Surgery in Ulcerative Colitis
– Indication and Timing

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Surgery in Ulcerative colitis

• Required in 30–40% of cases
  – First year – 10 %
  – Within 10 years – 25 %
  – ~50 % of these as emergency cases

• Combined attention colorectal surgeon and gastroenterologist essential for optimal patient outcome

• See surgery as additional, not as "failure"
Indications for surgery in UC

1. Fulminant or acute colitis not responding to medical therapy
2. Chronic continuous disease
   • Impaired growth and/or delayed puberty
3. Dysplasia and/or cancer
4. Reconstruction after previous surgery

Timing is always essential
Timing of different indications for surgery

1. Acute colitis – timing over hours-days
2. Chronic continuous disease – timing over weeks
3. Dysplasia and/or cancer – timing over weeks-months
4. Reconstructive surgery – timing over life
1. Acute Severe Colitis

• Absolute indications for surgery:
  – Toxic megacolon
  – Perforation
  – Severe colorectal bleeding

• Relative indications:
  – Deterioration during medical therapy
  – Severe disease with no improvement during first 5 days
1. Acute Severe Colitis

**ECCO statement 5F**

- The **response** to intravenous steroids is best assessed objectively (by **stool frequency, CRP and abdominal radiography**) on or about the **third day** [EL2b, RGB]. **Surgical options should be considered and discussed at this stage or earlier.**
- Second line therapy with either ciclosporin [EL1b, RG B], or infliximab [EL1b, RG B] or tacrolimus [EL1b, RG B] will often be appropriate.
- If there is clinical **deterioration colectomy is recommended.**
- If there is **no improvement within a further 4–7 days**, colectomy should usually be recommended [EL5, RG D].
- Third line therapy may be considered at a specialist centre.

Sigmoidoscopy; plain abdominal; air enema

## Assessment of severity

### Truelove & Witts index.

<table>
<thead>
<tr>
<th></th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of haemorrhagic stools</td>
<td>&lt;4</td>
<td>≥4 if</td>
<td>≥6 and</td>
</tr>
<tr>
<td>Pulse</td>
<td>&lt;90</td>
<td>≤90</td>
<td>&gt;90 or</td>
</tr>
<tr>
<td>Temperature</td>
<td>&lt;37.5°C</td>
<td>≤37.8°C</td>
<td>&gt;37.8°C or</td>
</tr>
<tr>
<td>Haemoglobin</td>
<td>&gt;115 g/L</td>
<td>≥105 g/L</td>
<td>&lt;105 g/L or</td>
</tr>
<tr>
<td>SR</td>
<td>&lt;20 mm</td>
<td>≤30 mm</td>
<td>&gt;30 mm or</td>
</tr>
<tr>
<td>or CRP</td>
<td>Normal</td>
<td>≤30 mg/L</td>
<td>&gt;30 mg/L</td>
</tr>
</tbody>
</table>

**Sweden index** = number of daily stools + 0.14 x CRP (mg/L)
- Index <8: 16% risk of colectomy
- Index ≥8: 72% risk of colectomy within 30 days

Acute severe UC

Clinical assessment of severity
Sigmoidoscopy. Plain abdominal.

Steroids i.v. (e.g. betamethason 4 mg x 2)
Joint assessment gastroenterologist-surgeon

Evaluate response day 4

Clinical improvement
(Sweden index)
(no. of stools + 0,14 x CRP)

Peroral corticosteroids - tapering.
Introduction of maintenance with 5-ASA (or azathioprine)

No improvement
(Sweden index)
(no. of stools + 0,14 x CRP)

Colectomy

Rescue therapy
Infliximab

Clinical deterioration

Colectomy

Clinical deterioration

Peroral corticosteroids - tapering.
Introduction of maintenance with 5-ASA and/or azathioprine
1. Acute Severe Colitis

Timing of surgery is crucial

- Medical therapy with i.v. corticosteroids and ciclosporin for a total of 7–10 days not associated with increase in postoperative morbidity [Hyde et al, *Dis Colon Rectum* 2001]

- Possible to predict the need for urgent surgery after 3-4 days of medical therapy

- Early introduction of rescue therapy (ciclosporin or infliximab) encouraged: rapid response in >80%
  i.e. clear decision about surgery made within 7–10 days
  [Hancock et al, *Colorectal Dis* 2006]
1. Acute Severe Colitis

**ECCO statement 7A** (Travis et al, *J Crohn’s Colitis* 2008)

- A staged procedure (colectomy first) is recommended in the acute case when patients do not respond to medical therapy [EL 4, RG C]
Acute severe UC

Clinical assessment of severity
Sigmoidoscopy. Plain abdominal.

