What is the role of Surgery for IBD – State of the Art 2007

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Falk Meeting Istanbul 2007
Surgery for IBD

Ulcerative colitis

Crohns Disease

When medicine fails.....
Parks and Nicholls

Proctocolectomy without ileostomy for ulcerative colitis
BMJ 1978;2:65-8
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<tr>
<td>UK</td>
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<td>France</td>
<td>750</td>
</tr>
<tr>
<td>Australia</td>
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</table>

**Estimated Total**: 25000
Pouch surgery – the ecstasy
Pouch surgery – the agony
Pouch technique

1975 convergence 2005
Pelvic dissection

Anastomosis

Pouch

Ileostomy
Mesorectal plane or close rectal dissection

- Mesorectal plane now well known
- Less difficult
- More danger to pelvic nerves
- Bigger space
- Close rectal less familiar
- More difficult
- Less danger to pelvic nerves
- Less dead space
The pouch
The pouch

- Size/configuration
- Rotation
- Mesentery
- Length/reach
Oversew the top staple line

Angle of sorrow sutures
The anastomosis
Mucosectomy or no?

• Advantage – theoretical improvement in disease control
• Disadvantage – possible worse functional outcome and more difficult technically
The 3 Components of the Anal Canal Mucosa

- great variation between individuals
- the anal transitional zone is narrower = av 0.45cm
- within the ATZ are islands of columnar epithelium

Thompson-Fawcett et al
Br J Surg 1998
The Lowest Columnar Epithelium

Range and median of lowest columnar epithelium (that may be in the form of tongues or islands)

- 2.02 cm
- Median = 0.98 cm (SE = 0.11)
- 0.26 cm
How to put the Anastomosis in the right place

Visualise  Parks et al BMJ 1978
Evert  Regimbeau et al DCR 2004
How to put the anastomosis in the right place

digitise

To the pip joint
The risks of maintaining Columnar Cuff

- Some 6-10% of the total anorectal mucosa is retained
- risk of malignancy
- risk of inflammation
Anal Manipulation/damage

- 153 patients
- Manipulation = mucosectomy, transanal pursestring, hand sewn pouch n=94
- Less manipulation correlated with better resting pressure, continence and fewer pads
- Extent of smooth muscle resection during mucosectomy

Becker et al DCR 1997
Pharmacological dilatation?

Winter et al
DCR 2004
Advantages of Stapling

- No anal dilatation
- No smooth muscle resection
- Sensation retained

And it’s much easier

Unless it misfires
Mucosectomy when?

- Consider in high grade rectal dysplasia or carcinoma complicating UC
- Consider in FAP with dense polyp burden in lower rectum
- Cuffitis requiring resection
- Re do pouch surgery with reanastomosis
Mucosectomy?

Not very often
A brief history of defunctioning ileostomy
Are the consequences of an unprotected leak more serious?
One Stage Restorative Proctocolectomy without ileostomy

100 patients, randomised

- life threatening complications more frequent in those with no ileostomy
  - 11 pelvic sepsis, 7 re-operation

- emergency operations in 11 v. 1 in those with ileostomy

Williamson et al
Dis Col Rect 1997
When is it reasonable to omit a defunctioning ileostomy?

**PATIENT**
- no comorbidity
- non toxic
- low steroids
- female

**SURGEON**
- experienced
- in town

**OPERATION**
- elective
- perfect technique
- histology
ileostomy? usually
Laparoscopic Proctocolectomy and Pouch – the US view

One stage lap IPAA

32 patients. No conversion, 3 reoperation

Ky et al DCR2002
Laparoscopic Proctocolectomy and Pouch – the European view

Lap colon mobilisation and pfannenstiel incision

54 patients, 5 conversions BMI

11 major complns and 9 needed secondary ileostomy

Kienle Surg Endosc 2003
Pouch complications

- Bleeding
- Infarction
- Peritonitis
- Anastomotic leak

- Pouch cutaneous fistula
- Pouch vaginal fistula
- Stricture
- Small bowel stricture
Pouch Failure
Causes of Pouch Failure  Toronto

49 (8.8%) of 551 pouches failed
9 (1.6%) defunctioned
- 21 (39%) anastomotic leak
- 13 (23%) poor function
- 7 (12%) pouchitis
- 7 (12%) pouch leakage
- 7 (12%) perianal disease
- 3 (5%) various

