SURGICAL MANAGEMENT OF IBD: ULCERATIVE COLITIS

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44 year old male with diagnosis of ulcerative colitis for approximately 20 years. Asymptomatic at presentation with 2 bowel movements daily

PMHx: Hgb SC disease
PSHx: None
Meds: Sulfasalazine 1500 mg BID
All: NKDA
Case presentation

- History of 1 colonoscopy in his home country at diagnosis
- Colonoscopy 3/07
  - Moderate to severe pancolitis extending from the anal verge to the terminal ileum
  - 4 mm polyp rectum: Inflammatory polyp
  - 4 mm polyp transverse colon: Inflammatory polyp
Case presentation

- Colonoscopy 4/08
  - Pancolitis
  - Nodular area in the colon: High grade dysplasia
- Pt was referred to surgery clinic however deferred intervention at that time
- 3/09: Pt had obtained a 2\textsuperscript{nd} review of his pathology slides. “Poor quality” and could not be evaluated
- Internal review of pathology slides agreed he had high grade dysplasia
Case presentation

- Evaluated by surgery 3/09
- Colonoscopy: Mass in the ascending colon.
- Pathology: high grade dysplasia in the cecum, ascending colon (mass), descending colon
Case presentation

- **Operative procedure:**
  - Open proctocolectomy with J-pouch ileoanal anastomosis and diverting loop ileostomy

- **Postoperative Course**
  - POD #1: Tolerating clear liquid diet
  - POD #2: Tolerating regular diet
  - POD #7: Discharged home
  - Readmitted POD #10 for dehydration: Ileostomy output had increased to 1600cc/24 hours
  - Discharged home after 4 days
Case presentation

- **Pathology**
  - 2 areas of moderately differentiated adenocarcinoma
  - 4/21 lymph nodes + for carcinoma
  - Negative resection margins
  - T3N1Mx: Stage IIIB
  - CEA <0.5

- Pt is declining chemotherapy at this time
QUESTIONS?
## Indications for Surgery in Ulcerative Colitis

<table>
<thead>
<tr>
<th>Urgent Surgery</th>
<th>Elective Surgery</th>
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<tbody>
<tr>
<td>Ongoing hemorrhage</td>
<td>Failure of medical therapy</td>
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<tr>
<td>Toxic Megacolon</td>
<td>Intolerable side effects of medical therapy</td>
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<td>Colonic perforation</td>
<td>Development of dysplasia</td>
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<td>Fulminant ulcerative colitis</td>
<td>Carcinoma</td>
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<td>Colonic stricture</td>
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<td>Growth retardation in children</td>
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</table>
Indications for Emergency Surgery in Ulcerative Colitis

- Massive lower GI hemorrhage
  - Rare
- Toxic megacolon
  - Present with signs of sepsis e.g. tachycardia, tachypnea, fever, acidosis, leukocytosis
  - Colonic dilatation on a flat plat of the abdomen (6 – 8 cm)
  - If no evidence of perforation, medical management may be attempted
    - Serial abdominal exams
    - No improvement within 24 – 72 hours or clinical deterioration is an indication for operative intervention
    - Patients previously on high dose steroids may not exhibit peritoneal signs
# Surgical Alternatives for Ulcerative Colitis

<table>
<thead>
<tr>
<th>Emergency Operation</th>
<th>Elective Operation</th>
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<tbody>
<tr>
<td>Subtotal colectomy with end ileostomy</td>
<td>Panproctocolectomy with permanent end ileostomy</td>
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<tr>
<td>Panproctocolectomy with permanent end ileostomy</td>
<td>Subtotal colectomy with ileorectal anastomosis</td>
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<td></td>
<td>Proctocolectomy with continent ileostomy (Kock pouch)</td>
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<tr>
<td></td>
<td>Panproctocolectomy with IPAA with or without diverting ileostomy</td>
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</table>
Indications for Emergency Surgery in Ulcerative Colitis

- Construction of a pouch is avoided in the emergency setting.
- Standard procedure: SUBTOTAL COLECTOMY WITH END ILEOSTOMY
  - Sigmoid is usually stapled above the peritoneal reflection so that future construction of J-pouch is easier.
  - Staple line of the sigmoid stump is brought above the fascia but below the skin of the inferior midline abdominal wound.
Advantages of long rectal stump with subtotal colectomy

- 1/3 of patients will have breakdown of the rectal stump. Suturing the stump to the inferior wound creates a controlled fistula rather than pelvic sepsis.
- On subsequent reoperation:
  - Easy identification of rectosigmoid stump
  - Rectal dissection can occur in virgin planes, decreasing chance of autonomic nerve injury
Surgical options for Ulcerative Colitis in the Elective Setting

