

Early Combined Parenteral and Enteral Nutrition

A new strategy to feed patients after Pancreaticoduodenectomy

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Introduction

Existing guidelines for nutritional support after pancreaticoduodenectomy (PD) are controversial. Whereas American guidelines favour oral intake only, the society of “Enhanced Recovery After Surgery” (ERAS) favours early enteral nutrition (EN). There have been some novel studies which have provided evidence that supplementation of parenteral nutrition (PN) in combination with EN improves outcome. The aim of this study was to assess feasibility and outcome of Early Combined Parenteral and Enteral Nutrition (ECPEN) after PD.

Methods

We retrospectively reviewed 79 consecutive cases involving PD procedures performed between 2003 and 2012. Enteral and parenteral nutritional support was standardized and started immediately after surgery. EN was increased 40 ml/h over 24 hours, while PN was supplemented based on an energy target of 25 kcal/kg of ideal bodyweight per day.

The primary endpoint was the caloric intake of patients per day and as total amount during the entire hospital stay in relation to the individual energy target (caloric balance). Secondary endpoints were mortality, morbidity, the influence of feeding routes (nasojejunal vs. jejunostomy) and preoperative immunonutrition.

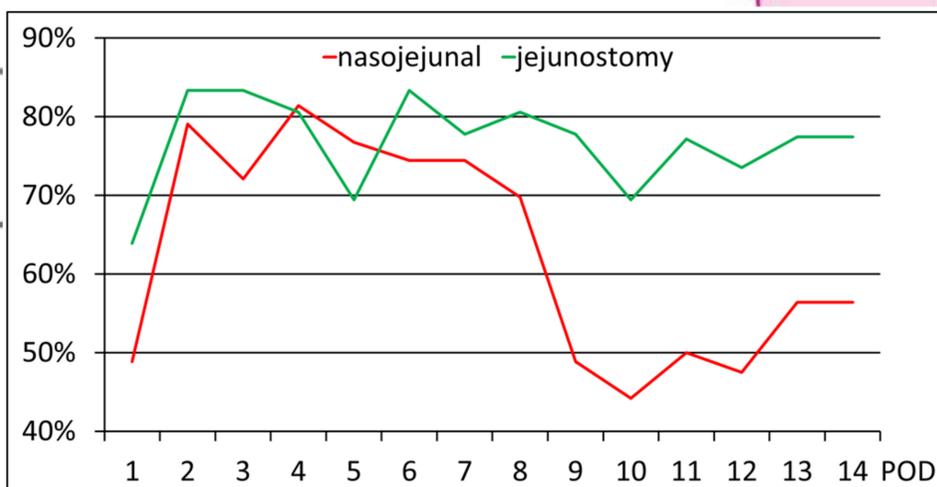


Figure 1: Achievement of caloric goal per day for nasojejunal tube and jejunostomy tube

Patients n=79		p=0.04
Complication	Deficite/ kgBW°	
None (n=17)	8 (0-43)	
Major (n=19)	29 (0-255)	

°mean with range

Table 1: Caloric deficite per complication group

Results

79 patients supported with ECPEN after PD were analysed. Overall in 1324 out of 1853 days of hospitalisation (71%) the energy target was achieved. The total caloric deficit in relation to the targeted total amount of calories during hospitalisation was 754 kcal (range: 0 – 16350 kcal). The catheter jejunostomy was associated with a significantly higher rate of days with sufficient caloric intake as compared to the nasojejunal catheter (75% vs 59%, p= 0.01; Figure 1).

Mortality was 5% (4 out of 79 patients) while major complications (Dindo-Clavien III – V) occurred in 24% (19 out of 79). The rate of postoperative pancreatic fistulas was 15.2% (Grade A: 2, B: 7, C: 3). Major complications were associated with a significant higher deficit of postoperative total caloric intake (30kcal/kg vs. 8kcal/kg; p= 0.04; Table 1). However, preoperative immunonutrition did not affect outcome at any level.

Conclusion

This is the first European study of Early Combined Parenteral and Enteral Nutrition after PD. ECPEN provides a comprehensive coverage of the nutritional requirements during the postoperative phase. Sufficient caloric intake is associated with a lower rate of major complications.