MacRae et al  DCR 1997
Incidence and Impact Pelvic Abscess after IPAA

73 of 1508 had pelvic abscess

- pouch failure 26%
- 55% need transabdominal salvage
- 8% local surgery
- 37% non surgical
- functional outcome poorer

Farouk et al  DCR 1998
## Indications for Pouch Excision at St Mark’s

<table>
<thead>
<tr>
<th></th>
<th>St Mark’s n=996</th>
<th>Referred n=245</th>
<th>Total</th>
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<tbody>
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<td>No patients</td>
<td>58 (5.6%)</td>
<td>10 (4%)</td>
<td>68</td>
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<tr>
<td>Pelvic sepsis</td>
<td>28</td>
<td>5</td>
<td>33 (48.5%)</td>
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<tr>
<td>Pouch fistula</td>
<td>24</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Crohns</td>
<td>3</td>
<td>2</td>
<td></td>
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<tr>
<td>Poor function</td>
<td>21</td>
<td>3</td>
<td>24 (35.2%)</td>
</tr>
<tr>
<td>Pouchitis</td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>other</td>
<td>5</td>
<td>1</td>
<td></td>
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</table>

Karoui, Cohen, and Nicholls  DCR 2004
Long Term Failure Rates from St Mark’s

[Graph showing cumulative risk of pouch removal (%)]

Time from pouch formation (in years)

Patients at risk: 634, 358, 178, 52

Karoui Cohen and Nicholls DCR 2004
Restorative Proctocolectomy - Technique

Get it right first time

Spend quality time with your anastomosis!
Long Term Follow Up – the issues

- Failure as defined by pouch excision
- Causes of failure
- Stability of function
- QOL data
- Fecundability
- Pregnancy and delivery
- The cancer bogey
- Pouchitis
Cumulative Risk of Pouchitis

Follow up (m)

Proportion of risk

overall

chronic

Keranen et al Dis Col Rect 1997
Function and Quality of Life
Is pouch function stable with time? 1)

235 pouch patients studied in 1992
154 agreed to re-study  median FU 12 y

Bullard et al
Dis Col Rect 2002
Is pouch function stable with time? 2)

- bowel frequency /24  6.7 v 6.8
- night frequency  1.6 v 1.4

Bullard et al
Dis Col Rect 2002
Is pouch function stable with time?  

<table>
<thead>
<tr>
<th>Continence Compared to 1992</th>
<th>Major day</th>
<th>Major night</th>
<th>Minor day</th>
<th>Minor night</th>
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<tr>
<td>Improved</td>
<td>1%</td>
<td>6%</td>
<td>9%</td>
<td>21%</td>
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<tr>
<td>No change</td>
<td>82%</td>
<td>73%</td>
<td>59%</td>
<td>55%</td>
</tr>
<tr>
<td>Worse</td>
<td>17%</td>
<td>21%</td>
<td>32%</td>
<td>24%</td>
</tr>
</tbody>
</table>

Bullard et al  
Dis Col Rect 2002
Quality of Life - Age related Outcomes after IPAA

- 1895 patients, 4.1% failure
- Stratified into <45, 46-55, 56-65 and >65 yrs
- Prospective assessment at 1, 3, 5, and 10 yrs
- Minor diffs in QOL favouring <45s
- Acceptable function and QOL in patients of all ages

Pregnancy and Fertility
Pregnancy and delivery before and after IPAA – Mayo experience

- 236 pregnancies before and 232 after
- No diff in vag deliveries 59% before v 54% after
- Stool frequency up from 5.4 to 6.4 at 68m pp
- Occas incont up from 21% to 36%

Hahnloser et al DCR 2003
Female Fecundity after IPAA for UC

- 290 patients
  - Severe reduction in fecundity

<table>
<thead>
<tr>
<th></th>
<th>Pre colect</th>
<th>IPAA</th>
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<tr>
<td>12m</td>
<td>83%</td>
<td>18%</td>
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<tr>
<td>24m</td>
<td>85%</td>
<td>27%</td>
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<td>60m</td>
<td>90%</td>
<td>36%</td>
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</table>

