Saturday 6 October 2001

BMJ

Postoperative starvation after gastrointestinal surgery

Early feeding is beneficial

Papers p 773

The widespread practice of starving patients in the immediate period after gastrointestinal surgery has been challenged by a systematic review and meta-analysis in this issue (p 773), which finds that "nil by mouth" after gastrointestinal surgery may not be beneficial.[1] Further, the apparently beneficial effects of early postoperative enteral feeding on infection rates and length of stay in hospital are compelling arguments in favour of a change in clinical practice.

The rationale of nil by mouth and gastric decompression is to prevent postoperative nausea and vomiting and protect the anastomosis, allowing it time to heal before being stressed by food. Nausea and vomiting, however, occur more commonly after upper gastrointestinal surgery than after resection of the small intestine and colon. In our clinical experience nasogastric decompression can usually be discontinued 12-24 hours after resection of the small intestine and colon.

There is no evidence that bowel rest and a period of starvation are beneficial for healing of wounds and anastomotic integrity. Indeed, the evidence is that luminal nutrition may enhance wound healing and increase anastomotic strength, particularly in malnourished patients.[2 3]

The findings of the meta-analysis, however, raise some important questions. Should early postoperative feeding be restricted to patients with pre-existing malnutrition; is its efficacy related to the degree of surgical injury; and is the main site of action of luminal nutrition the level of the intestinal barrier?

Pre-existing malnutrition has been shown to be a major clinical problem in surgical patients.[4] Although several factors—age, coexisting disease, type and extent of surgical procedure, blood loss, duration of procedure, skill of the surgeon, and the disease itself—have been shown to be associated with postoperative complications, nutritional depletion is an independent determinant of serious complications after major gastrointestinal surgery.[5] Surgical injury itself increases resting energy expenditure and protein loss, and intake of energy and protein after gastrointestinal surgery fall well below what is required throughout the stay in hospital.[6 7] Understandably, the advocates of early postoperative enteral feeding have therefore often focused on its use in malnourished patients.

Pre-existing nutritional depletion, however, may not be the only nutritional factor associated with postoperative complications after gastrointestinal surgery. Two recent studies on postoperative enteral feeding showed that nutritional support was associated with a significant reduction in postoperative complications, a reduction that was independent of preoperative nutritional status.[7 8]

The benefits of postoperative enteral feeding in normally nourished surgical patients indicate that it is reduced nutritional intake that predisposes patients to developing complications, including deficits in muscle function and surgical fatigue.[7] There is thus no evidence that early postoperative enteral feeding should be restricted to malnourished patients undergoing gastrointestinal resection. Indeed, one study has found that supplementing "normal" oral diet in hospital wards with as little as 1250 kJ (300 kcal) and 12 g of protein per day resulted in a reduction of postoperative complications in patients undergoing gastrointestinal surgery.[7] Therefore, there may be a threshold of nutritional intake which, if not achieved, may predispose some patients to postoperative complications.[9]

As the authors have pointed out, the randomised trials they identified were heterogeneous as to underlying diagnosis and type of surgery. Ten of 11 studies reported the site of surgery. Importantly, in all but two studies most patients underwent lower gastrointestinal surgery. In the two studies in which patients underwent major upper gastrointestinal surgery, early postoperative enteral nutrition either afforded no advantages over standard care or seemed to have a deleterious effect.[10 11]

One explanation of these results might be that the surgical injury is less and the metabolic response to it relatively modest in patients undergoing lower gastrointestinal surgery, compared with patients undergoing major upper gastrointestinal surgery. Only in patients undergoing lower gastrointestinal surgery does enteral nutrition in the early postoperative period have an important impact.

Recently, changes in intestinal permeability have been shown in patients undergoing gastrointestinal surgery, increased permeability being associated with sepsis and systemic inflammation.[12] Bacterial translocation has also been shown in patients undergoing laparotomy, and a higher proportion of patients with bacterial translocation developed sepsis than those without.[13] There is, however, no evidence in humans that increased intestinal permeability correlates with bacterial translocation or that early postoperative enteral nutrition influences intestinal permeability or reduces the incidence of bacterial translocation. The

BMJ 2001;323:761–2

appealing hypothesis that early postoperative luminal nutrition might have a beneficial effect on the function of the intestinal barrier in respect of permeability, bacterial translocation, and the subsequent development of septic complications has no supporting evidence at present.

What impact could the findings of this systematic review have on daily surgical practice? The review shows that there is no clinical benefit to starving patients in the early postoperative period after gastrointestinal resection. Further, the finding that postoperative infections can be reduced and hospital stay shortened by starting early postoperative enteral nutrition should challenge clinicians to consider this treatment. The findings pave the way for an appropriate multicentred trial to assess early enteral feeding in patients undergoing elective gastrointestinal resection. The patients recruited to such a trial should be stratified by nutritional status and type of surgical procedure. The outcome measures should include not just effects on wound infection, other infectious complications, and dehiscence of the anastomosis but also surgical fatigue, muscle function, quality of life after discharge from hospital, and cost effectiveness.

D B A Silk *consultant physician*
N Menzies Gow *consultant surgeon*

Department of Gastroenterology and Nutrition, Central Middlesex Hospital, London NW10 7NS

DBAS has been reimbursed by NUMICO to attend conferences and a recent symposium.

