Ulcerative Colitis: Surgical Indications and Controversies

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Surgery for Ulcerative Colitis

Need for operation 25-30%
– treat complications of the disease
– inadequate control of the disease

Surgery for Ulcerative Colitis

• More than one choice
• Emergent, urgent or elective
• Type of operation based on:
  – indication for surgery
  – discussion of treatment options by surgeon and patient

Aim of operation

Aims:
1. To eradicate disease of colon and rectum
2. To preserve natural bowel function
**Choice of Operation**

- **Emergent/Urgent** (little time for counseling)
  - Total Abdominal Colectomy
- **Elective** (chance to educate)
  - Total Proctocolectomy

**Severity of Colitis: Symptoms**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mild</th>
<th>Severe</th>
<th>Fulminant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stools/Day</td>
<td>&lt;4</td>
<td>&gt;6</td>
<td>&gt;10</td>
</tr>
<tr>
<td>Bld stool</td>
<td>Intermittent</td>
<td>Frequent</td>
<td>Continuous</td>
</tr>
<tr>
<td>Temp.</td>
<td>Normal</td>
<td>&gt;37.5</td>
<td>&gt;37.5</td>
</tr>
<tr>
<td>Pulse</td>
<td>Normal</td>
<td>&gt;90</td>
<td>&gt;90</td>
</tr>
<tr>
<td>Hgb</td>
<td>Normal</td>
<td>&lt;75% nl</td>
<td>Transfusion</td>
</tr>
<tr>
<td>ESR</td>
<td>≤30</td>
<td>&gt;30</td>
<td>&gt;30</td>
</tr>
<tr>
<td>Radiograph</td>
<td>Normal gas</td>
<td>Edema, tmp.</td>
<td>dilatation</td>
</tr>
<tr>
<td>Exam</td>
<td>BS, NT</td>
<td>Tender</td>
<td>Dis, T, ↓ BS</td>
</tr>
</tbody>
</table>

**Emergent operation for Ulcerative Colitis**

- Toxic colitis not better with medication
- Toxic megacolon – colonic dilatation
  - +/- perforation
  - Colonic pneumatosis
  - Hemorrhage

**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
Elective Operation

- 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

Reconstruction Options

- End Ileostomy
- Continent Ileostomy/ Koch Pouch
- Ileal Pouch/J Pouch

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

TPC with End Ileostomy
Continent Ileostomy

Koch Pouch

Advantages
• Remove all disease
• No stoma bag
• Better self image

Disadvantages
• Many complications
• Slipped valve
• Pouchitis
• Obstruction
• Fistula
• Retraction
• Need to intubate pouch
• Rarely performed
• Perineal wound

Indications
• Conversion from end ileostomy/IPAA
• Weak anal sphincter
• This option rarely selected

Continent Ileostomy

Nessar et al DCR 2006

TPC with Koch Pouch

Advantages
• Remove all disease
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Ileoanal Pouch

Nessar et al DCR 2006

Long-Term Continent Ileostomy Outcomes

<table>
<thead>
<tr>
<th>Postoperative complications</th>
<th>No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality</td>
<td>6</td>
<td>35.7</td>
</tr>
<tr>
<td>Major complications</td>
<td>83</td>
<td>43.3</td>
</tr>
<tr>
<td>Pouchitis</td>
<td>51</td>
<td>15.1</td>
</tr>
<tr>
<td>Ureteric obstruction</td>
<td>20</td>
<td>6.1</td>
</tr>
<tr>
<td>Pouchitis</td>
<td>57</td>
<td>25.4</td>
</tr>
<tr>
<td>Smear-related obstruction</td>
<td>56</td>
<td>17.6</td>
</tr>
<tr>
<td>Bladder irrigation</td>
<td>46</td>
<td>14.5</td>
</tr>
<tr>
<td>Stricture</td>
<td>33</td>
<td>10.3</td>
</tr>
<tr>
<td>Pouch bleeding</td>
<td>34</td>
<td>10.3</td>
</tr>
</tbody>
</table>

Total pouches encased: 51

Nessar et al DCR 2006
TPC with IPAA

**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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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 (30%)

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**IPAA and Age**

<table>
<thead>
<tr>
<th>Age in years</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 yrs FU</td>
</tr>
<tr>
<td>#BM</td>
</tr>
<tr>
<td>Incontinence(%)</td>
</tr>
<tr>
<td>Night seepage(%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age in years</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 yrs FU</td>
</tr>
<tr>
<td>QOL</td>
</tr>
<tr>
<td>QOHealth</td>
</tr>
<tr>
<td>Happy with outcome</td>
</tr>
</tbody>
</table>

Staple or Sew?

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

Stapled vs Handsewn

Meta-Analysis: 21 studies of 4183 patients

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


Downside to stapling?