Steroids i.v. (e.g. betamethason 4mgx2)
Joint assessment gastroenterologist-surgeon

Colectomy

Evaluate response day 4

Clinical improvement (Sweden index)
(no. of stools + 0.14 x CRP)

Clinical deterioration

Peroral corticosteroids - tapering.
Introduction of maintenance with 5-ASA (or azathioprine)

No improvement (Sweden index)
(no. of stools + 0.14 x CRP)

Rescue therapy
Infliximab

Clinical deterioration

Clinical improvement

Peroral corticosteroids - tapering.
Introduction of maintenance with 5-ASA and/or azathioprine

Swedish National Guidelines
Acute severe UC
Tysk et al 2009
2. Chronic Continuous Colitis

- Active disease despite optimized maintenance therapy
- Often “steroid dependency”
- High risk of septic complications; poor conditions for healing (Lake et al, J Gastrointest Surg 2004; Aberra et al, Gastroenterology 2003)

- Optimize patient from nutritional and fluid balance point of view
- Keep steroid dose at a minimum

Table 6. Adjusted ORs for CS and 6-MP/AZA of Postoperative All and Major Infectious Complications

<table>
<thead>
<tr>
<th></th>
<th>Infectious complications OR</th>
<th>95% CI</th>
<th>Major infectious complications OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>3.69</td>
<td>1.24-10.97</td>
<td>5.54</td>
<td>1.12-27.26</td>
</tr>
<tr>
<td>CS&lt;20 mg</td>
<td>2.56</td>
<td>0.68-9.61</td>
<td>6.28</td>
<td>0.97-40.36</td>
</tr>
<tr>
<td>CS 20-40 mg</td>
<td>3.12</td>
<td>0.93-10.49</td>
<td>5.87</td>
<td>0.90-38.23</td>
</tr>
<tr>
<td>CS &gt;40 mg</td>
<td>9.16</td>
<td>1.51-55.42</td>
<td>18.94</td>
<td>1.72-207.34</td>
</tr>
<tr>
<td>6-MP/AZA</td>
<td>1.68</td>
<td>0.65-4.27</td>
<td>1.20</td>
<td>0.37-3.94</td>
</tr>
<tr>
<td>6-MP&lt;1.5 mg/kg</td>
<td>1.49</td>
<td>0.56-3.98</td>
<td>1.12</td>
<td>0.32-3.93</td>
</tr>
<tr>
<td>6-MP ≥1.5 mg/kg</td>
<td>4.50</td>
<td>0.46-44.51</td>
<td>1.89</td>
<td>0.15-24.62</td>
</tr>
</tbody>
</table>
3. Dysplasia/Cancer

- Indications for surgery must be clearly defined and verified in cases with dysplasia
  - Often very little symptoms from their colitis
  - Surgery (proctocolectomy + IPAA) not without complications and effects on QoL
  - Life-long surveillance still needed
3. Dysplasia/Cancer

- **Indications for surgery:**
  - Cancer of the colon or rectum
  - High-grade dysplasia in flat mucosa
  - Low-grade dysplasia associated with DALM
- Diagnosed by 2 independent experienced GI pathologists

**ECCO Statement 9J**
High grade dysplasia in flat mucosa and adenocarcinoma are indications for proctocolectomy [EL2, RG B]. A patient with low-grade dysplasia in flat mucosa should be offered proctocolectomy or repeat surveillance biopsies within 3–6 months [EL2b, RG B]
3. Dysplasia/Cancer

- **Surgical technique**
  - Proctocolectomy with total mesorectal excision
    - risk for nerve damage
  - Mucosectomy with a hand-sewn anastomosis?
  - Double-stapled technique, leaving a rectal cuff?

- **Functional outcome IPAA**
  hand-sewn vs. double-stapled
  with inflammation in anal transitional zone
  
  (Silvestri et al, *Surgery* 2008)
3. Dysplasia/Cancer

- Prospective follow-up stapled IPAA 10 years+, Cleveland Clinic: Cancer 0 %; Dysplasia 4.5 % (Remzi et al, Dis Colon Rectum 2003)

- Systematic review: dysplasia in IPAA 1-2 % after 2-16 years
  - Same frequency in pouch and cuff
  - Surveillance of pouch advocated after surgery for cancer
  - (Scarpa et al, Br J Surg 2007)

- Stapled or hand-sewn?
4. Reconstructive Surgery

Surgical Options

Conventional ileostomy (Brooke)

Ileal pouch-anal anastomosis

 Continent ileostomy (Kock pouch)

Ileorectal anastomosis
4. Reconstructive Surgery – IPAA

**IPAA not perfect solution**

- Full continence day 65-75%, night 35-45%
- Pouchitis: sporadic 50%, chronic 10% (Ståhlberg, DCR 1996)
- Failure (excision) 2-13%

