

Enteral nutrition led to fewer postoperative complications than did parenteral feeding in gastrointestinal cancer

Bozzetti F, Braga M, Gianotti L, Gavazzi C, Mariani L. Postoperative enteral versus parenteral nutrition in malnourished patients with gastrointestinal cancer: a randomised multicentre trial. *Lancet*. 2001 Nov 3;358:1487-92.

QUESTION

In malnourished patients having elective surgery for gastrointestinal cancer, is enteral nutrition (EN) better than parenteral nutrition (PN) for reducing postoperative complications?

DESIGN

Randomized {allocation concealed*}†, unblinded,* controlled trial with follow-up to discharge.

SETTING

10 Italian centers.

PATIENTS

317 patients who were ≥ 18 years of age (mean age 64 y, 58% men) and had weight loss $\geq 10\%$ of usual body weight in the previous 6 months, histologically confirmed cancer, and planned major elective surgery. Exclusion criteria were hepatic, renal, or cardiac dysfunction; Karnofsky performance status < 60 ; pregnancy; ongoing infection; and intestinal anastomosis of the large bowel without a diverting stoma. Follow-up was complete.

INTERVENTION

Patients were allocated to EN ($n = 159$) or PN ($n = 158$). Patients in the EN group had a jejunostomy feeding catheter or a nasojeju-

nal feeding tube placed during surgery. PN was given by central venous catheter.

MAIN OUTCOME MEASURES

Postoperative complications. Secondary outcome measures were length of postoperative hospital stay, adverse events, and treatment switchover.

MAIN RESULTS

Analysis was by intention to treat. Fewer patients in the EN group than in the PN group had postoperative complications ($P = 0.005$); the mean length of postoperative hospital stay was shorter in the EN group ($P = 0.009$) (Table). More patients in the EN group than in the PN group had adverse events (abdominal distention and cramps, diarrhea, and vomiting) ($P < 0.001$)

(Table) and more switched treatments (8.8% vs 0%, $P < 0.001$).

CONCLUSION

In malnourished patients having elective surgery for gastrointestinal cancer, enteral nutrition led to a lower complication rate and shorter postoperative hospital stay than did parenteral nutrition but was not as well tolerated.

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*See Glossary.

†Information provided by author.

Enteral nutrition (EN) vs parenteral nutrition (PN) for malnourished patients having surgery for gastrointestinal cancer†

Outcomes at discharge	EN	PN	RRR (95% CI)	NNT (CI)
Overall postoperative complications	34%	49%	31% (10 to 48)	7 (4 to 22)
			RRI (CI)	NNH (CI)
Adverse events	35%	14%	153% (64 to 294)	5 (4 to 9)
			Mean difference (CI)	
Length of postoperative stay (mean d)	13.4	15.0	1.6 (0.5 to 2.7)	

‡Abbreviations defined in Glossary; RRR, RRI, NNT, NNH, mean difference, and CI calculated from data in article.

COMMENTARY

Many clinicians, including Bozzetti and colleagues, believe that nutritional support, or the nonvolitional infusion of nutrient-containing solutions into patients who are malnourished or at risk for becoming so, is beneficial. The question that Bozzetti and colleagues asked is whether any differences exist between parenteral or enteral routes of infusion. They found that although it was more difficult to deliver the planned nutrient load with EN, that group had fewer complications (particularly infectious ones) and a shorter mean hospital stay. Their results are consistent with a meta-analysis of 27 randomized controlled trials (RCTs) that found that PN caused more infections than did EN or standard care (1).

The study by Bozzetti and colleagues was not blinded. The identification of complications can be subjective. For example, does a chest x-ray show an infiltrate or only a confluence of shadows? Decisions by unblinded clinicians could be influenced by preexisting bias. However, in this trial, the complications were objectively defined beforehand and were diagnosed by persons not directly involved in the study.

This study did not include a group that received no nutritional support. Thus, these data do not address the value of either type of nutri-

tional support in relation to conventional management. Lipman, Klein, and I reported a meta-analysis of 82 RCTs (not just surgical) that compared PN with standard care (2). The only difference in clinical outcomes was that the recipients of PN had more infectious complications (absolute risk increase 5%, 95% CI 1% to 9%). The fact that EN led to fewer complications than did PN does not prove that it is superior to standard care. It may be that infusions of nutrients are harmful and that the superiority of EN over PN relates to the delivery of fewer nutrients (3). We need large RCTs that compare early EN with standard care to know whether clinicians should offer any nutritional support at all.

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