1 Lewis SJ, Egger M, Sylvester PA, Thomas S. Early enteral feeding versus "nil by mouth" after gastrointestinal surgery: systematic review and meta-analysis of controlled trials. *BMJ* 2001;323:773-6.
2 Schroeder D, Gillanders L, Mahr K, Hill GL. Effects of immediate post operative enteral nutrition on body composition, muscle function and wound healing. *J Parenter Enteral Nutr* 1991;15:376-83.
3 Haydock DA, Hill GA. Impaired wound healing in patients with varying degrees of malnutrition. *J Parenter Enteral Nutr* 1986;10:550-4.
4 Hill GL, Pickford I, Young GA, Schorah CJ, Blackett RC, Burkinshaw L. Malnutrition in surgical patients: an unrecognised problem. *Lancet* 1977;i:689-92.
5 Hulsewe KW, Von Meyenfeldt MF, Soeters PB. Nutrition support for the surgical patient. In: J Payne-James, G Grimple, D Silk, eds. *Artificial nutritonal support in clinical practice*. London: Greenwich Medical; 605-16.
6 Elia M. Metabolic response to starvation, injury, sepsis. In: J Payne-James, G Grimple, D Silk, eds. *Artificial nutritional support in clinical practice*. London: Greenwich Medical; 1-24.
7 Keele AM, Bray MJ, Emery PW, Duncan HD, Silk DB. Two phase randomised controlled clinical trial of postoperative oral dietary supplements in surgical patients. *Gut* 1997;40:393-9.
8 Beier-Holgersen R, Boesby S. Influence of post operative enteral nutrition on post surgical infections. *Gut* 1996;39:833-5.
9 Silk DBA, Green CJ. Peri-operative nutrition: parenteral versus enteral. *Curr Opin Clin Nutr Metab Care* 1998;i:21-7.
10 Heslin MJ, Latkany L, Leung D, Brooks AD, Hochwalk SN, Pisters PWT, et al. A prospective randomised trial of early enteral feeding after resection of upper GI malignancy. *Ann Surg* 1997;226:567-80.
11 Watters JM, Kirkpatrick SM, Norris SB, Shamji FM, Wells GA. Immediate postoperative enteral feeding results in impaired respiratory mechanics and decreased mobility. *Ann Surg* 1997;226:367-80.
12 Reynolds JV, Kanwar S, Welsh FKS, Windsor ACJ, Murchan P, Barclay GR, et al. Does the route of feeding modify gut barrier function and clinical outcome in patients after major upper gastrointestinal surgery. *J Parent Ent Nutr* 1997;21:196-201.
13 O'Boyle CJ, MacFie J, Mitchell CJ, Johnson D, Sagar PM, Sedman PC. Microbiology of bacterial translocation in humans. *Gut* 1998;42:29-35.

Equity versus efficiency: a dilemma for the NHS

If the NHS is serious about equity it must offer guidance when principles conflict

Concerns about equitable provision and financing of health care have characterised the NHS since its foundation. Evidence of persisting and, in some cases, widening health inequalities, gathered since the publication of the Black report,[1] has progressively raised equity to a high rank among health policy objectives.[2] Though the general aim of reducing health inequalities appears uncontroversial, the practical notions of equity that should inform policy and the ways in which these should be implemented are far from clear. Even more importantly, there is no consensus on how to deal with policies that may cause a conflict between the goals of equity and efficiency—that is, those that may improve efficiency while increasing health inequalities or improve fairness while decreasing efficiency. The equity versus efficiency dilemma[3] has been virtually ignored in the political debate, often leading to inconsistent judgments in the development of health policies.

In a report recently published by the NHS Health Technology Assessment programme[4] we examined examples of the equity-efficiency dilemma that the NHS is facing. The analysis of three case studies—cervical cancer screening, renal transplantation, and neonatal screening for sickle cell disease—shows inconsistencies between NHS policies and a lack of guiding principles to support the pursuit of equity in health care.

The NHS policy on cervical cancer screening has been primarily aimed at maximising coverage by using powerful economic incentives to general practitioners. The issue of low participation by women at high risk[5] (particularly those in disadvantaged socioeconomic groups[6]) has been less of a concern. The programme could have achieved the same cost effectiveness with less extensive but more even coverage. The number of cases of invasive cancer avoided in 1997 is likely to be 60-85% of the number of cases that might have been avoided if screening rates had increased uniformly in different social groups after the introduction of target payments to general practitioners.[4] The equity principle underlying this NHS policy is one of equal access (rather than outcome) for all women, where access is defined purely from the perspective of the healthcare provider.

Renal transplantation consistently generates health improvements and economic savings, but kidneys are in short supply and priorities for access to this service must be set. The UK Donor Kidney Allocation Scheme[7] provides an allocation algorithm in which the recipient's age plays an important part. Priority is given to recipients aged 0-17 over those 18 and older, and within the older group a decreasing priority is associated with increasing age. Younger recipients are favoured in the allocation of younger donors' kidneys, with greater survival benefits. These age priorities are not fully supported by evidence on effectiveness[8] and

BMJ 2001;323:762–3