Nutritional Support in the Perioperative Period

Topic 17

Module 17.3

Nutritional Support in the Perioperative Period

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Learning Objectives

- Understand the principles behind nutritional care for elective surgical patients;
- Recognise key issues that allow restoration of oral food intake quickly and safely following major surgery;
- Understand the specific issues surrounding provision of nutritional support for malnourished/complicated patients in the post-operative period.

Contents

Key Messages

- Restoration of normal gastrointestinal function is a key aspect of postoperative care and is promoted by the use of enhanced recovery programs;
- Early oral feeding improves outcomes and should be facilitated;
- The malnourished patient are at high risk of postoperative complications;
- Nutritional support should be considered on an individual basis for all patients undergoing major surgery.

1. Principles of post-operative care

For **normally nourished** patients, one of the key objectives of postoperative care is restoration of normal GI function to allow adequate food intake and rapid recovery. Normally nourished patients clearly have no pre-existing nutritional deficit and thus if GI function is restored shortly after surgery there should be no risk of developing nutrition-related morbidity/mortality.

In contrast, **malnourished** patients are at increased risk of postoperative complications and mortality, yet artificial nutritional support in itself can be associated with major complications.

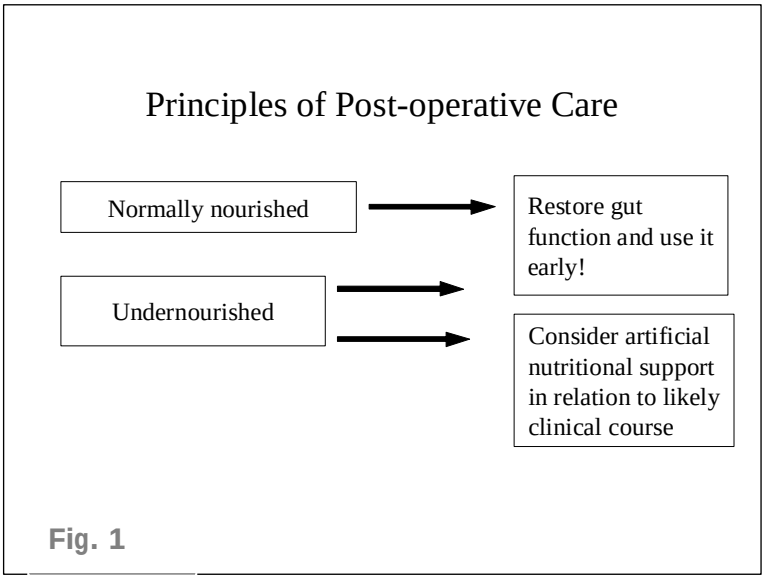

Fig. 1

Thus if outcome is to be improved in malnourished patients not only must restoration of GI function be as rapid as possible but the quality of care surrounding any targeted artificial nutritional support must be of the highest standards.

2. Promotion of oral food intake for patients not at nutritional risk

Oral intake should be commenced as soon as possible after surgery.

A meta-analysis of controlled trials (11 studies with 837 patients) of early enteral feeding versus 'nil by mouth' after GI surgery, concluded there is no clear advantage to keeping patients nil by mouth after elective GI resection (1).

Early feeding reduced both the risk of any type of infection and the mean length of stay in hospital. However the risk of vomiting increased in patients fed early.

For patients with an anastomosis in the upper GI tract, ingestion of solid food may have to be delayed for several days (e.g. until contrast studies confirm an intact oesophageal anastomosis).

Meta-analysis of selective versus routine nasogastric decompression

(20 trials, quality score > 0.5, 2915 patients)

	Selective	Routine	P Value	RR
Patients	1413	1502		
Tubes placed/replaced	100	36	<0.0001	2.95
Complications	770	877	0.79	0.93
Deaths	13	23	0.31	0.60
Pneumonia	51	92	0.01	0.59
Atelectasis	44	90	0.002	0.52

Fig. 2

Following colorectal operations where the GI tract remains functional solid food can be commenced without adverse effect on the first postoperative day (2). Patients may find liquid supplements easier to take in the first instance.

