

Topic: *Early enteral nutrition after lower gastrointestinal surgery : impact on hospital stay and complications*

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Historically, patients were kept fasted after most gastro-intestinal surgeries (Catchpole, 1985). Towards the end of the 20th century, however, several investigators hypothesised that immediate enteral nutrition was feasible and resulted in an improved wound healing response (Schroeder et al, 1991). For example, Moore et al (1989) demonstrated that early enteral feeding was well tolerated in patients with severe abdominal trauma and reduced septic complications. Most studies unequivocally showed that early enteral feeding led to a shorter length of hospital stay and decreased incidence of complications (Zhuang et al, 2013).

It is known that the immediate postoperative period is associated with the stress response, which stimulates neuroendocrine, metabolic and inflammatory responses (McSorley et al, 2016). The neuroendocrine response includes secretion of pituitary hormones and release of catecholamines and cortisol from the adrenal gland.

Norepinephrine is released from the nerve endings of the sympathetic nervous system. Insulin secretion decreases and there is transient resistance to insulin, leading to hyperglycaemia immediately following surgery. Further, there is decreased insulin release and increased glucagon secretion from the pancreas as a response to surgery. This response leads to increased levels of glucose in the plasma, protein breakdown and lipolysis-that is, a catabolic state. Additionally, the inflammatory response to tissue injury leads to the release of interleukin-1, tumour necrosis factor-alpha and, later, interleukin-6 from macrophages and monocytes, leading to what is known as systemic acute phase response (**Burton et al, 2004**).

Early enteral feeding after lower gastrointestinal and other types of surgeries in combination with preoperative carbohydrate-rich feed and pain management with epidural analgesia has been shown to circumvent the acute stress-induced metabolic changes (**Bardram et al, 1995; Soop et al, 2004**).

Objective/s:

In their Cochrane review, **Herbert et al (2018)** aimed to evaluate whether feeding patients within the first 24 hours after lower gastrointestinal surgery orally or through a tube would shorten the hospital stay in comparison with the traditional management of delayed feeding. In addition, the review also looked at complications, mortality and adverse events.

Intervention/Methods:

The participants included were above 18 years of age and were undergoing lower gastrointestinal surgery, with malignant or benign disease, including inflammatory bowel diseases. The interventions focused on in the review comprised early enteral feeding within the first 24 hours postoperatively to patients undergoing surgery in the lower gastrointestinal tract (**Herbert et al, 2018**). The feed had to contain energy (carbohydrate, protein or fat) and be deliverable either through the mouth or using a tube, which could be gastric, duodenal or jejunal. The comparison was with traditional management, in which oral intake is restricted and any kind of tube feed containing energy is not permissible before bowel function returns.

Results:

Randomised controlled trials (RCTs) comparing adult patients who received early enteral nutrition after lower gastrointestinal surgery with those who received no feed during the first few days after surgery were reviewed under standard systematic review guidelines.

The review identified 17 RCTs. However, there were issues with the methodology of the studies, such as risk of bias, blinding, incomplete data, lack of protocol and heterogeneity. In 16 studies, the length of stay was significantly shorter in the early feeding group (4–16 days in the early feeding group vs. 6.6–23.5 days in the delayed feeding/control group (mean difference (MD)=1.95; 95% confidence interval (CI): -2.99 to -0.91; $p < 0.001$), favouring early feeding. No difference was found in the

occurrence of post-operative complications (wound infection, intra-abdominal collections, anastomotic leak, pneumonia and nausea and vomiting). However, the evidence was of low quality. The number needed to treat (NNT) to prevent one anastomotic leak was 100 and that to prevent postoperative pneumonia was 333. The number of events in either group was not adequately large to suggest a reduction in complications by >30%.

There was no significant difference in the mortality rate between the groups in the 12 studies in which this was recorded ($p=0.96$). The most common causes of death were anastomotic leak, sepsis and myocardial infarction. There was no significant difference in the quality-of-life scores at 30 days postoperatively between the groups.

The results point towards a shorter length of stay (by 1 day) in the early feeding group with no other major benefit. Further, the results surrounding length of hospital stay should be interpreted with caution, as there was significant heterogeneity among the reviewed studies, and there was a risk of bias.

Conclusions:

The results of **Herbert et al's (2018)** Cochrane review suggested that there is no more harm done by commencing early enteral feeding in patients who undergo lower gastrointestinal surgery in terms of complications such as wound infection, anastomotic leak, abdominal collections, pneumonia, and nausea in the absence of high-quality evidence. The length of hospital stay is lower by at least 1 day in the early feeding group. However, cautious interpretation is warranted due to substantial heterogeneity among RCTs and low-quality evidence. Although high-quality RCTs would yield a higher level of evidence, this may not be feasible in the era of enhanced recovery after surgery (ERAS). Hence, alternative study designs could be considered, such as quasi-experimental designs, pragmatic trials and the use of historical controls.

Implications for Practice:

The emphasis on early commencement of enteral feeding should be encouraged among care providers for this group of patients based on the evidence that there is no harm caused by this approach. However, the approach should be tailored according to individual patients needs, and close liaison with the surgical team is warranted.

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