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Total Parenteral Nutrition in Patients Following Pancreaticoduodenectomy: Lessons from 1184 Patients

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Total parenteral nutrition (TPN) has historically been used conservatively in the management of patients after pancreaticoduodenectomy (PD).

In this study, we evaluate the indications for and outcomes associated with TPN use in a high-volume pancreatic surgery center.

**RESULTS**

**Table 1. Patient Demographics and Operative Data**

<table>
<thead>
<tr>
<th>Complication</th>
<th>No TPN (n=952)</th>
<th>TPN (n=332)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>453 (48)</td>
<td>156 (67)</td>
<td>0.0001</td>
</tr>
<tr>
<td>Age</td>
<td>66.8 (18-92)</td>
<td>69.3 (37-90)</td>
<td>0.007</td>
</tr>
<tr>
<td>BMI</td>
<td>25.6 (10.8-52.6)</td>
<td>26 (15-43.9)</td>
<td>0.30</td>
</tr>
<tr>
<td>Diabetic</td>
<td>245 (26)</td>
<td>60 (26)</td>
<td>1.00</td>
</tr>
<tr>
<td>Smoker (Current or Past)</td>
<td>448 (47)</td>
<td>131 (56)</td>
<td>0.01</td>
</tr>
<tr>
<td>Pylorus Preservation</td>
<td>801 (84)</td>
<td>183 (79)</td>
<td>0.06</td>
</tr>
<tr>
<td>EBL (mL)</td>
<td>430 (50-1600)</td>
<td>630 (40-8000)</td>
<td>0.08</td>
</tr>
<tr>
<td>Soft Gland (n=872; n=204)</td>
<td>421 (48)</td>
<td>114 (56)</td>
<td>0.05</td>
</tr>
<tr>
<td>Pathology</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PDA</td>
<td>601 (63)</td>
<td>164 (71)</td>
<td>0.03</td>
</tr>
<tr>
<td>IPMN</td>
<td>138 (15)</td>
<td>27 (12)</td>
<td>0.29</td>
</tr>
<tr>
<td>Pancreatitis</td>
<td>52 (5)</td>
<td>6 (3)</td>
<td>0.09</td>
</tr>
</tbody>
</table>

Forty-four (19%) patients received short-course TPN (≤3 days), primarily those diagnosed with isolated Grade A DGE without associated complications (p=0.0003).

Multivariate analysis suggests the presence of deep surgical site infection (OR 3.09, [1.16 - 5.06], p=0.018) or PF (OR 2.57, [1.03 – 6.41], p=0.043) at the time of DGE presentation as predictive of long-term TPN requirement.

**KEY FINDINGS**

- The most common indications for TPN were delayed gastric emptying (DGE, n=171, 73.7%), pancreatic fistula (PF, n=102, 44%), and generalized malnutrition (n=25, 10.8%).
- The median day of TPN initiation was POD 4 (range: minus 31 to 22), with a median usage of nine days (range: 1 to 115).
- Forty-four (19%) patients received short-course TPN (≤3 days), primarily those diagnosed with isolated Grade A DGE without associated complications (p=0.0003).

**CONCLUSIONS**

- TPN is safe and effective in patients following PD.
- Avoid TPN in patients with isolated DGE secondary to anastomotic edema.
- Use TPN in patients with DGE and another serious complication such as deep surgical site infection or PF.