- **Proctocolectomy and Ileostomy**
  - One stage procedure & curative
  - Associated with lowest complication rates
  - Indicated in patients with poor sphincter tone
  - Permanent ileostomy therefore some patients have altered body image

- **Colectomy & Ileorectal Anastomosis**
  - Rarely performed
  - Minor rectal disease and patient is not on any medical therapy
  - 25% of patients report unacceptable rates of stool frequency due to persistent rectal inflammation
Kock Ileostomy

- 1st described in 1963 by Dr. Kock
- Construct an S pouch using ~ 60 cm of terminal ileum
- Part of the ileum is intussuscepted into the pouch to create a ‘nipple valve’
- Outlet is secured to the skin and can be cannulated for evacuation
Kock Ileostomy

- Rarely performed due to high degree of complications with the nipple valve
- Studies report valve slippage rates of 30 – 50 %
- Inability to cannulate pouch
Ileal pouch-anal anastomosis (IPAA)

**History**
- 1933 Nissen performed ileoanal anastomosis on a pt with familial adenomatous polyposis (FAP)
- 1947 Ravitch and Sabiston removed rectal mucosa, pulled the ileum through muscular cuff forming an anastomosis at the dentate line
- 1978 Parks and Nicholls created a pouch in an ‘S’ configuration that was handsewn to the anus after mucosectomy
- J pouch was conceived by Dr. Utsunomiya
Pouch configurations

- J pouch
- S pouch
- W pouch
Preoperative considerations for IPAA

- **Indications:**
  - Ulcerative colitis
  - FAP

- **Contraindications:**
  - CROHN’S DISEASE
    - Increased rate of postoperative pelvic sepsis
    - Loss of the pouch occurs in 1/3 of pts
    - All patients must be examined for signs of perianal Crohn’s disease and skip lesions in the small bowel
  - History of extensive small bowel surgery
  - Sphincter trauma or dysfunction
  - Advanced carcinoma of the rectum
Effect of age on IPAA

- Many surgeons do not offer surgery to pts over 65 years of age without anal manometric studies
- Age related decline in sphincter function
- Farouk et al reported increased nocturnal stool frequency, fecal incontinence and consumption of constipating medication was higher in patients 45 years and older
- While functional results were inferior, there was no significant difference in surgical complication rates

Farouk et al Functional outcomes after ileal pouch-anal anastomosis for chronic ulcerative colitis Ann Surg 2000 231 919 - 926
IPAA technique

- **GOLD STANDARD**: J POUCH
- Modified dorsolithotomy & Tredelenberg position
- Perform abdominal proctocolectomy
- Terminal ileum is divided just proximal to the ileocecal valve
- Rectal dissection carried out to the level of the levator complex
- 2 options for anastomosis:
  - Double stapling technique
  - Handsewn anastomosis
Division of distal rectum with TA stapler

- Leaves some rectal mucosa behind
- Can leave too long of a rectal stump
Formation of the J pouch

- Two 15 – 20 cm limbs of the terminal ileum are measured and folded back on themselves
- Apical enterotomy
- Serial firings of linear stapler
Stapled IPAA

Anvil which is secured with a pursestring in the pouch

Completed J pouch
Handsewn anastomosis

- Mucosectomy is performed
- Inject saline/epinephrine solution into the submucosa
- Remove intact rectal mucosa from dentate line to the proximal margin of the rectal cuff
- Single layer 2-0 absorbable full thickness sutures through pouch to the level of the dentate line
Mobilization of terminal Ileum

- Apex of the pouch should reach below the inferior border of the pubic bone.

- Mobilize the small bowel mesentery up to the duodenum and ligament of Treitz.

- Incise the surface of the mesentery at multiple points.

Visit www.downstatesurgery.org for more information.
Laparoscopic IPAA

- Can be performed either with ‘pure’ laparoscopic technique vs hand assisted method
- Hand assisted
  - Lower midline incision or a transverse Pfannenstiel incision at the start of the case
  - Colectomy via hand assisted method
  - Rectal resection performed via open technique
- Laparoscopic method
  - Colectomy and rectal mobilization performed down to the pelvic floor
  - Rectum transected laparoscopically
  - Pfannenstiel incision used to construct the pouch and anastomosis made laparoscopically
Complications of IPAA

- Acute
  - Death (<1 %)
  - Wound infection
  - Thromboembolic events
  - Pulmonary complications
  - Pelvic sepsis: 8 – 10 %
  - Hemorrhage
Pelvic Sepsis

