NUTRIENT INTAKE AND CONTRIBUTION OF HOME JEJUNOSTOMY FEEDING IN MEETING NUTRITIONAL REQUIREMENTS AFTER OESOPHAGECTOMY AND TOTAL GASTRECTOMY

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A systematic review of the nutritional consequences of esophagectomy
Clinical Nutrition
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Patient and Family Caregivers’ Experiences of Living With a Jejunostomy Feeding Tube After Surgery for Esophagogastric Cancer
JPEN
DOI: 10.1177/0148607115604114
Background

• Quality of life is reduced during the first 12 months after oesophagectomy

• Poor nutrition may be a contributing factor to this \(^3\)

• Body mass index deteriorates between 8% – 10% in the first 6 months after surgery \(^4\)-\(^5\)

• Post-operative nutritional support remains controversial in terms of use, route, timings & amounts given.

• Studies evaluating the role of extended JEJ feeding are lacking.
Study Schema

Part A (RCT)
Recruited Pre-Surgery
Baseline Assessment (Visit 1)
Pre hospital Discharge (Visit 2)

INTERVENTION
6 Weeks Home JEJ feeds
(in addition to standard clinical / dietetic care)

CONTROL
6 Weeks standard clinical / dietetic care.
(JEJ restarted if clinical / dietetic need)

ASSESSMENTS
Post Hospital discharge – 6 weeks (Visit 3),
3 months (Visit 4),
6 months post OP (Visit 5)

Part B (Qualitative)
Max 20 Participants
+/- carers interviewed
Methods

• Nutritional Assessment
  – Weight, height, BMI, % weight loss
  – MAMC, TSF, Hand Dynamometry

• Nutritional Intake
  – 3 days food diaries analysed using Dietplan 6
  – JEJ intake estimated for same period.
Nutritional Intake

• Nutritional Requirements
  – Energy. Henry Equation + PAL (1.3 to 1.5)
  – Protein. 1.25g/kg/day
  – RNI for micronutrients

• Adequacy of Nutritional Intake
  – >90% of estimated energy and protein
  OR
  – Meeting RNI for micronutrients
Results: Participants

41 participated in the Study

- 18 HOME JEJ Feeding
- 17 had no HOME JEJ Feeding
- 6 Restarted HOME JEJ Feeding
<table>
<thead>
<tr>
<th>Micronutrient</th>
<th>Hospital Discharge (n=35)</th>
<th>3 months post operation (n=36)</th>
<th>6 months post Operation (n=34)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium (mg)</td>
<td>572 (284) / 14%</td>
<td>971 (419) / 47%</td>
<td>1037 (316) / 62%</td>
</tr>
<tr>
<td>Iron (mg)</td>
<td>5.0 (4.4) / 9%</td>
<td>9.1 (4.9) / 47%</td>
<td>10.3 (3.2) / 68%</td>
</tr>
<tr>
<td>Magnesium (mg)</td>
<td>77.2 (46.7) / 0</td>
<td>198 (80) / 22%</td>
<td>239 (66) / 24%</td>
</tr>
<tr>
<td>Selenium (µg)</td>
<td>9.6 (12.7) / 0</td>
<td>31.1 (20.0) / 3%</td>
<td>47.9 (26.9) / 21%</td>
</tr>
<tr>
<td>Zinc (mg)</td>
<td>3.2 (2.9) / 6%</td>
<td>7.7 (3.3) / 39%</td>
<td>9.0 (2.5) / 41%</td>
</tr>
<tr>
<td>Vitamin A (µg)</td>
<td>202 (225) / 3%</td>
<td>1329 (2620) / 39%</td>
<td>946 (1868) / 29%</td>
</tr>
<tr>
<td>Vitamin C (mg)</td>
<td>45 (41.5) / 43%</td>
<td>61.3 (52.0) / 61%</td>
<td>92 (128) / 71%</td>
</tr>
<tr>
<td>Vitamin E (mg)</td>
<td>2.5 (3.0) / n/a</td>
<td>6.0 (3.6)</td>
<td>8.1 (5.2)</td>
</tr>
<tr>
<td>Thiamine (mg)</td>
<td>0.5 (0.4) / 12%</td>
<td>1.2 (0.5) / 75%</td>
<td>1.4 (0.4) / 94%</td>
</tr>
<tr>
<td>Riboflavin (mg)</td>
<td>1.0 (0.5) / 20%</td>
<td>1.9 (0.9) / 81%</td>
<td>2.0 (0.9) / 82%</td>
</tr>
<tr>
<td>Niacin (mg)</td>
<td>5.1 (4.5) / 6%</td>
<td>13.3 (7.6) / 50%</td>
<td>18.2 (7.3) / 59%</td>
</tr>
<tr>
<td>Vitamin B6 (mg)</td>
<td>0.5 (0.4) / 9%</td>
<td>1.4 (0.7) / 59%</td>
<td>1.7 (0.5) / 71%</td>
</tr>
<tr>
<td>Folate (µg)</td>
<td>110 (69) / 12%</td>
<td>180 (85) / 36%</td>
<td>229 (87) / 59%</td>
</tr>
</tbody>
</table>
Contribution of JEJ and Oral intake in meeting estimated Energy and Protein needs (6 weeks after hospital Discharge)

