Surgical Treatment of Ulcerative Colitis

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Surgery for Ulcerative Colitis

- Need for operation: 25-30%
- Inadequate control of the disease
- Complications of the disease
- Emergent, urgent or elective
- More than one choice: Type of operation based on
  - indication for surgery
  - discussion of treatment options by surgeon and patient

Emergent operation

- Toxic colitis not better with medication
- Toxic megacolon – colonic dilatation
- +/- perforation
- Colonic pneumatosis
- Hemorrhage
- Hospitalization for Anemia, Dehydration, Malnutrition, Failure of medications

Emergent/Urgent Operation

- Total Abdominal Colectomy
- Total Proctocolectomy +/- IPAA
- little time for counseling, stoma marking

Normal Mucosa  Moderate colitis  Severe colitis
Elective Operation
- Response to medical treatment
  - Partial improvement with medication
  - Chronic disability due to disease
  - Unacceptable side effects from medications
  - Inability to taper steroids
- Colorectal Cancer
  - Risk 0.5-1%/yr after 10 yrs.
  - Risk with pancolitis, duration of disease, dysplasia
- Dysplasia
  - Low grade (10%)
  - High grade (30-40%)
  - DALM (>50%)
- Stricture
- Pseudopolyps

Choice of Operation
- Elective (chance to educate)
  - Total Proctocolectomy
- Reconstruction Options
  - End Ileostomy
  - Continent Ileostomy/ Koch Pouch
  - Ileal Pouch / J Pouch / IPAA

End Ileostomy

TPC with End Ileostomy

Advantages
- Remove all disease
  - No medications
  - No risk of cancer
- No issues of bowel function
  - No urgency
  - More liberal diet
  - Less night wakening
  - Fewer trips to BR
- Single operation

Disadvantages
- Permanent stoma
  - Leakage of bag
  - Skin problems
  - Money for supplies
  - Emotional issues
- Perineal wound

Indications:
- Older patients
- Distal rectal cancer
- Weak anal sphincter
- Want one operation
Ileoanal Pouch

**Advantages**
- Remove disease up to anal transition zone
- Avoid permanent stoma
- Evacuate “normally” via anus

**Disadvantages**
- Leaves anal transition zone
- Pelvic surgery
- More than one operation
- Complications
  - Infections
  - Pouchitis
  - Bowel problems
  - Incontinence
  - Night waking
  - Perianal skin irritation
  - Diet restrictions

**Indications**
- Anyone who needs operation except:
  - Emergency
  - Elderly, rectal ca, fecal incontinence
  - Patient preference

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TPC with IPAA

**Advantages**

**Disadvantages**

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**Indications**

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Ileal Pouch for Ulcerative Colitis

**Operative Controversies**
- Patient age (8-79)
- Sew or Staple
- Rectal Cuff follow-up (?)
- Laparoscopic vs. open
- Ileostomy at time of surgery for IPAA

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**IPAA and Age**

<table>
<thead>
<tr>
<th>Age in years</th>
<th>10 yrs FU</th>
<th>#BM</th>
<th>Incontinence(%)</th>
<th>Night seepage(%)</th>
<th>Q Of Life</th>
<th>Q Of Health</th>
<th>Happy w/ outcome</th>
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</thead>
<tbody>
<tr>
<td>&lt;45</td>
<td>5.5</td>
<td>44</td>
<td>39</td>
<td>8.7</td>
<td>8.7</td>
<td>8.5</td>
<td>9.2</td>
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<td>54</td>
<td>48</td>
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<td>8.3</td>
<td>9.2</td>
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<td>55-65</td>
<td>6.2</td>
<td>58</td>
<td>39</td>
<td>8.7</td>
<td>8.7</td>
<td>8.5</td>
<td>9.2</td>
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<tr>
<td>&gt;65</td>
<td>4.6</td>
<td>67</td>
<td>60</td>
<td>7.5</td>
<td>7.5</td>
<td>7.5</td>
<td>8.5</td>
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</tbody>
</table>

Age associated with need for permanent ileostomy

Wibmer et al Br J Surg 2010

Staple or Sew?