The following key issues should be addressed if restoration of oral food intake is to be achieved quickly and safely:

- **Avoiding routine nasogastric intubation**
  To promote a return to normal dietary intake, the presence of a nasogastric (NG) tube should be avoided. Avoiding routine nasogastric decompression after abdominal surgery significantly reduces the incidence of fever, atelectasis and pneumonia (3).
- **Provision and access to appetising food**
  Patients should not be fasted for any longer than necessary, either for investigations or surgery. Studies in hospital patients have shown that up to 20% of meals are missed while patients attend

or are fasted for investigative or therapeutic interventions, whilst 40% of the content of meals delivered to the patient is discarded (4). The provision of appetising hospital food and access to sufficient nursing staff to help patients who have difficulty in eating is a key issue in helping patients return to a normal food intake.

- **Postoperative nausea and vomiting**
  The control of postoperative nausea and vomiting is essential if patients are to resume normal oral fluid and dietary intake. The regular use of anti-emetics according to a strict protocol and with an emphasis on targeting high risk patients is strongly recommended.
- **Prevention of postoperative Ileus**
  The effect of early enteral feeding on ileus is controversial. The only manoeuvre proven to reduce the incidence of post-operative ileus is the use of epidural analgesia during and after surgery (5).
- **Use of oral nutritional supplements**
  Patients who are malnourished either at the time of, or shortly following, major abdominal or vascular surgery have a more rapid recovery of nutritional status, physical function and quality of life, if given nutritional advice and prescribed routine oral supplements in the immediate postoperative period and following two months (6).
  The evidence supporting the short term routine use of oral supplements in patients who are not malnourished is not clear (7, 8).
- **Multimodal enhanced recovery programmes**
  Use of early oral or artificial enteral nutrition at a time when gastrointestinal function has not returned to a suitable level can be associated with abdominal distension, vomiting and respiratory embarrassment (9). In contrast, multimodal enhanced recovery programmes (with a focus on pain control, early mobilisation and promotion of gastrointestinal function) are associated with an early return of oral nutrition in the postoperative period (10, 11). Patients care pathways should therefore, be designed to take account of a multimodal approach (12) (see also Module 17.6).

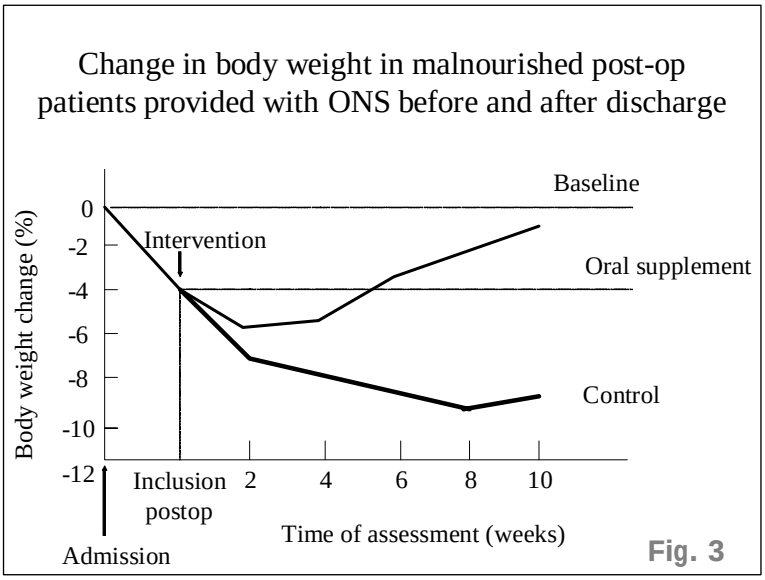

Fig. 3

3. Nutritional support for malnourished patients

Protein/calorie undernutrition can vary from mild (e.g. < 5% weight loss) to severe (e.g. > 15% weight loss, BMI < 18 kg/m^2, albumin < 30 g/l) and can occur in patients undergoing surgery for benign or malignant disease. The need for nutritional support should be considered in relation to each patient's nutritional status and surgical pathology. Patients who are identified as malnourished should be referred to the unit dietician for further assessment and management.

