

## Enteral Nutritional Support of Patients With GI Cancer: Is it of Benefit? Questions and Dilemmas

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In the era of laparoscopic surgery and enhanced recovery protocol programme (fast track surgery), the recommendations for perioperative artificial nutrition in non malnourished gastrointestinal cancer patients with full intestinal tract functions are scarce, for several reasons:

(a) the practice of postoperative fasting along with nasogastric suction has now been progressively abandoned<sup>1,2</sup>; (b) quite often patients start eating normal food within a few days after surgery; (c) the majority of patients with colon or rectal cancer have a normal nutritional state<sup>3</sup>.

There are consensus statements and guidelines from ASPEN and ESPEN recommending that the use of perioperative artificial nutrition should only be deserved in a subset of surgical patients who have an increased likelihood of developing postoperative complications, that is patients with weight loss  $\geq 10\%$  of their usual body weight, or those who have very low BMI or exhibit inflammatory activity.<sup>4-8</sup> This subset of patients nowadays represents about 3-5% of the whole population.<sup>5,9</sup>

The present modern surgical approach entails the use of non-invasive form of nutritional support such as oral mixtures (immune-nutrients, probiotics or oral preoperative carbohydrate loading) because they are cost-effective, they do not require a preoperative hospitalization to be administered, and they would work in modulating the response of the patient to metabolic changes induced by the surgical stress, which per se might increase the susceptibility to postoperative complications. There is evidence from

the literature that the administration of immune-nutrients such as omega-3 fatty acids, arginine, and ribonucleic acid fragments may modulate the immune and inflammatory responses and gut perfusion/oxygenation, resulting in a better outcome, regardless of the baseline nutritional status, both after conventional open surgery or laparoscopic colorectal surgery.<sup>10-19</sup> Five days should be the minimum period to achieve a clinical benefit through the preoperative administration of immune nutrients. In fact, the preoperative administration of oral arginine and n-3 fatty acids and ribonucleic fragments is able to improve the immune-metabolic response, decrease the infection rate and reduce the length of the postoperative stay.

Since there is increasing evidence of the role of the patient's own intestinal microbiota in postoperative surgical infections, another recently proposed preoperative prophylactic strategy is the administration of probiotics. The rationale for using probiotics is due to (a) their ability to reduce the load of intestinal pathogen bacteria, (b) inhibit the production of anti-inflammatory cytokine IL-6, (c) facilitate the production of anti-inflammatory cytokines interleukin like IL-10, (d) stimulate the non-specific resistance to microbial pathogens by activation of macrophages, (e) increase systemic and mucosal IgA response and, finally, (f) their modulatory effect on the immune intestinal cell population. Furthermore, they act on the intestinal permeability by promoting the gut barrier function and, possibly, by reducing the bacterial translocation. To support this hypothesis in clinical practice, various RCTs on probiotics in major abdominal surgery (liver resection, transplantation and acute pancreatitis surgical patients) have been published in recent years.<sup>20-25</sup>

The majority of studies dealing with elective gastrointestinal surgery failed to demonstrate a positive effect of probiotics<sup>26</sup>. In particular, studies dealing with colon or rectal surgery only, have shown no positive effect of

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both probiotics and synbiotics on infectious complications and bacterial translocations.<sup>23,25</sup>

Other preoperative strategies to minimize post-inflammation include the preoperative use of an oral mixture of complex carbohydrates, maltodextrins in a concentration of about 12.5%. They minimize insulin resistance and attenuate loss of muscle function, alone<sup>27</sup> or within the context of multimodal enhanced recovery protocol in colon and rectal surgery.<sup>28</sup> They can be given orally; the drink is a mixture of complex carbohydrates, maltodextrins in a concentration of about 12.5% or as a glucose infusion at a rate of 5mg/kg/min.

In well-nourished patients the quick restoration of normal gastrointestinal function allows an adequate food intake, diminishes the dependency on the intravenous support and consequently allows a rapid recovery and discharge from the hospital.

A recent meta-analysis (including 11 RCT studies, 5 of which were focused on colon surgery only), showed no benefit in fasting patients after all types of elective gastrointestinal surgery including colon surgery.

In contrast early feeding reduced the risk of any type of infection and the length of hospital stay without any increased risk of dehiscence of the gastrointestinal anastomosis.<sup>29</sup>

The optimization of the perioperative care, however, involves multiple components which minimize stress and facilitate the return of bowel function. They include: (a) avoidance of intestinal washout and routine nasogastric suction, (b) avoidance of fasting patients overnight before elective surgery, (c) optimization of fluid balance with avoidance of perioperative fluid overload<sup>30</sup>, (d) the use of epidural anaesthesia and postoperative analgesia without the administration of morphine, (e) the perioperative early enteral nutrition and (f) an early mobilization.

All these measures must to be associated with adequate information and preparation of the patient and their family.

These findings have been recently confirmed by Wind et al. in a recent systematic review on this topic including more than 500 patients.<sup>31</sup>

Consequently, at the present time there is indication for postoperative artificial nutrition only in colon or rectal patients who are not able orally meet their caloric requirements within seven to ten days after surgery.

Postoperatively, artificial nutrition is also indicated in complicated patients with impaired gastrointestinal

function for at least 7 days. In these patients the enteral route should be preferred to the intravenous one, except for the following contraindications: intestinal obstruction or ileus, small bowel fistulas with high output, impaired splanchnic perfusion or intestinal ischemia.

In malnourished patients with normal functional gastrointestinal tract, the use of oral nutrition supplements in the postoperative period is a reasonable approach and should be continued at home in addition to normal food. This emerged in a recent consensus review on clinical care for patients undergoing colonic resection.<sup>31</sup>

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