to medical Rx
  - dysplasia/cancer
Surgical options in Ulcerative Colitis

Brooke ileostomy
Ileo-rectal anastomosis
IPAA
Development of the IPAA operation for Ulcerative Colitis

1947  Anal ileostomy with preservation of the sphincter
       Ravitch and Sabiston  *Surg Gynecol Obstet*

       This was a straight ileoanal anastomosis. It
       avoided a permanent ileostomy, but the
       functional results were poor.

1978  Proctocolectomy without ileostomy for
       Ulcerative Colitis  Parks and Nicholls  *BMJ*

       Added an ileal reservoir that provided
       better functional results.
IPAA - evolution in technique

S-pouch with hand-sewn anastomosis

J-pouch with double stapled anastomosis

Easier and safer operation, decreased early morbidity, and improved long-term functional outcomes
1-, 2-, or 3-step IPAA?

One-stage colectomy/J-pouch/no ileostomy
  - Elective operation in selected patients

Total colectomy/J-pouch/diverting ileostomy
  - Surgery in the setting of acute flare or elective operation

Subtotal colectomy/hartmann’s pouch/ileostomy
  - Unsure of diagnosis – UC vs Crohn's
  - Urgent/emergent surgery in the setting of hypotension, sepsis, perforation, etc.
Ileal pouch

Columnar cuff

ATZ

Squamous epithelium

Ileo-anal anastomosis

J-pouch staple line

Ileal pouch

Columnar cuff

ATZ

Squamous epithelium

J-pouch anatomy
J-pouch

Rectal cuff
Quality of Life

Bad colitis

IPAA

Normal
Prospective, Age-Related Analysis of Surgical Results, Functional Outcome, and Quality of Life After Ileal Pouch-Anal Anastomosis

Delaney et al  Cleveland Clinic Annals of Surg 2003

1895 patients over 17 yr period, grouped by age at surgery.

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Results: No differences in BM/day (5-6) or BM/night (1-2)
Complications associated with the IPAA operation

Early
- SBO (~10%)
- Anastomotic stricture (~15%)
- Pouch leak/sepsis (~10%)

Long term
- Pouchitis (up to 50%)
- Cuffitis (~15%)
- Irritable Pouch Syndrome (?)
- Pouch failure (8-10%)
Pouch Failure Rates

- Ulcerative Colitis: 1.5 - 8%
- Indeterminate Colitis: 5 - 20%
- Crohn’s Disease: 15 - 50%
Evaluation of disabling pouch symptoms

- Review previous op notes and pathology - technical problem vs chronic disease
- Careful history to correlate symptoms with objective findings
- X-rays and pouchoscopy
Sepsis was early post-op
J-pouch looked healthy

Sepsis was late post-op
J-pouch looked terrible
Incisions

What surgeons used to say

“Incisions heal side to side, not end to end”

“Big surgeons make big incisions”

The lap chole experience changed everything
Laparoscopic Bowel Surgery

Laparoscopic surgery is better because:

- Smaller/Better Incisions
- Less post-op pain
- Decreased hospital stays
- Quicker overall recovery
- Better cosmetic result

ERAS pathways have made a huge difference
Laparoscopic Bowel Surgery

• **Rule #1:** Think about the incision
  – *Length* - smaller is better
  – *Location* - lower abdomen is better
  – *Direction* - transverse is better
Laparoscopic surgery for complicated CD?

NO

YES
Laparoscopically-assisted surgery for IBD

The lap-assisted pfannenstiel approach provides an ideal combination of good exposure and excellent cosmesis.
THANK YOU

Massachusetts General Hospital, established 1811
"Nurse, get on the internet, go to SURGERY.COM, scroll down and click on the 'Are you totally lost?' icon."