- **Malnutrition and surgical risk; screening tools**
  Patients who are malnourished are at increased risk of postoperative complications (13, 14). A variety of strategies have been suggested for screening patients for malnutrition in the community, but it is not clear whether their implementation reduces morbidity or mortality.
- **Malnutrition in benign disease**
  There is no evidence that malnourished patients with benign disease and requiring surgery (e.g. Crohn's disease) benefit from prolonged preoperative artificial nutrition support. Such patients are best treated by surgical correction of their pathology followed by intensive nutritional support in the postoperative period.
- **Malnutrition in malignant disease**

There is some evidence to suggest that severely malnourished patients with cancer benefit from perioperative total parenteral nutrition (TPN) (15). This benefit does not pertain to cancer patients with mild or moderate malnutrition, where a meta-analysis has shown that perioperative TPN has no benefits in terms of mortality (16).

Upper GI cancer patients are often given postoperative enteral feeding either via a jejunostomy or fine-bore nasoenteral feeding tube. This allows maintenance of nutritional status should the patient develop a postoperative complication that retards normal progression towards oral nutrition (e.g. an anastomotic leak).

Risk ratios and associated 95% confidence intervals for the effect of total parenteral nutrition (TPN) on major complication

A meta-analysis has demonstrated that enteral nutritional support supplemented with immunomodulatory nutrients results in a significant reduction in the risk of developing infectious complications but has no effect on mortality (17). The cost effectiveness of such a strategy has not been clearly established. Immunonutrition may be given preoperatively as well as postoperatively (18).
In summary mild or moderately malnourished cancer patients should proceed with surgery and only receive artificial nutritional support if specifically indicated. All malnourished cancer patients should be considered for nutritional advice and oral supplements in the postoperative period and for a period following discharge.

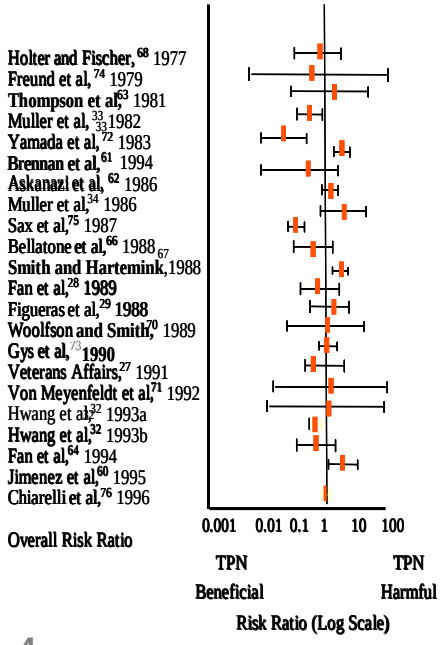

Fig. 4

Heyland et al 1998, JAMA, 280: 2013, 9

4. Use of artificial nutritional support

Generally, if oral nutritional is not re-established within five to seven days postoperatively, enteral or parenteral feeding should be considered (see Module 17.4).

5. Summary

It is vital to consider a patient's nutritional status throughout their surgical journey and to optimise the function and use of their GI tract whenever possible.

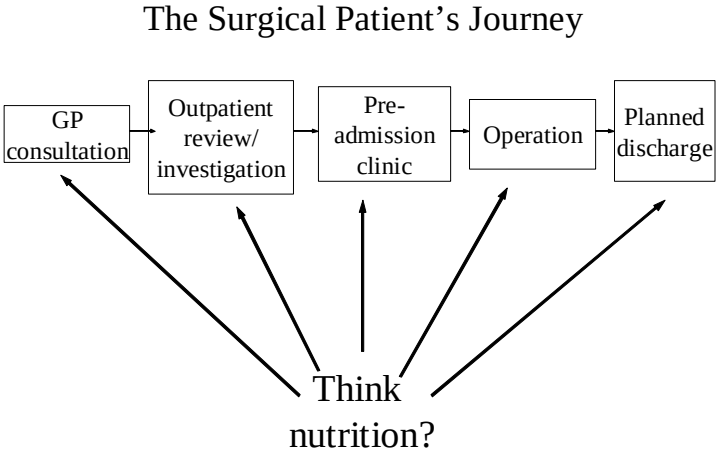

Fig. 5

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