- Anastomotic leak from ileoanal anastomosis or from the pouch
- Digital examination
- CT scan to gauge extent of abscess
- Small abscess may be treated with broad spectrum antibiotics
- EUA for failure to respond to antibiotics
- Drainage of abscess via IR or transanal method
- Failure of drainage or generalized peritonitis warrants relaparotomy
  - Diverting loop ileostomy if one is not present
  - Complete anastomotic disruption warrants reconstruction of the pouch or conversion to permanent ileostomy
Hemorrhage

- Occurrence within 24 hours of surgery is likely due to bleeding from the anastomotic sites.
- Most cases are controlled by irrigation with 1:200,000 epinephrine solution.
- If hemorrhage continues then re-evaluate in the OR.
- If discrete bleeding point is identified then suture or inject with epinephrine solution.
- Sources of intraabdominal hemorrhage:
  - Mesenteric vessels
  - Pelvic side wall
Complications of IPAA

- Chronic
  - Pouchitis
  - Small bowel obstruction
  - Fistula formation
  - Sexual Dysfunction
  - Pouch failure
Pouchitis

- Most common complication of IPAA (25 – 30% of patients)
- Symptoms
  - Increased stool frequency and urgency
  - Liquid stool
  - Anal bleeding
  - Malaise
  - Anorexia
  - Low grade fever
- Average time of presentation is 34 months post procedure
Pouchitis

- Diagnosis is NOT based on symptoms alone
- **Pouchitis Disease Activity Index (PDAI)** accounts for symptoms, endoscopic findings and histological changes
- Score of 7 or higher on the PDAI is diagnostic

**Cuffitis**
- Inflammation of the cuff without changes in the pouch

**Irritable pouch syndrome**
- PDAI < 7
- No rectal cuff inflammation
POUCHITIS

<table>
<thead>
<tr>
<th></th>
<th>Pouchitis</th>
<th>Irritable pouch syndrome</th>
<th>Cuffitis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Definition</strong></td>
<td>Non-specific inflammation of the ileal reservoir</td>
<td>Symptoms of pouchitis with PDAI &lt; 7 and the absence of cuffitis</td>
<td>Endoscopic and histological inflammation of the rectal cuff with no inflammation of the pouch</td>
</tr>
<tr>
<td><strong>Symptoms</strong></td>
<td>Frequency, urgency, liquid consistency of stool, cramps, malaise, anorexia, rectal bleeding, low-grade fever, extraintestinal manifestations</td>
<td>Frequency, urgency, abdominal cramps</td>
<td>Frequency, urgency, abdominal cramps, rectal bleeding, extraintestinal manifestations</td>
</tr>
<tr>
<td><strong>Endoscopic findings</strong></td>
<td>Mucosal oedema, contact bleeding, mucosal haemorrhage, ulceration</td>
<td>Normal</td>
<td>Cuff inflammation</td>
</tr>
<tr>
<td><strong>Histological findings</strong></td>
<td>Marked acute and chronic inflammatory infiltration, ulceration, increased crypt depth, marked villous atrophy</td>
<td>Normal</td>
<td>Ulceration, erythema, neutrophil infiltration</td>
</tr>
<tr>
<td><strong>Treatment</strong></td>
<td>Metronidazole 20 mg per kg per day or ciprofloxacin 1000 mg per day for 2 weeks</td>
<td>Dietary modifications, dietary fibre supplements, antidiarrhoeal agents, antispasmodic/anticholinergic agents, antidepressants</td>
<td>2-week course of topical mesalamine or hydrocortisone</td>
</tr>
<tr>
<td><strong>PDAI</strong></td>
<td>≥ 7</td>
<td>&lt; 7</td>
<td></td>
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</tbody>
</table>

PDAI, Pouchitis Disease Activity Index.
Complications of IPAA

- Pouch failure
  - 5 – 10%
  - Early pouch failure is usually secondary to perioperative pelvic sepsis
  - Late pouch failure
    - Poor function
    - Unexpected diagnosis of Crohn’s disease
Is Mucosectomy necessary during IPAA?

- Double stapling technique leads to retention of the anal transition zone (ATZ)
- ATZ defined as area between uninterrupted colorectal type mucosa and uninterrupted squamous epithelium
- Advocates of mucosectomy state that there is a reduced chance of colitis and malignancy
- However, even with mucosectomy the mucosa can regenerate or remain as intramuscular islands
Is Mucosectomy necessary during IPAA?

