“Jejunostomy after oesophagectomy, how and why I do it”

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Oesophageal Cancer.

- 8th most common adult malignancy.
- Rapidly increasing incidence.
- Median survival 9 months.
- 5-year survival 10-15% following “curative” resection.
Changing pattern of Oesophageal Cancer.

<table>
<thead>
<tr>
<th>Study</th>
<th>Period</th>
<th>% Adenocarcinoma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ellis 1959</td>
<td>1946-56</td>
<td>5.7%</td>
</tr>
<tr>
<td>Applequist 1975</td>
<td>1945-70</td>
<td>5.7%</td>
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<tr>
<td>Malik 1976</td>
<td>1962-73</td>
<td>5%</td>
</tr>
<tr>
<td>Sons 1984</td>
<td>1950-82</td>
<td>6.5%</td>
</tr>
<tr>
<td>Yang 1988</td>
<td>1973-82</td>
<td>13%</td>
</tr>
<tr>
<td>Wang 1986</td>
<td>1975-82</td>
<td>34%</td>
</tr>
<tr>
<td>Orringer 1984</td>
<td>1977-84</td>
<td>48%</td>
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</tbody>
</table>
Implications.

- More advanced stage at presentation.
- Younger population.
- Lower response rates than squamous cell carcinoma to neo-adjuvant/adjuvant treatment.
Why nutritional support?

- Pre-op.
- Peri-op.
- Post-op.
- Review of literature and unit experience in Edinburgh.
Personal results.

- 50 consecutive patients undergoing oesophagectomy.
- Notes available for 48.
- 21 minimally invasive.
- 27 Ivor Lewis.
- 35% (17/48) had pre op chemo.
Pre-operative concerns.

- Pre-operative chemotherapy.
- Based on OEO2 trial demonstrating survival advantage.
  - 2-year 43% vs 34%
  - 5-year 23% vs 17%
Weight changes during pre-operative chemotherapy.
ESPEN guidelines on TPN.


- Pre-op TPN in well-nourished or mildly undernourished patients is associated with either no benefit or with increased morbidity.

- Post-op nutrition should be via the enteral route or a combination of enteral and supplementary parenteral feeding in the first instance.
TPN vs Enteral nutrition.

- Meta analysis of 8 trials comparing TPN and TEN.
- “high-risk surgical patients have reduced septic morbidity rates with TEN compared with those receiving TPN”
Pre-op nutrition.

- 305 pts undergoing surgery for GI cancer randomised.

<table>
<thead>
<tr>
<th></th>
<th>Infections</th>
<th>Hospital Stay</th>
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</thead>
<tbody>
<tr>
<td>Pre-op only</td>
<td>13%</td>
<td>11.6 days</td>
</tr>
<tr>
<td>Pre + Peri-op</td>
<td>15.8%</td>
<td>12.2 days</td>
</tr>
<tr>
<td>No Supplement.</td>
<td>30.4%</td>
<td>14.0 days</td>
</tr>
</tbody>
</table>
Newcastle Trial.

- 300 patients undergoing upper GI resection randomised to:
  A. Omega-3 fatty acid preparation. 7 days pre and post op.
  B. Standard feed. 7 days pre and post op.
  C. Standard post op feed.

- No difference in: morbidity, mortality, antibiotic usage, hospital stay, immune function
Pre-operative concerns.

- Presence of dysphagia.
- (23/48) 48% of patients dysphagia to solids.
- All are assessed at initial clinic by dietician.
- Those with weight loss or swallowing difficulties are prescribed oral supplements.
- None required fine-bore feeding.
- Few if any patients are admitted for surgery in a malnourished state.
Peri-operative.

- Does early post-operative feeding reduce morbidity and mortality?
Early post op nutrition.

- 195 pts undergoing Upper GI surgery randomised to early post-op feeding with immune-enhancing formula or IV crystalloid.
- No difference in number of minor, major or infective complications.
- Not beneficial and should not be routine.
Early post op nutrition.

- 28 pts undergoing Upper GI surgery randomised to early post-op feeding or no feeding for 6 days.
- Feeding group had impaired respiratory mechanics and impaired post-op mobility.
- Immediate post-op enteral feeding should not be routine in well nourished patients at low risk of nutrition related complications.
Post–operative.

- **Main indications for nutritional support.**
  - Major Complication rate 30-66%.
  - Long-term nutritional difficulties.
Weight Change in Patients Undergoing Oesophagectomy

![Graph showing weight loss over time post-oesophagectomy.](Image)
At 6 months only 8% of patients have regained their pre-operative weight.
Post op Complications.

- 23/48 (48%) patients had complication.
- 10 pneumonia.
- 5 anastomotic leak.
- 8 other.
Weight changes in patients with post-op complications.

-35
-30
-25
-20
-15
-10
-5
0
5
10
15

Pre op 2 weeks 6months

Weight (Kg)

Time

Pre op 2 weeks 6months
Weight changes in patients without post-op complications.
Weight loss and Complications.

