Nutritional Management in Enterocutaneous fistula

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• What is enterocutaneous fistula
• Factors important in management of ECF
  – Etiology
  – Site
  – High or low
  – Favourable or unfavourable
• Nutritional Management
  – How much and what is required
  – How to give
  – Practical problems & their Management
  – cases
Entero cutaneous fistula
A Disaster !!!

- Surgeon
- Patient
- Hospital
• Phase I – acute – sepsis

• Phase II - Supportive treatment

• Phase III - Definitive treatment
Initial resuscitations

- Fluid resuscitation
- Electrolyte correction

Control of sepsis

- Antimicrobial treatment
- Source control
- Antimotility agents

Nutrition

- Enteral
- Parenteral

Control of effluent

- Wound management
# Causes

<table>
<thead>
<tr>
<th>Causes</th>
<th>Frequency (%)</th>
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<tbody>
<tr>
<td>• Postoperative</td>
<td>• 85</td>
</tr>
<tr>
<td>• Spontaneous</td>
<td>• 15</td>
</tr>
<tr>
<td>• Crohn disease and TB</td>
<td>• 39</td>
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<tr>
<td>• Ulcerative colitis</td>
<td>• 13</td>
</tr>
<tr>
<td>• Malignancy</td>
<td>• 9</td>
</tr>
<tr>
<td>• Radiation</td>
<td>• 6</td>
</tr>
<tr>
<td>• Diverticular disease</td>
<td>• 5</td>
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<tr>
<td>• others</td>
<td>• 27</td>
</tr>
</tbody>
</table>
Anatomic location

- Gastric
- Duodenal
- Small bowel (proximal vs distal)
- Large bowel
Proximal vs distal

- **Proximal fistulas (stomach, duodenal, jejunal)**
  - high output and loss of large quantities of important body fluids
  - Refeeding

- **Distal fistulas (distal ileum and colon)**
  - easier to manage
High or Low output

• Low output : <200 ml/day

• Moderate output : 200 - 500 ml/day

• High output : >500 ml/day
Losses at each site

- **Duodenum**
  - Tissue permeability: PD
  - Absorptive mechanisms: Na-nutrient, Na^+--H^+
  - Leaky: 3 mV
  - Secretions: 7000 mL

- **Jejunum**
  - Absorption: 7000 mL

- **Ileum**
  - Mod. leaky: 6 mV
  - Mod. tight: 12 mV
  - Na^+, Na-Cl, Na-nutrient, Na-bile acid

- **Cecum**
  - Mod. tight: 1500 mL

- **Proximal colon**
  - Tight: 1400 mL

- **Distal colon**
  - Tight: 100 mL

- **Salivary** 1500 mL
- **Gastric** 2500 mL
- **Biliary** 500 mL
- **Pancreatic** 1500 mL
- **Intestinal** 1000 mL
Favourable Factors

• No distal obstruction
• No intraabdominal collection
• No malignancy
• No Foreign body
• No radiation
• Long tract (>2.5cms)
• Small size of the opening
• Absence of inflammation
Route of nutrition administration

- Location of the fistula
- Output from fistula
- Nutritional status of the patient
- Long term vs short term requirement
- Enteral access (oral route, gastrostomy, jejunostomy)
• optimal nutrition (>3000 kcal/d)
  – mortality rate of 12%,
  – fistula closure rate 90%.

• unable to maintain this intake
  – mortality rate 55%
  – fistula closure rate 37%
Enteral Route

- **Gastric route**: oral feeding, orogastric tubes, nasogastric tubes, percutaneous endoscopic, percutaneous radiological, or surgical tube insertion.

- **Post pyloric feeding**: nasojejunal & feeding jejunostomy tube.
Benefits of enteral nutrition

- Natural
- Stimulates the gut function
- Enhances mucosal blood supply and improves its absorptive capacity
- Reduces the chances of bacterial translocation and thus minimises the chances of infection
Post-pyloric feeding

- prolonged inability to tolerate gastric feedings
- gastric outlet obstruction
- duodenal obstruction
- gastric or duodenal fistula
- severe gastroesophageal reflux
- inability to have a gastric enteral access tube due to altered anatomy
When we cannot use enteral route

- Insufficient bowel length
- Bowel incapable of absorbing nutrients (radiation enteritis, etc.)
- Progressive paralytic ileus
- Severe diarrhoea
- Severe malabsorption
Parenteral nutrition

- central or a peripheral
- Peripheral route the osmolality of the fluid < 900 mosl/l
- Central < 1400 mosl/l
Side effects of Parenteral Nutrition

- **Endocrine & metabolic:** Fluid overload, hypercapnia, hyperglycemia, hyper-/hypokalemia, hyper-/hypophosphatemia, metabolic bone disease, nonanion gap metabolic acidosis, refeeding syndrome
- **Hepatic:** Cholestasis, cirrhosis (<1%), gallstones, liver function tests increased, pancreatitis, steatosis, triglycerides increased
- **Renal:** Azotemia, BUN increased
- **Miscellaneous:** Bacteremia, catheter-induced infection, exit-site infections, DVT
Practical Problems

- Tubes placement
- Blockage and regurgitation
- Leakage around the tubes
- Refeeding

- PATIENCE
• Issues: To prevent formation of more enterocutaneous fistulas through the exposed bowel.

• Building up nutrition, to make the patient fit to tolerate second procedure.

• Care of stoma

• Maintaining of jejunal feeding for long term.

• Refeeding of the jejunostomy output through jejunostomy tube.
• Necrosed esophagus, stomach, duodenum and jejunum.
• Pancreatico and duodeno cutaneous fistula formed.
• Extremely difficult to manage technically and nutritionally
• Nutrition being managed by feeding jejunostomy.
• Refeeding of biliopancreatic collections
Multi disciplinary treatment

- Surgeon
- Wound management
- Nutritional care
- Fluid and electrolyte management
Conclusions

• Disaster
• Control of sepsis
• Proximal, high output worse
• Distal, low output better to manage
• Enteral better than parenteral
• Multidisciplinary approach
Thank You