- Rectal Cuff follow up
  - potential for dysplasia is small (0-4.5% at 10 years) in the last centimeter of mucosa next to anus
  - no need for intensive checkups with biopsies unless cancer/dysplasia was present within 8cm
- Cuffitis (inflammation)
  - occurs about 9-22% of the time
- Difficult to do in a redo situation
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

Lap vs Open IPAA

Operative Time longer, but time to po, hospital stay and incision length shorter
Cosmesis scores higher

Emergency Laparoscopic TAC with Ileostomy

• 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
**Laparoscopic TPC with Ileostomy**

Hand assisted laparoscopic procedure can save operative time. Size of incision is comparable to that needed for extraction.

**Perioperative Course**

- 3-7 hours depending on operation
- 4-6 days in the hospital (less with stoma)
- Non diverted patients can have prolonged ileus and stay up to 10 days
- 2-6 weeks to return back to work
- Complications are the same
  - wound infection
  - pelvic abscess, leak
  - bleeding
  - long-term outcomes

**Is an ileostomy necessary?**

**An Exercise in Risk Management!!!**

Pouch anastomotic leak 5-15%

Stoma complication rates 10-30%

**Why an ileostomy?**

- Ileostomy
  - Yes
  - No

- risk of pelvic infection
  - abscess/peritonitis
  - anastomotic leak
  - reoperation
  - need for ileostomy

- risk of poor pouch function
  - avoid complications of ileostomy
  - bag leak/skin problems
  - bowel obstruction
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>
</tr>
<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>
</tr>
<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

Skip the ileostomy

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

- Technical Factors
  - smooth operation
  - no leak, tension

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%

  *Shen et al Am J G 2004
  *Lepisto et al DCR 2002

**Small Bowel Obstruction**

- Cumulative Probability
  - 6% 1 yr
  - 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

  *MacLean et al Ann Surg 2002

**Sexual Dysfunction**

- Few prospective studies of effect of proctectomy on sexual function

- 122 pts with IPAA given IIEF
  - Increase 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

- 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

  *Farouk et al Ann Surg 2000

**Sexual Dysfunction in women**

**Systematic Review 22 studies of 1852 women**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>PreOp %</th>
<th>Post Op %</th>
</tr>
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<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
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>160</td>
<td>160</td>
</tr>
<tr>
<td>Preoperative pregnancy</td>
<td>75 (54-97)</td>
<td>70 (53-98)</td>
</tr>
<tr>
<td>Postoperative attempt at pregnancy</td>
<td>50 (32-81)</td>
<td>60 (45-92)</td>
</tr>
<tr>
<td>Successful natural pregnancy</td>
<td>35 (67)</td>
<td>49 (62)</td>
</tr>
</tbody>
</table>

Lepisto et al. BJS 2007

• Reduction in probability of conception not complete infertility
• Complications of pregnancy and delivery were rare
• C Section as indicated for obstetric reasons.

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


TPC with IPAA for UC
Long-term Outcomes

- 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
TPC with IPAA
Change in Continence with Time

<table>
<thead>
<tr>
<th></th>
<th>Better</th>
<th>Unchanged</th>
<th>Worse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major day incontinence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All patients</td>
<td>1</td>
<td>81</td>
<td>18</td>
</tr>
<tr>
<td>&lt;12 years</td>
<td>0</td>
<td>91</td>
<td>9</td>
</tr>
<tr>
<td>&gt;12 years</td>
<td>1</td>
<td>72*</td>
<td>27*</td>
</tr>
<tr>
<td>Major night incontinence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All patients</td>
<td>6</td>
<td>72</td>
<td>22</td>
</tr>
<tr>
<td>&lt;12 years</td>
<td>2</td>
<td>88</td>
<td>10</td>
</tr>
<tr>
<td>&gt;12 years</td>
<td>11*</td>
<td>57*</td>
<td>33*</td>
</tr>
<tr>
<td>Minor day incontinence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All patients</td>
<td>9</td>
<td>59</td>
<td>32</td>
</tr>
<tr>
<td>&lt;12 years</td>
<td>12</td>
<td>72</td>
<td>16</td>
</tr>
<tr>
<td>&gt;12 years</td>
<td>6*</td>
<td>46*</td>
<td>48*</td>
</tr>
<tr>
<td>Minor night incontinence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All patients</td>
<td>22</td>
<td>54</td>
<td>24</td>
</tr>
<tr>
<td>&lt;12 years</td>
<td>24</td>
<td>57</td>
<td>19</td>
</tr>
<tr>
<td>&gt;12 years</td>
<td>21</td>
<td>51</td>
<td>28</td>
</tr>
</tbody>
</table>

Pouch Failure

- Long term failure now 5-10%
- Decrease in rates over past 20 years due to advancements in reoperative pouch surgery
- Most common causes
  - early perioperative sepsis
  - poor pouch function
  - Crohn’s disease
- Pouch excision associated with high rate of perineal wounds 40% at 6mo and 10% at 12mo.

Surgery for UC

- Patients are usually well informed
- Counselling is critical
- Input from GI, family members, enterostomal nurse and surgeon
- Satisfaction, in spite of these issues, is high

Karoui et al DCR 2004