<table>
<thead>
<tr>
<th></th>
<th>ENERGY</th>
<th>PROTEIN</th>
<th>ENERGY</th>
<th>PROTEIN</th>
<th>ENERGY</th>
<th>PROTEIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Fed (n=18)</td>
<td><img src="ENERGY_NOT_FED" alt="Graph" /></td>
<td><img src="PROTEIN_NOT_FED" alt="Graph" /></td>
<td><img src="ENERGY_RESCUE_JEJ" alt="Graph" /></td>
<td><img src="PROTEIN_RESCUE_JEJ" alt="Graph" /></td>
<td><img src="ENERGY_PLANNED_JEJ" alt="Graph" /></td>
<td><img src="PROTEIN_PLANNED_JEJ" alt="Graph" /></td>
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</tbody>
</table>

**Legend:**
- JEJ Intake
- Oral Intake
# Weight Change

<table>
<thead>
<tr>
<th></th>
<th>3 months post operation</th>
<th>6 months post operation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Planned JEJ (n=16)</td>
<td>Rescue JEJ fed (n=6)</td>
</tr>
<tr>
<td>Weight (%)</td>
<td>-6.6 (5.6)</td>
<td>-8.3 (7.5)</td>
</tr>
<tr>
<td>≥5%</td>
<td>7 (43%)</td>
<td>4 (67%)</td>
</tr>
<tr>
<td>≥10%</td>
<td>4 (25%)</td>
<td>3 (50%)</td>
</tr>
<tr>
<td></td>
<td>No JEJ feed (n=17)</td>
<td>Planned JEJ (n=14)</td>
</tr>
<tr>
<td>Weight (%)</td>
<td>-12.2 (4.8)</td>
<td>-8.1 (5.8)</td>
</tr>
<tr>
<td>≥5%</td>
<td>16 (94%)</td>
<td>9 (64%)</td>
</tr>
<tr>
<td>≥10%</td>
<td>12 (71%)</td>
<td>6 (43%)</td>
</tr>
<tr>
<td></td>
<td>Rescue JEJ Fed (n=6)</td>
<td>No JEJ feed (n=17)</td>
</tr>
<tr>
<td>Weight (%)</td>
<td>-8.9 (4.8)</td>
<td>-13.6 (6.7)</td>
</tr>
<tr>
<td>≥5%</td>
<td>5 (83%)</td>
<td>15 (88%)</td>
</tr>
<tr>
<td>≥10%</td>
<td>3 (50%)</td>
<td>13 (76%)</td>
</tr>
</tbody>
</table>
Change in Nutritional Status (mean shown)

Hand Grip Strength

MAMC

Planned JEJ
Rescue JEJ
No JEJ
Discussion

Routine planned Home JEJ feeding offers potential for early nutritional advantage.

Limitations
- Small numbers
- Estimating nutritional intake / requirements / adequacy of intake.

Further large scale studies appropriate
- Consider appropriate primary outcome measure and comparison groups.
- Need to explore why nutritional intake is poor.
Acknowledgements

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