- **Complication Group**
  Average weight loss at 6 months post-oesophagectomy 9.7Kg (+11.9 -31)

- **No Complication Group**
  Average weight loss at 6 months post-oesophagectomy 6.7Kg (+4.8 -15.1)
Weight loss and Survival.

- 34/48 (71%) of patients were alive and disease-free at 2 years.
- 13/14 (93%) had node positive disease.
- 10/14 (71%) had received pre-op chemo.
Weight Changes in Patients with Recurrent Disease within 24 months.

Time

Weight(Kg)
Weight Changes in Patients Without Recurrent Disease at 24 months.

-35
-30
-25
-20
-15
-10
-5
0
5
10
15
Pre op 2 weeks 6months
Time
Weight(Kg)
Weight loss and Survival.

- **Early Recurrence Group**
  Average weight loss at 6 months post-oesophagastomy 7.8Kg (+1.5 - 18.4)

- **No Recurrence Group**
  Average weight loss at 6 months post-oesophagastomy 7.6Kg (+11.9 - 31)
Why feeding jejunostomy?

Alternatives.

- Fine-bore feeding.
  Uncomfortable.
  Blockage.
  Displacement.
- TPN.
  Expensive.
  Line complications.
  Unsuitable for home use.
Feeding jejunostomy in Oesophageal surgery.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Year</th>
<th>Study design</th>
<th>Patient No.</th>
<th>Complication rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brandmair</td>
<td>1988</td>
<td>RCT</td>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td>Gerndt</td>
<td>1994</td>
<td>Retrospective</td>
<td>523</td>
<td>2.1</td>
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<tr>
<td>Wakefield</td>
<td>1995</td>
<td>Retrospective</td>
<td>58</td>
<td>14</td>
</tr>
<tr>
<td>Mercer</td>
<td>1996</td>
<td>RCT</td>
<td>32</td>
<td>13</td>
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<tr>
<td>Yagi</td>
<td>1999</td>
<td>Retrospective</td>
<td>78</td>
<td>4</td>
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<tr>
<td>Date</td>
<td>2004</td>
<td>Retrospective</td>
<td>42</td>
<td>21</td>
</tr>
<tr>
<td>Han-Geurts</td>
<td>2004</td>
<td>RCT</td>
<td>1166</td>
<td>1.1</td>
</tr>
<tr>
<td>Han-Geurts</td>
<td>2007</td>
<td>RCT</td>
<td>150</td>
<td>35</td>
</tr>
</tbody>
</table>
Post-op feeding.

- Length of feeding tube insertion.
- Patients with complications: Median 11.5 weeks (4-32 weeks):
- Patients without complications: Median 8 weeks (1-32 weeks).
Tube complications.

- 6/48 (12.5%) had minor complications.
- 4 fell out at 9 wks, 12 wks, 6 months and 7 months.
- 1 pulled out at 7 days.
- 1 infection at 4 weeks.
- No tube required replacement or reoperation.
Which feeding jejunostomy tube?

Alternatives.

- **T-tube.**
  Large diameter.
  High leak rate.
  Difficult to unblock.

- **Foley catheter.**
  Large diameter.
  High leak rate.
  Difficult to unblock.
FREKA® SURGICAL JEJUNOSTOMY SET

- **Indications**

For early post-operative long-term intra-jejunal nutrition after laparotomy or laparoscopy.

- **Contraindications**

  - Ileus
  - Immune suppression
  - Peritonitis
  - Acute Abdomen
  - Sepsis
  - Ascites
  - Blood clotting disorders
  - Severe general wound healing disorders
  - Peritoneal carcinoma
  - Crohn’s disease
  - Ulcerative Colitis
FREKA® SURGICAL
JEJUNOSTOMY SET
Jejunostomy Feeding Protocol

Flush jejunostomy tube 6 hourly with 50mls sterile water when not in use.

1. **Start Nutrison Standard at 10ml/hr for 12 hours**
   - Increase rate to 25ml/hr for 12 hours
     - **YES**
       - GI complications (abdominal distension +/- vomiting)?
         - **YES**
           - Abdominal distension +/- vomiting?
             - **YES**
               - Seek medical advice
             - **NO**
               - Increase rate to 25ml/hr for 12 hours
         - **NO**
           - Reduce rate to 10ml/hr for 12 hours
     - **NO**
       - Increase rate to 50ml/hr for 24 hours
         - Is patient >70kg?
           - **YES**
             - Increase rate to 75ml/hr for 24 hours
             - Do not increase rate until seen by dietician
           - **NO**
             - Do not increase above 50ml/hr x 24 hours until seen by dietician
Conclusions.

- All patients with oesophageal cancer need ongoing dietary assessment from time of diagnosis to discharge or death.
- The main indication for feeding is to maintain nutrition in patients with post-operative complications or those with prolonged poor oral intake.
- Feeding is best achieved using a Freka jejunostomy.