– Better function with stapling
  • less incontinence
  • better sampling reflex
– More anal problems in handsewn group
  • abscess, leak
  • stenosis
  • pouch removal

Handsewn vs. Stapled

Meta-Analysis: 21 studies of 4183 patients

<table>
<thead>
<tr>
<th></th>
<th>OR</th>
<th>p value</th>
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</thead>
<tbody>
<tr>
<td>Pouch Failure</td>
<td>1.73</td>
<td>0.06</td>
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<tr>
<td>Night seepage</td>
<td>2.78</td>
<td>0.001</td>
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<tr>
<td>Night pad use</td>
<td>4.12</td>
<td>0.007</td>
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<tr>
<td>Incontinence</td>
<td>2.32</td>
<td>0.009</td>
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<tr>
<td>MRP/MSP</td>
<td>-13.4</td>
<td>0.001</td>
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Handsewn vs. Stapled

<table>
<thead>
<tr>
<th>Variable</th>
<th>Handsewn n=474</th>
<th>Stapled n=2635</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Follow-up (years)</td>
<td>10.50 ± 7.22</td>
<td>6.42 ± 5.54</td>
<td>&lt;.001</td>
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<tr>
<td>Severe complications</td>
<td>101 (21.5%)</td>
<td>666 (16.9%)</td>
<td>.019</td>
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<tr>
<td>Nonsevere complications</td>
<td>365 (78.5%)</td>
<td>2581 (83.1%)</td>
<td>.001</td>
</tr>
<tr>
<td>Anastomotic stricture</td>
<td>160 (21.7%)</td>
<td>151 (22.6%)</td>
<td>.59</td>
</tr>
<tr>
<td>Small bowel obstruction</td>
<td>109 (21.7%)</td>
<td>125 (18.6%)</td>
<td>.027</td>
</tr>
<tr>
<td>Wound infection</td>
<td>85 (17.4%)</td>
<td>152 (18.5%)</td>
<td>.62</td>
</tr>
<tr>
<td>Pouch failure</td>
<td>84 (17.8%)</td>
<td>148 (18.7%)</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>


Kirat et al Surgery 2009

Downside to stapling?

- Cuffitis (inflammation)
  - occurs about 9-22% of the time
  - Relates to amount of rectal mucosa left in place
  - More common for increased BMI / men: longer anal canal
- Difficult to do in a redo situation

Rectal Cuff follow up

- important factor for pouch or ATZ neoplasia is previous history of dysplasia or cancer
- mucosectomy does not protect against pouch neoplasia

Shen et al Gastro 2010

Laparoscopic-Assisted IPAA

- Port Sites
- Remove entire colon and rectum through Pfannenstiel incision
Lap vs. Open IPAA

- Cochrane Study 2008
- 11 trials, 607 patients/ 253(41%) lap
- Total complication rate similar

<table>
<thead>
<tr>
<th>Study of Choice</th>
<th>Operative Time</th>
<th>Length of Stay</th>
<th>Hospital Stay</th>
<th>Return to Work</th>
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</thead>
<tbody>
<tr>
<td>Laparoscopic</td>
<td>3-5 hours</td>
<td>3-5 days</td>
<td>3-5 weeks</td>
<td>2-4 weeks</td>
</tr>
<tr>
<td>Open</td>
<td>3-5 hours</td>
<td>3-5 days</td>
<td>3-5 weeks</td>
<td>2-4 weeks</td>
</tr>
</tbody>
</table>

Port sites

- 3 hours operative time
- 3-5 days in hospital
- return to work 2-4 weeks

Marcello P et al DCR 2001
Equivalent outcomes for patients with acute flare undergoing open Vs. Lap operation

Emergency Laparoscopic TAC with Ileostomy

- 90 patients with medically refractory UC
- 29 laparoscopic; 61 open

Lap vs. Open TAC

- Laparoscopic:
  - Decrease in EBL, LOS,
  - Increase in operative time
  - NO wound complications

- No statistically significant difference in:
  - Overall morbidity
  - Readmission rates
  - Subsequent restoration of GI continuity

