Current Surgical Management of Enterocutaneous Fistulas
Surgical prevention of ECF formation

Preparing your patient for surgery

The surgery to the bowel

The surgery of the abdominal wall
Surgical prevention

90% of non-Crohn’s fistulas follow surgery
Before elective surgery get your patient to lose weight and stop smoking

200kg
At surgery get your anatomy right

Closed end of ileum left in the abdomen

DJ flexure

Anastomosis

Descending colon
TRY NOT TO REOPERATE IN THE 8 DAY TO 6 MONTH WINDOW AFTER MAJOR INTRA-ABDOMINAL SURGERY
Do not re-operate in the 2 week to 3 month window after intraabdominal surgery.

<table>
<thead>
<tr>
<th></th>
<th>Early</th>
<th>3-12 weeks</th>
<th>6-12 months</th>
<th>&gt;12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality</td>
<td>30-100%</td>
<td>7-20%</td>
<td>3-9%</td>
<td>0-3%</td>
</tr>
<tr>
<td>ECF recurrence</td>
<td>40-60%</td>
<td>17-31%</td>
<td>10-14%</td>
<td>3%</td>
</tr>
</tbody>
</table>
Even in this 75yr old man we waited a further 4 months after this extrusion of dead gut on the ward before re-operating.
Do not use non-absorbable or cross linked biological mesh next to friable bowel
Do not use VAC pumps directly on fragile bowel
AND WHEN THINGS GO WRONG

JUST...JUST STOP

The more you go back in the worse the situation becomes
Do not panic
Get someone else involved
If you reoperate madly....
THE SURGICAL MANAGEMENT OF PATIENTS WITH ACUTE INTESTINAL FAILURE

September 2010

ISSUES IN PROFESSIONAL PRACTICE

THE SURGICAL MANAGEMENT OF PATIENTS WITH ACUTE INTESTINAL FAILURE

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the surgeon’s attitude to the development of serious postoperative complications may significantly complicate rational decision-making ......

The consultant responsible for the case should therefore consider, .......asking a similarly experienced colleague to give a second opinion about management, assist with further surgery where appropriate.......to fully take over the patient’s management
A typical referral – a 70 year farmer

- ITU to ITU transfer in 01/10/09
- Requested by ITU anaesthetic consultant
  “urgently before the surgeon operates yet again”
Clinical history

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 2008</td>
<td>Hartmann’s for T4N1 rectal cancer followed by chemotherapy</td>
</tr>
<tr>
<td>17/08/09</td>
<td>Reversal of Hartmann’s, ileostomy</td>
</tr>
<tr>
<td>19/08/09</td>
<td>Re-laparotomy, high jejunostomy for mid jejunal tear, mesh closure, VAC</td>
</tr>
<tr>
<td>26/08/09</td>
<td>Re-laparotomy for jejunostomy retraction, closure stoma</td>
</tr>
<tr>
<td>27/08/09</td>
<td>Re-laparotomy and debridement, VAC</td>
</tr>
<tr>
<td>02/09/09</td>
<td>Re-laparotomy for caecal perforation</td>
</tr>
<tr>
<td>18/09/09</td>
<td>Re-laparotomy and fasciotomy for fat necrosis</td>
</tr>
<tr>
<td>20/09/2009</td>
<td>Attempt to control fistula with Foley then attempt to repair it using Permacol</td>
</tr>
</tbody>
</table>

“I duly therefore closed the fistula primarily with two interrupted vicryl sutures over a Permacol overlay”
On arrival

- Septic, ventilated & on inotropes
- Tracheostomy
- Severe chest infection: *E. coli*
- Bilateral pleural effusions
- Anuric requiring haemofiltration
- GCS 10/15
- Laparostomy, with prolene mesh, stoma and fistulas
- RIF collection, Candida in drain fluid
Additional diagnoses

- Alcoholic cirrhosis
- Chronic renal failure
- Coeliac trunk atrophy
- Radiological mapping
  - rectal anastomosis – leak and stenosis
Early Surgical Intervention

06/10/09  Removal prolene mesh

Transferred to IF ward 10/11/09
Total ITU stay of 83 days (both hospitals)
Discharged home 17/02/10
Homecare issues

- Discharged on HPN
- Minimal lipid in PN as abnormal LFTs
- Alcoholic partner with antisocial behaviour
- Killer dog
  - Affecting HPN administration
  - Domestic hygiene
  - Homecare nurses felt unsafe, went in 2 at a time
- Fistuloclysis (daily bolus) prior to restorative surgery
Surgery