Olsen KO et al Gastroenterology 2002
Female infertility after IPAA for UC – Toronto experience

- Infertility rate 38.1% after IPAA v 13.3% non op
- No diff before and after diagnosis of UC
- 98% reduction in fertility after IPAA v before

Johnson et al DCR 2004
Summary

10% lose pouch
10% have poor function but prefer to keep their pouch
80% report an excellent quality of life
But….. Some worries

- Increasing numbers of patients needing chronic ciproxin dosing
- Perianal disease being treated with infliximab
Surgery for Crohn's Disease
Indications for Surgery in Crohn’s Disease

- Internal fistula and abscess
- Intestinal obstruction
- Perianal disease
- Failed medical therapy
- Acute colitis

Ileocolic

Small bowel

Colonic

Oxford Colorectal
Small bowel
Treatment of Crohn’s Disease

Radical Excision and lymph nodes

Bypass

Minimal Resections

Limited Resections
Surgical Intervention in Crohn’s Disease - the balance

early surgery

poor trial medical therapy
disease recurs

late surgery

more technical problems
more complications
Surgery for Obstruction

- Recurrent obstructive symptoms
  - one is a warning
  - two is an indication
  - three is an indictment

Alexander-Williams 1993
Resection for “classical” ileocaecal Crohn’s disease

1970-1988  139 patients  10y follow up
110 resection
114 fit and well
1 death from Crohn’s disease

Andrews et al 1991
Effect of Resection Margins on Recurrence

131 in a randomised trial of limited v. extended resection
Follow up median 56m
Recurrence 25% limited v. 18% extended  NS
Microscopic disease at margins no effect

Fazio et al
Ann Surg 1996
Laparoscopic resection for ileocaecal Crohn’s disease

- Lap assessment and ileocaecal mobilisation
- Extra corporeal anastomosis or strictureplasty
- Case selection
Laparoscopic resection for ileocaecal Crohn’s disease – problems with assessment

- Hand over hand with soft forceps
- Preop imaging will be the key – small bowel enema being replaced by CT enteroclysis or MRI studies
Randomised trial of lap v open ileocaecal resection

- 60 patients randomised after lap assessment
- 6 exclusion for adhesions
- 2 conversions after randomisation
- Better pulmonary function and fewer complications in selected patients with ileocolic disease
Assessment at open surgery

- feel
- balloon characterisation
- on table enteroscopy
- inspect margins
Assessment of proximal margin of resection
Balloon impaction at strictures
Intra operative enteroscopy in Crohn’s disease

33 exams in 31 patients

20 surgical decisions affected

14 more limited surgery

External appearance less reliable than enteroscopy

Smedh et al
BJS 1993

Oxford
Colorectal
What causes intestinal failure in Crohn’s disease?

Of 41 patients referred over 10y for permanent home TPN

• 7 due to Crohn’s alone
• 34 due to repeated resection,
  25 after multiple unplanned procedures
  70 cm SB remaining

Agwunobi DCR 2001
Who invented Strictureplasty?

JAWS, Big Vic, or Mannie?
Strictureplasty in Crohn’s Disease

“We have delayed reporting it widely in spite of the marked benefit obtained by a group of patients who present one of the most difficult problems of management in clinical medicine. Our particular worry was that the technique contravenes a widely held surgical view - that it is hazardous to anastomose bowel in which Crohn’s inflammation is active”

Lee & Papaioannou 1982
*Annals Royal Coll Surg Eng*
Strictureplasty - diathermy transverse incision
Strictureplasty - suture vertically
Synchronous Resections

- acute phlegmon
- fistula
- perforation and abscess
- long stricture > 20 cm
- multiple strictures in a short segment
Strictureplasty: Oxford Experience

- 1978 to 2002
- 95 patients
- M:F 53:42
- 454 strictureplasties
- 151 operations
- mean follow-up 79.0 months (0.2 months to 19.5 years)

Number of patients undergoing 1 or more SP operations
Complications **not** associated with:

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<tr>
<th>Patient Factors</th>
<th>Age &gt; 50 years</th>
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<tr>
<td></td>
<td>Weight loss &gt; 5kg</td>
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<td></td>
<td>Hb &lt; 10</td>
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<tr>
<td>Medication</td>
<td>Steroids</td>
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<td></td>
<td>Immunosuppressants</td>
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<td>Aminosalicylates</td>
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<td>Inflammatory Markers</td>
<td>WCC &gt;10</td>
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<td>ESR &gt; 20</td>
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<td>CRP &gt; 20</td>
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<tr>
<td>Surgical Factors</td>
<td>Strictureplasties &gt; 10</td>
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<td>Previous anastomosis or strictureplasty site</td>
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<td>Concomitant resection</td>
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Complications: Associated Factors

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<th>Nutritional status</th>
<th>Albumin &lt; 30</th>
<th>Perioperative TPN</th>
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<tr>
<td></td>
<td>p &lt; 0.01</td>
<td>p &lt; 0.001</td>
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Number of patients

- **Complications**
- **No complications**

Oxford Colorectal
Repeat Strictureplasty

- 39 strictured sites of previous anastomoses or strictureplasties were treated with strictureplasty
- Complication rate of 10.3% (vs 20.4% virgin site)

![Bar chart showing number of operations vs complications for virgin and repeat sites](chart.png)

\[ p = 0.46 \]
# Reported Strictureplasty Follow-up

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Group</th>
<th>Patients</th>
<th>SPs</th>
<th>Mean FU (range) months</th>
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<tr>
<td>Spencer <em>et al</em></td>
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<td>Mayo Clinic</td>
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<td>Serra <em>et al</em></td>
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<td>43</td>
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<td>Stebbing <em>et al</em></td>
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<td>241</td>
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<td>Hurst <em>et al</em></td>
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<td>Chicago</td>
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<td>109</td>
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<td>Yamamoto <em>et al</em></td>
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<td>Birmingham</td>
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<td>Tonnelli &amp; Ficaro</td>
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<td>Florence</td>
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<td>174</td>
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<td>Dietz <em>et al</em></td>
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<td>Cleveland</td>
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<td>Tichansky <em>et al</em></td>
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<td>Meta-analysis</td>
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# Reported Strictureplasty Results

<table>
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<tr>
<th>Authors</th>
<th>Patients</th>
<th>SPs</th>
<th>Complication Rate</th>
<th>Recurrence or Reoperation</th>
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<tr>
<td>Spencer et al</td>
<td>35</td>
<td>71</td>
<td>14%</td>
<td>20% at 3 years</td>
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<td>Serra et al</td>
<td>43</td>
<td>154</td>
<td>18.6%</td>
<td>32.6% reoperation</td>
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<td>Stebbing et al</td>
<td>52</td>
<td>241</td>
<td>7.7%</td>
<td>44% reoperation</td>
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<td>Hurst et al</td>
<td>57</td>
<td>109</td>
<td>12%</td>
<td>22% at 5 years</td>
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<td>Yamamoto et al</td>
<td>111</td>
<td>285</td>
<td>7% septic</td>
<td>54% at 8.9 years</td>
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<tr>
<td>Tonnelli &amp; Ficaro</td>
<td>44</td>
<td>174</td>
<td>6.8%</td>
<td>46% at 5 years</td>
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<tr>
<td>Dietz et al</td>
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<td>1124</td>
<td>18%</td>
<td>34% at 7.5 years</td>
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<tr>
<td>Tichansky et al</td>
<td>506</td>
<td>1825</td>
<td>13%</td>
<td>25.5% → further Sx</td>
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</table>
Michaelassi Strictureplasty

Indication: short gut
Michaelassi strictureplasty

Michelassi *DCR* 1996
Italian side to side

Tonelli et 2004 47:494-501 al DCR
Side to Side Strictureplasty

- 31 patients
- Average length 32cm (range 10-54)
- No morbidity or mortality
- At 26m follow up, 6 required reoperation, only one at a previous SP site
Carcinoma and Strictureplasty

3 possible cases

• SB adenoCA near a previous strictureplasty
  (Alexander Williams and Haynes World J Surg 1985)

• 70 yo with Crohn’s and coeliac develops CA at strictureplasty site 7y later
  (Marchetti et al DCR 1996)

• 47 yo, CA at strictureplasty site 7y later, background 23y Crohn’s
  (Jaskowiak and Michelassi DCR 2001)
Adhesions

• suspect an entero-enteric fistula until proven otherwise
Special Problems: severe adhesions

- back off, prolonged TPN
- painstakingly divide ± sepra film
Special Problems- strategic inflammatory mass

Inflammatory mass densely adherent to great vessels, ureters

- bypass, wait 3m
- painstakingly divide
Philosophy of Management in Crohn’s Disease

- it is an incurable disease
- it has potential for pan-intestinal involvement
- surgery only overcomes the complications
Why do things go wrong?