Telem, et al. Surgical Endoscopy, March 2010
**Is an ileostomy necessary?**

*An Exercise in Risk Management!!!*

- Pouch anastomotic leak: 5-15%
- Stoma complication rates: 10-30%

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**Why an ileostomy?**

- **Ileostomy**
  - ↓ risk of pelvic infection
  - ↓ abscess/peritonitis
  - ↓ anastomotic leak
  - ↓ reoperation
  - ↓ need for ileostomy
  - ↓ risk of poor pouch function

- **No**
  - omit a second operation
  - and a second hospitalization
  - avoid complications of ileostomy
  - bag leak/skin problems
  - bowel obstruction

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**Ileostomy: to divert or not?**

<table>
<thead>
<tr>
<th></th>
<th>Ileostomy</th>
<th>No Ileostomy</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td># patients</td>
<td>1725</td>
<td>277</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>age</td>
<td>38</td>
<td>34</td>
<td>&lt;0.001</td>
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<tr>
<td>Male:Female</td>
<td>2.1</td>
<td>0.8</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>BSA</td>
<td>1.87</td>
<td>1.80</td>
<td>ns</td>
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<tr>
<td>Prev colostomy</td>
<td>34%</td>
<td>48%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Prednisone&gt;20mg</td>
<td>22%</td>
<td>5%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Blood trans.</td>
<td>20%</td>
<td>11%</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Remzi et al DCR 2006

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**Ileostomy: to divert or not?**

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<td>pelvic infxn</td>
<td>6.5</td>
<td>5.4</td>
<td>ns</td>
</tr>
<tr>
<td>anast leak</td>
<td>5.5</td>
<td>4.3</td>
<td>ns</td>
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<tr>
<td>p-v fistula</td>
<td>7.3</td>
<td>2.6</td>
<td>0.049</td>
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<td>ileus</td>
<td>11.3</td>
<td>20.2</td>
<td>&lt;0.001</td>
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<tr>
<td>sbo</td>
<td>18.8</td>
<td>10.1</td>
<td>0.012</td>
</tr>
<tr>
<td>stricture</td>
<td>20.4</td>
<td>9.4</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>pouch exc</td>
<td>4.5</td>
<td>1.8</td>
<td>0.022</td>
</tr>
</tbody>
</table>

Remzi et al DCR 2006
Skip the ileostomy

- Patient health
  - not hospitalized
  - normal nutrition
  - no long term steroids
  - no anemia

- Technical Factors
  - smooth operation
  - stapled anastomosis
  - No leak, intact donuts, no tension
  - Min blood loss

Ileal Pouch for Ulcerative Colitis

**LONG TERM MORBIDITY**

- Pouchitis
- Small bowel obstruction
- Sexual dysfunction
- Fertility
- Long term function of pouch
- Pouch loss?

Pouchitis

- Cumulative probability
  - 20% 1 yr
  - 32% 5 yrs
  - 40% 10 yrs

- Differential of pouch dysfunction
  - Pouchitis 34%
  - Irritable pouch syndrome 28%
  - Crohn's disease 15%
  - Cuffitis 22%

Small Bowel Obstruction

- Cumulative Probability
  - 6% 1yr
  - 14% 5 yrs
  - 19% 10 yrs

- 25% had more than one episode
- 33% required laparotomy (stuck in pelvis or stoma site)
  - 1/5th of these patients had further episodes of SBO
  - increased risk with pouch revisions and use of loop ileostomy

References:

- Lepisto et al DCR 2002
- Shen et al Am J G 2004
- MacLean et al Ann Surg 2002
Sexual Dysfunction

- Few prospective studies of effect of proctectomy on sexual function
- 1454 pts with IPAA
  - 25% reported improvement in sex life
  - 56% not affected by surgery
  - 16% mildly restricted by surgery
  - 3% severely restricted
  - 3% retrograde ejaculation

122 pts with IPAA given IIEF
- Improvement in score by 2.12 points (better function)
- Improvement in score in 4 of 5 domains (erectile function, sexual desire, intercourse satisfaction, and overall satisfaction)
- Less improvement in score with older age

Sexual Dysfunction in women after IPAA

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>PreOp %</th>
<th>Post Op %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex Dysfunction*</td>
<td>419</td>
<td>8</td>
<td>25</td>
</tr>
<tr>
<td>Urinary Dysfunction</td>
<td>62</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Infertility</td>
<td>945</td>
<td>12</td>
<td>26</td>
</tr>
<tr>
<td>C Section Rate</td>
<td>393</td>
<td>11-20(pop)</td>
<td>49</td>
</tr>
</tbody>
</table>