- Over 18 months later readmitted surgery
- Surgical procedure
  - 2 anastomoses
  - 140cm of small bowel to most of colon
  - End colostomy
  - Strattice mesh to the abdominal wall
- Self - discharged day 22
- Of PN one month later
**Intestinal failure patient**

<table>
<thead>
<tr>
<th>In hospital for months</th>
<th>Confined to bed</th>
<th>Nil by mouth</th>
<th>High output stoma/ECF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple laparotomies</td>
<td>Attempted ECF repairs or relook operations</td>
<td>Undrained pockets of sepsis</td>
<td>Patient wants surgical correction</td>
</tr>
<tr>
<td>Depressed</td>
<td>Abnormal liver functions</td>
<td>Repeated CVC infections</td>
<td>Gastroenterologist wants surgery</td>
</tr>
</tbody>
</table>

The pressure is on....
But be patient

and while you wait to operate.....
Get imaging

Exclude septic collections

Exclude distal obstruction

Find the optimal site of entry into the abdomen

Assess abdominal wall defects
Bowel mapping

- Ba follow through
- Fistulogram
- CT or MR enteroclysis
- Colonoscopy or alternative

Mesenteric CTA if vascular cause
ARP & EUS
Allow the abdomen to optimise
Optimise the nutrition
Get them mobile

Calcified joints from immobility
Exclude underlying disorders – Crohn’s, Behcet’s, Ehlers Danlos type IV, portal hypertension, mesenteric ischaemia
Optimise pain management

- Reduce opiates if intake high
- Multimodal approach
- Use a pain team where possible
- Deal with ‘clockwatching’ behaviour

Or postop pain management will be very difficult
Work on bad behaviour
Teach the patient wound care care
Get support from a dedicated gastroenterology psychiatrist
And finally to send the patient home prior to surgery.

“You could go home tomorrow, but it will take the plumber three days to disconnect you.”
Surgery to the bowel
→ Take a very broad consent
→ Put aside ample time
→ Go through the imaging with a radiologist just before surgery
→ Plan to take a break mid op or have a 2nd surgeon if the operation takes >5-6 hours
→ Do not be afraid to change the operative plan
Feel the abdomen & do a PV & PR on the table
→ Use the CT to show where to enter the abdomen – or go in next to the fistula
→ Use a scalpel to dissect very difficult areas
→ Mark or repair any serosal tears as you make them
→ We avoid anastomoses in malnourished patients, in the presence of ischaemia or next to active sepsis
Safety of ECF surgery

2005-15
0% in hospital / 30 day mortality
Surgery for abdominal wall defects
If in doubt abdominal CT can be used to predict difficulty of closure
Plan your operating time & order the right mesh (+/- a plastic surgeon)
These operations are not the same as an incisional hernia repair

- The patient may be less fit
- There is always faecal contamination
- The abdominal wall is inflamed
- There are holes in the abdominal wall from fistulas and stomas
- The blood supply to the bowel may be compromised
- They may have portal HT, etc etc ....
- The operation has already taken 6 hours before you even start the closure
Outcome of reconstructive surgery for intestinal fistula in the open abdomen

Connelly, Teubner, Lees, Scott, Carlson

Sutured closure 0% fistulas
Non-absorbable mesh 24.1% fistulas
Cross linked collagen mesh 41.7% fistulas
Outcomes of simultaneous large complex abdominal wall reconstruction and enterocutaneous fistula takedown


37 cases, mean hernia defect width 16.7 ± 5.1 cm
35 (95%) required fascial releases
36 (97%) had sublay biologic mesh reinforcement

Majority repaired with Strattice
65% wound infection
11% refistulated
32% hernia recurrence rate at median of 20 mths
Which of the new biological to choose?

- Human, porcine and fetal bovine dermis
- Porcine small intestine submucosa
- Bovine pericardium
  - Decellularized leaving only highly organized collagen
What is the best technique?

Fascial release
Component separation
Underlay/ Overlay

Inlay (not strong enough)
Interlay (not enough abdo wall)
Sandwich (? too expensive with a biological)
Fascial release – EO released just lateral to rectus sheath can gain 10cm in either direction to close a 20cm defect
Component separation +/- interlay mesh is not easy to do when there are fistulas, 1 or 2 stomas & inflammation / fibrosis of the abdominal wall.
Underlay mesh
Onlay mesh

Seromas

Higher recurrence rates
When do you use a plastic surgeon?
38 year old lady red-carded from another hospital for picking her own (and another patient's) wounds
Abdominal Wall Transplant
ECF surgery is done on patients who have been ill & traumatised patients – get it right first time