Fistuloclysis (distal limb feeding)

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Overview

- Define what is meant by fistuloclysis (distal limb feeding)
- Consider the supporting evidence
- Describe the practicalities of undertaking it
- Present some case histories illustrating the benefits
Fistuloclysis/distal limb feeding

- The infusion of nutrients via defunctioned bowel
  - Fistula, loop stoma, double barrelled stoma, mucous fistula
  - Sole or supplemental nutrition support
- Enteral formula &/or reinfusion of ostomy effluent (chyme)
  - Bolus or continuous delivery
Potential benefits

- Increased absorption
  - Intestinal adaptation
- Prevent atrophy of distal intestine
  - Trigger release of enteroendocrine hormones, including GLP-2
- Potential for improvement in LFT’s
  - Prevent cholestasis
  - Diversion colitis
- Reduction in upper fistula output
  - Inhibition of upper GI secretions
- Possible reduction in PN requirements

Complications

- GI related
  - Diarrhoea
  - Nausea
  - Vomiting
  - Abdominal pain

- Tube related
  - Tube falls out
  - Tube blockage
  - Tube migration

Evidence base

- **Initial case series**
  - 12 patients
  - Minimum of 75cm of healthy small bowel
  - Standard polymeric feed
    - 12-16 hours
  - Low residue diet
  - PN until 90ml/hour tolerated
    - 11/12 patients off PN

- **Subsequent findings**
  - 69 patients
  - Median length of distal bowel 120cm
  - 51 patients successfully weaned off PN
  - 45 had successful reconstructive surgery

Methods of feeding

Continuous

Bolus
Which method?

Continuous
Method described in the literature
May permit reduction in or independence from PN
Can be difficult & time consuming
Issues with compliance & leakage

Bolus
No published reports to date
Unlikely to allow a significant reduction in PN
Easy
Increased compliance & reduced leakage

Aims of treatment & patient preference
What is going to go down the tube?

- **Feed**
  - Farrer et al (2014) ESPEN extract

- **Chyme**

- **Feed & Chyme**
  - Coetzee et al (2014) Colorectal Disease
  - Wu et al (2014) Gastroenterology Research & Practice
Which feed?

- No comparative studies to date
- Reports of polymeric, semi elemental & elemental being tolerated
  - Polymeric
    - 1kcal/ml 160ml/hour
    - 1.5 kcal/ml 70ml/hour
  - Peptide
    - 100ml/hour
- May be beneficial to select MCT feeds if feeding into the colon


>75cm SB
Full EN

- Colon
  - MCT based
    - Peptamen
    - Peptisorb
    - Vital 1.5
    - Nutrison MCT

- No Colon
  - Peptide
    - Perative
    - Peptisorb

<75cm of SB
Trophic

- Colon
  - MCT based
    - Peptamen
    - Liquigen
    - MCT Oil
    - Vital 1.5

- No Colon
  - Peptide
    - Perative
    - Peptisorb
Reinfusion

- Chyme (succus entericus)
  - Semi fluid mass of partly digested food
- Contains many enzymes
  - Salivary amylase, pepsin, pancreatic enzymes
- Bile
- Growth factors
  - EGF, HGF, KGF
- May promote nutritional absorption & adaptation
  - Can be given on its own or mixed with enteral formula

Would you do it?
Reinfusion of chyme

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Before CR</th>
<th>During CR</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intestinal absorptive function</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intestinal wet weight output (ml/day)</td>
<td>2384±969</td>
<td>216±242</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Net digestive absorption nitrogen (%)</td>
<td>44.5±12.5</td>
<td>84.0±12.2</td>
<td>&lt;0.0001</td>
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<tr>
<td>Net digestive absorption fat (%)</td>
<td>47.8±25.0</td>
<td>89.3±11.1</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Parenteral nutrition delivery (n) (%)</td>
<td>17 (65)</td>
<td>2 (8)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td><strong>Nutritional status</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>20.6±3.8</td>
<td>21.5±3.4</td>
<td>&lt;0.001</td>
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<tr>
<td>Nutrition Risk Index</td>
<td>79.7±15.4</td>
<td>90.9±12.9</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Serum albumin (g/dL)</td>
<td>2.8±0.9</td>
<td>3.5±0.9</td>
<td>0.0003</td>
</tr>
</tbody>
</table>

n=26

Monitoring

Same as for any enteral feeding
When should we do it?

- When there is downstream bowel
- When it is safe to use the bowel
  - Always have a distal contrast study first
- There is a clear goal
  - Nutrition support or trophic
  - Defined period or long term
- When the patient can cope with it physically & psychologically
  - Help in community limited
Tube selection

- **Balloon gastrostomy**
  - Sizes from 14-24 Fr in literature

- **Gastrojejunostomy**
  - Longer than balloon gastrostomy
  - Expensive

- **Foley catheter**
  - Risk of inward migration
  - Not licensed for enteral use

- **Fine bore feeding tube**
  - For intermittent use only as no external fixator

Tubes and any equipment used must be ISO (ENFIT) compliant
Appliance selection

- Involve stoma team
- Depends on distal limb presentation
  - Separate from output stoma
  - Within laparostomy
- Is tube remaining in situ
- Is feed continuous or bolus
- Need to consider
  - Ease of application for patient
  - Availability of product & support in community
Case study 1

- 56 year old lady
  - Roux en y bariatric surgery 2011
  - Ischaemic bowel 2014
- Complicated anatomy
  - Oesophageal stump not connected to the stomach
  - Segment of stomach to duodenostomy
  - 2 metres of floating bowel jejunostomy to ileostomy (not working)
- TDS bolus of 100mls of Fortisip™ Compact via jejunostomy
  - Ileostomy started functioning
Case study 2

- 64 year old male
  - 2000 Sigmoid Ca, Ileostomy
  - 2012 infarcted bowel
  - Jejunostomy 60-70cm
  - Mucous fistula

- Distal end of bowel not used for 14 years
  - BD bolus feeding 150 mls Vital 1.5
  - Bowels now opening
  - Reduction on nights on PN
  - Radiological improvement noted
Conclusion

- Fistuloclysis feeding should be considered in patients with downstream bowel
  - Tailored to the needs of the patient
- Patient participation & MDT involvement essential
- More research is required to optimise efficacy
References

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