* dyspareunia, vaginal discharge, fear of leakage during intercourse, pain interfering with sexual pleasure, sexual satisfaction

PFPP study at UCSF

Gender-Specific Differences in Pelvic Organ Function After Proctectomy for Inflammatory Bowel Disease

- Prospective study of sexual, urinary and bowel function before and after total proctocolectomy for IBD using validated measures
- 66 patients (44 men, 22 women)

Measures of Pelvic Organ Function and Quality of Life

- Sexual Function
  - Female Sexual Function Index (FSFI)
  - International Index of Erectile Function (IIEF)
  - Sexual Function Questionnaire (SFQ)
- Bowel Function/Quality of Life
  - Inflammatory Bowel Disease Questionnaire (IBDQ)
- Urinary Function
  - American Urological Association Symptom Index (AUASI)
  - MESA Urinary Incontinence Questionnaire
- Quality of Life
  - SF-36
Gender Comparison

- **MAGNITUDE** of change in sexual function was the same in men and women using:
  - SFQ
  - IBDQ
  - SF-36
- SFQ and IIEF scores highly correlated among men
- SFQ and FSFI scores highly correlated among women
  - N smaller for women, thus no significance detected
- Ileostomy group did not have same improvements as IPAA group
  - ? More Crohn’s disease
  - ? Small sample size

Fertility in women after IPAA

- Questionnaire study of 160 IPAA and 160 controls (with UC)

<table>
<thead>
<tr>
<th></th>
<th>IPAA</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. contacted</td>
<td>160</td>
<td>160</td>
</tr>
<tr>
<td>No. who replied</td>
<td>139</td>
<td>130</td>
</tr>
<tr>
<td>Preoperative pregnancy</td>
<td>79 (54-3)</td>
<td>70 (53-8)</td>
</tr>
<tr>
<td>Postoperative attempt at pregnancy</td>
<td>54 (38-1)</td>
<td>50 (46-2)</td>
</tr>
<tr>
<td>Successful natural pregnancy</td>
<td>39 (57)</td>
<td>49 (62)</td>
</tr>
</tbody>
</table>

Lepisto et al BJS 2007

TPC with IPAA

Long-term Outcomes

- 997 patients followed 1-12 years (mean 5 years)
- Pouch preserved in 97% of patients
- Perfect continence 82% of patients
- 98% would recommend surgery to others
- 96% would have pouch again
- Most patients have stable pouch function for at least 10 years
- 30% of patients reported functional deterioration with time
- Change in continence unrelated to age or gender, but related to length of follow-up
- Risk of pouchitis and pouch failure increases over time


<table>
<thead>
<tr>
<th>Time (months)</th>
<th>Effective sample size</th>
<th>Cumulative incidence of natural conception (%)</th>
<th>IPAA</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>37</td>
<td>3 (16)</td>
<td>0 (6)</td>
<td>0 (8)</td>
</tr>
<tr>
<td>12</td>
<td>20</td>
<td>0 (9)</td>
<td>0 (9)</td>
<td>0 (15)</td>
</tr>
<tr>
<td>24</td>
<td>10</td>
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<td>0 (n/a)</td>
<td>0 (n/a)</td>
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<tr>
<td>36</td>
<td>17</td>
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<td>0 (n/a)</td>
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<tr>
<td>48</td>
<td>10</td>
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<tr>
<td>72</td>
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Lepisto et al BJS 2007
Long-term functional outcomes

Pouch Failure

- Long term failure now 5-15%
- Advancements in reoperative pouch surgery vs longer follow up
- Most common causes
  - early perioperative infection
  - poor pouch function
  - Crohn’s disease
- Pouch excision associated with high rate of perineal wounds 40% at 6mo and 10% at 12 mo.

Surgery for UC

- Patients are usually well informed
- Counseling is critical—written info, web, support groups, call patients
- Input needed from GI, family members, enterostomal nurse and surgeon
- Satisfaction, in spite of these issues, is high