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**Cumulative incidence of pregnancy**

It has been convincingly demonstrated in three cohort studies that female fecundity or fertility is reduced after IPAA

Ording Olsen et al
_Gastroenterology_ 2002
4. Reconstructive Surgery

Ileorectal anastomosis – IRA

**Ileo-rectal anastomosis**

- Historically burdened:
  - persistent rectal inflammation
  - risk of later cancer (6-15% Aylett, 1960)
- Recently better than expected
  - Full anal continence 66-100%
  - half of patients still IRA after 10 years.
  - "cancer risk with modern medical therapy and surveillance at least less than non-operated total colitis"
- Women with FAP:
  - no reduction in fecundity associated with an IRA
    (Olsen Br J Surg 2003)

**ECCO statement 7K**

In a fertile female patient the option of an ileorectal anastomosis should always be considered, because fecundity is at risk after IPAA [EL3b, RG B]
## 4. Reconstructive Surgery - Summary

<table>
<thead>
<tr>
<th>Technique</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPAA</td>
<td>Transanal defecation</td>
<td>Pouchitis</td>
</tr>
<tr>
<td></td>
<td>No follow-up needed</td>
<td>Risk for incontinence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fertility/dyspareunia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Impotence/retrogr. ejac.</td>
</tr>
<tr>
<td>Ileorectal anastomosis</td>
<td>Less effect sexual/fertility</td>
<td>Dysplasia/cancer risk</td>
</tr>
<tr>
<td></td>
<td>Good anorectal function</td>
<td>Follow-up needed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Medication needed</td>
</tr>
<tr>
<td>Ileostomy</td>
<td>“Cured”</td>
<td>Ostomy problems</td>
</tr>
<tr>
<td></td>
<td>Rectal stump issues</td>
<td>Body image</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sexual initiative</td>
</tr>
<tr>
<td>Kock pouch</td>
<td>Less ostomy problems</td>
<td>Multiple revision surgery</td>
</tr>
<tr>
<td></td>
<td>No follow-up needed</td>
<td>Risk for pouchitis</td>
</tr>
<tr>
<td></td>
<td>Improved body image</td>
<td></td>
</tr>
</tbody>
</table>
4. Reconstructive Surgery

• **Timing and relation to medication**

• Cleveland Clinic experience 1991-2000 IPAA after acute colectomy
  - <3 months: higher incidence of intra-operative complications
  - <6 months: more postoperative fistulas vs. >7 months
  (Dinnewitzer et al, *Colorectal Dis* 2006)

• Increased complication risk in IPAA performed after infliximab treatment (Holubar et al, *F1000 Medicine Reports* 2009)

### Table 1. Summary of literature of the association of IFX with post-operative complications

<table>
<thead>
<tr>
<th>Article</th>
<th>Institution</th>
<th>Year</th>
<th>IBD</th>
<th>IFX subjects/Total subjects</th>
<th>IFX window</th>
<th>Specifically adjusted for disease severity</th>
<th>IFX increased complications?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schluender [5]</td>
<td>Cedars Sinai</td>
<td>2007</td>
<td>CUC</td>
<td>17/151 (11%)</td>
<td>1–12 months</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Selvasekar [16]</td>
<td>Mayo Clinic, Rochester</td>
<td>2007</td>
<td>CUC</td>
<td>47/301 (16%)</td>
<td>6 months</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Mor [19]</td>
<td>Cleveland Clinic, Ohio</td>
<td>2008</td>
<td>CUC</td>
<td>85/523 (16%)</td>
<td>4–37 weeks</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
In conclusion...

- Surgery for ulcerative colitis with correct timing:
  - complimentary to medical treatment
  - prevents complications
  - improves the patients’ quality of life
  - sometimes “curative”
  - occasionally life saving

- Close interaction between gastroenterologist and surgeon key to optimized patient outcome over a life-long perspective
4. Reconstructive Surgery – IPAA

- Diverting ileostomy
  Cleveland Clinic experience:
  - Clinical leak: one-stage 14% vs. diverted 4% (Tjandra, Dis Colon Rectum 1993)

- **ECCO statement 7F**
  When performing a restorative proctocolectomy for ulcerative colitis a covering loop ileostomy is generally recommended, but it can be avoided in selected cases [EL 3b, RG C]
4. Reconstructive Surgery – IPAA

Laparoscopic technique for IPAA

• Small non-randomized studies:
  – Earlier return to bowel function; Shorter hospital stay; Improved cosmesis
    (Marcello, Dis Rectum Colon 2000; Dunker, Dis Colon Rectum 2001)

• **ECCO statement 7R**
  Laparoscopic restorative proctocolectomy with an IPAA is a feasible operation; it gives shorter scars but there is no evidence for additional benefit to the patient [EL 2a, RG B]