Medical management of high output fistulae and stomas

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Disclosures

- No disclosures
Workshop Objectives

- Review normal gut function
- Know the underlying aetiology of high output fistulae and stomas
- Review complications
- Know how to assess high output fistulae and stomas
- Treatment of high output fistulae and stomas
Intestinal fluid flux

• 7-8 litres of fluid in upper gut
  • Most reabsorbed in jejunum & ileum (small intestine)
  • Need a high salt concentration to absorb water in the jejunum (90mmol/L)

• 1.5-2 litres enters colon
  • 1.5-1.8L reabsorbed in colon
  • Colon absorbs up to 4L/day if infused slowly
  • With an ileostomy, initial volumes are often 1500-1800mL until adaptation

• Normally, 150-200mL excreted as stool
  • Low salt, low water content

10% reduction in colonic absorption doubles the stool volume
Ileal effluent
- Similar to cellular physiology
- High sodium (140mM)
- Low potassium (5mM)
- High magnesium (1mM)

Faecal effluent
- Depends on colonic absorptive capacity
- Low sodium (10mM)
- High potassium (70mM)
- Diarrhoea causes hypokalaemia

Ileostomy (high output)
- Hyponatraemia
- Hyperkalaemia
- Hypomagnesaemia
- Biochemical picture of Addison’s

High output stoma >1500mL/day
High output fistula >500mL/day

Do NOT discharge patients
### Aetiology of High Output Fistulae and Stomases

#### Who is at risk?
- Crohn’s patients
  - Fistulating disease
  - Ileostomy
    - Defunctioned
    - Permanent
- Colectomy
  - UC
  - Cancer
- Vascular accidents
- Other

#### Aetiology?
- Inflammatory burden
- Dietary intake
- Small bowel maladaption
- Short bowel syndrome
- Entero-enterofistulae can behave like high output stomas
- Hypoalbuminaemia
- Operating <3-6/12 after last laparotomy
Assessment of High Output Stoma/Fistulae

- Review History
  - Number of bag emptyings/night, associated pain, etc

- Request specialist dietician to review oral intake
  - Type of fluid, quantity of drinks, food, etc

- Check current medication
  - Doses of loperamide, omeprazole, lactose-containing medication
Consider cause of High Output Stoma/Fistulae

- Partial obstruction (parastomal hernia)
- Gastric acid hyper-secretion
- Bacterial overgrowth
- Pre-stomal ileitis (inflammation upstream of the stoma)
- Revealed latent disease (coeliac disease/ hypolactasia/ pancreatic disease/ pancreatic insufficiency/thyrotoxicosis)
- Infection (including ileal Clostridium difficile)
- Short bowel (surgical optimism on resected bowel length)
- Adaptation phase
- Uncontrolled inflammation, sepsis or malnutrition
Complications

- Dehydration/renal dysfunction
- Electrolyte abnormalities
- Renal Oxalate stones
- Psychological morbidity
- Death
## Stoma and Fistulae investigations

<table>
<thead>
<tr>
<th>Stoma</th>
<th>Fistulae</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measure volumes</td>
<td>Urine sodium (&gt;20mmol)</td>
</tr>
<tr>
<td>Fluid balance</td>
<td>Electrolytes (Na/K/Mg/Ca/PO4)</td>
</tr>
</tbody>
</table>

### Stoma
- Examine stoma (exclude stomal stenosis with little finger)
- Read op note (how much bowel left)
- Small bowel radiology
- Ileoscopy and biopsy
- Ileostogram
- Cross sectional imaging

### Fistulae
- Small bowel radiology (define anatomy, exclude distal obstruction)
- Fistulogram is rarely helpful (defines a connection between skin and bowel)
- Cross sectional imaging
- MR pelvis
- Direct visualisation (OGD/Colonoscopy, Ileoscopy) + biopsy
Fistula Treatment 1+2

- Antibiotics for bacterial overgrowth or sepsis
- High dose PPI (switch off gastric secretions)
- Mega dose loperamide (16-40-100mg/d) for high output
- Radiological drainage of abscess if appropriate
- Stomatherapy to protect skin
- IF dietician
- Enteric feed depending on location and output
- Fistuloclysis (occasionally possible for high fistula, long distal run off)
- TPN (if ECF output >500mL day and nutritional need)
- Nil by Mouth does not expedite healing!
Fistula Treatment 3+4

- Define Anatomy (see earlier slides)
- Treat medically and start planning surgical intervention if medical treatment fails
- 60% close spontaneously
- 90% conservative management by 4-6/52
- Albumin >30g/l necessary
- Albumin <30g/L usually = sepsis
- Address psychological support
- Wait (3-)6/12 after last laparotomy
High Output Stoma Treatment Step 1

- IF dietician
- Dietary adjustment
- Isotonic fluids
- Omeprazole (80mg/d)
- Megadose Loperamide (16 - 40 - 100mg/day)
- Antibiotic trial for bacterial overgrowth
If output still >1500mL/d

- NBM 48hrs iv fluids to assess baseline output
- Review all investigations and management
- IF dietician and stomatherapist
- Monitor electrolytes (incl. Mg) daily
- If baseline output >1200mL then consider the need for iv fluids longterm
High Output Stoma Treatment Step 3

If output <1200mL...

- Commence oral rehydration solution trial 48hrs
  - Na+ > 90 mmol

![Diagram of gut lumen](image)

<table>
<thead>
<tr>
<th>Oral Rehydration Salts</th>
<th>g/L</th>
<th>mM/L</th>
</tr>
</thead>
<tbody>
<tr>
<td>NaCl</td>
<td>3.5</td>
<td>90</td>
</tr>
<tr>
<td>NaHCO₃</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>KCl</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Glucose</td>
<td>20</td>
<td>111</td>
</tr>
<tr>
<td>Na⁺</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>K⁺</td>
<td>20</td>
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</tr>
<tr>
<td>Cl⁻</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>HCO₃⁻</td>
<td>30</td>
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*Image of oral rehydration solution packet*
High Output Stoma Treatment Step 4

<1500 mL/24hrs after isotonics

- Go to Step 5

>1500 mL/24hrs after isotonics

- Sequential trial:
  - Omeprazole 80mg/day
  - + loperamide 8mg 4-5xday (can increase up to 100mg/d)
  - + codeine 60mg 4xday
  - + octreotide 3 x day

- Stop octreotide after 72hr if impact <300mL/d

Output <1500mL
Go to Step 5

Output >1500mL
Plan longterm iv fluids/TPN
High Output Stoma Treatment Step 5

- Commence liquid feed (nutritional supplements)
- Measure effect on output
- >1500mL plan for TPN
- <1500mL go to Step 6
High Output Stoma Treatment Step 6

- Start food and monitor effect on output
### High Output Stoma Management

1. History/dietitian/investigate/empirical therapy
   - loperamide up to 100mg/d, omeprazole 80mg/d, antibiotic trial

2. Measure basal output

3. Impact of proper isotonics
   - monitor output, should be <1500mL/d

4. Optimise medication and monitor output

5. Add liquid feed and monitor output

6. Add solid food and monitor output

7. Decide on intravenous support
   - fluids + magnesium, or nutrition

### High Output Fistula Management

- SNAP
- Sepsis
- Nutrition
- Anatomical assessment
- Plan for surgery
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