  - Lovegrove et al Ann Surg Vol 244 July 2006 18 – 26

- Seepage at night occurred more frequently in the hand-sewn group (H: 29.8% - S: 16.8% P<0.001)

- Incontinence was more frequent in the hand-sewn anastomosis group (H: 29.4% - S: 22.1% P = 0.009)
Is Mucosectomy necessary during IPAA?

- Preservation of ATZ produces better long-term functional outcomes
- No consensus on how to proceed if dysplasia is present
- 19 case reports in the English literature of dysplasia and carcinoma after IPAA
## Table 1 Adenocarcinoma after RPC IPAA for UC

<table>
<thead>
<tr>
<th>Reference</th>
<th>Yr</th>
<th>RPC IPAA</th>
<th>Preoperative diagnosis</th>
<th>Pathological diagnosis</th>
<th>Yr to CA</th>
<th>Site of carcinoma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ravitch</td>
<td>1984</td>
<td>H5</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
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<tr>
<td>Stern</td>
<td>1990</td>
<td>H5</td>
<td>Dysplasia</td>
<td>HGD rectum</td>
<td>3</td>
<td>Pouch</td>
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<tr>
<td>Puthu</td>
<td>1992</td>
<td>NR</td>
<td>NR</td>
<td>NR</td>
<td>6</td>
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<tr>
<td>Rodriguez-Sanjuan</td>
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<td>Sequens</td>
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<td>CA rectum</td>
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<td>Vieti</td>
<td>1998</td>
<td>H5</td>
<td>Carcinoma</td>
<td>CA colon, multifocal dysplasia</td>
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<tr>
<td>Iwama</td>
<td>2000</td>
<td>H5</td>
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<td>Rotholtz</td>
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<td>HGD distal margin</td>
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<td>Heuschen</td>
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<td>Laureti</td>
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<tr>
<td>Hyman</td>
<td>2002</td>
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<td>Dysplasia</td>
<td>HGD distal margin &amp; colon</td>
<td>5</td>
<td>Rectal stump</td>
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<td>Baratsis</td>
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<td>CA cecum, multifocal dysplasia</td>
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<td>Bentrem</td>
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<td>Walker</td>
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<td>Dysplastic colon &amp; rectum</td>
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<td>Das</td>
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<td>Ota</td>
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<td>Pedersen</td>
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<td>ATZ</td>
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1Excludes articles not in English and one study using Cavitron Ultrasonic Surgical Aspirator technique for rectal mucosal stripping; 2Yr to presentation of carcinoma after RPC IPAA; H5: Handsewn anastomosis; Stapled: Stapled anastomosis; NR: Not recorded or unknown; UC: Ulcerative colitis; HGD: High grade dysplasia; CA: Carcinoma; LGD: Low grade dysplasia.
Is Mucosectomy necessary during IPAA?

- Pts should undergo annual endoscopic evaluation of the ATZ after stapled IPAA.
- High grade dysplasia in ATZ should be treated with completion mucosectomy with pouch advancement.
- Some surgeons perform mucosectomy if dysplasia is present anywhere in the colon on preoperative evaluation.
- Other surgeons recommend only performing mucosectomy if dysplasia is located in the lower 2/3 of the rectum.
Use of the diverting loop ileostomy

- Traditionally IPAA is a 2 stage procedure
- Avoids pelvic contamination in the event of anastomotic dehiscence
- Some surgeons have been performing single stage IPAA
  - Very careful patient selection
    - Elective
    - Well nourished
    - Not anemic
    - Not taking high dose steroids
    - Well constructed anastomosis
CONCLUSION

- Surgical options for ulcerative colitis
  - Emergent setting: Subtotal colectomy with end ileostomy
  - Elective: Proctocolectomy with J pouch ileoanal anastomosis
- IPAA improves patient’s quality of life from severe ulcerative colitis
- Controversy still exists about necessity of mucosectomy
QUESTION 1

Which of the following is a contraindication for IPAA?
A. Obesity
B. Crohn’s disease
C. Anemia
D. Steroid use
A 30 year old male with known history of ulcerative colitis has been treated in the MICU for 7 days for toxic megacolon. He is febrile to 103 and has developed peritoneal signs. What surgery should be performed?

A. Kock continent ileostomy
B. Diverting loop colostomy
C. Proctocolectomy with J pouch ileoanal anastomosis
D. Subtotal colectomy with end ileostomy
QUESTION 3

Which pouch configuration has been shown to have better functional outcome?

A. J pouch  
B. S pouch  
C. W pouch  
D. No difference
What is the most common long term complication of IPAA?

A. Pouchitis
B. Sexual dysfunction
C. Fistula formation
D. Incontinence
References

- Cameron *Current Surgical Therapy 9th Edition* 2008