- Wrong operation
- Wrong timing
- Wrong surgeon
Large bowel

Segmental resections

Ileoanal pouches
The Ideal Candidate

* no SB disease
* no anal disease
* diffuse rectal and colonic involvement
The Typical Crohn’s Colitis

* 25% have SB disease
* anal disease common
* rectal sparing
Oxford Colorectal Perianal
Aetiology of anal lesions

- lymphoid aggregations around anal gland ducts
- retrograde lymphatic flow
- Narrow high pressure zone
- diarrhoea
Clinical Course of Perianal Fistula & Abscess

90 patients, median Fu 22m
Risk of recurrence 48% at 1y, 59% at 2y
Healing in 51% at 2y
Re-opened in 44%, 18m after healing
Best outcome with absent rectal disease and faecal diversion

Makowiec et al
Gut 1995
Emergency treatment of sepsis
Incision and drainage

Definitive treatment
Fistulotomy
Flap repair or glue

Damage limitation
Seton
Defunctioning stoma

Intestinal resection
Proctectomy or proximal resection
What Surgery can Achieve

• drain abscess
• treat fistula
• dilate stricture
• defunction
What Surgery Cannot Achieve

- heal aggressive and atypical ulceration
- stop the inflammatory response
- prevent relapse
- success in the non healing perineum
Treatment of Fistula’s in Crohn’s Disease with Infliximab

Randomised controlled trial, 94 patients, 90% perianal
55% multiple

End point 50% or > reduction in number of draining fistulas
56-68% infliximab v 26% placebo success

Present et al
NEJ Med 1999
Does Infliximab heal fistula?

- Anal endosonography before and after
- although external tracks “healed,” ES changes remained

Meuwissen DCR in press
Perianal Crohn’s Disease Activity Index

Score 0-4, worst case 20

- discharge
- pain/restriction activity
- restriction sexual activity
- type perianal disease
- degree of induration

Irvine et al J Clin Gastro 1995
A change in philosophy?
Not so much to cure as to contain
Where will Infliximab fit in?

• reduction in inflammation prior to surgery
• prevention relapse after surgery
• the no hope case or instead of diversion
Combined seton, infliximab and maintenance immunosuppression

• 29 patients, 8 with rectovag fistula
• 67% complete response at 9m
• Partial in 4 with decreased drainage or infliximab dependence
• Setons in 13 removed after 2nd infusion

Topstad et al DCR 2003
Unresolved issues with infliximab therapy

- How long should setons be left in place?
- When should they be removed, after 2nd infusion?
- Can they be removed without any other intervention?
- What degree of continuing sepsis is acceptable?
- MRI or EUA?
- How long to continue with infliximab, every 8 weeks? (Sands et al NEJMEd 2004)
<table>
<thead>
<tr>
<th></th>
<th>number</th>
<th>primary failure</th>
<th>recurrence</th>
<th>follow up months</th>
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<tr>
<td>Moskowiez</td>
<td>20</td>
<td>1</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Jones</td>
<td>6</td>
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<td>3-67</td>
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<td>Lewis</td>
<td>6</td>
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<td>Fry</td>
<td>3</td>
<td>0</td>
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<td>-</td>
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<td>Joo</td>
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<td><strong>4 (11%)</strong></td>
<td><strong>28 (29%)</strong></td>
<td></td>
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</table>
Perianal Crohn’s Disease – fibrin glue and other novel therapies

• fibrin glue results are poorer than for cryptogenic fistula
  • Pharma treatment for fissure
Perianal Crohn’s Disease - Philosophy of Management

• incurable
• damage limitation
• patient comfort and confidence
• share the pain with a physician
Joint medical-surgical management

The aggressive physician

The conservative surgeon

The aggressive physician

Oxford

Colorectal