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Nutritional support and therapy in pancreatic surgery: A position paper of the International Study Group on Pancreatic Surgery (ISGPS)

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ABSTRACT

Background: The optimal nutritional therapy in the field of pancreatic surgery is still debated.

Methods: An international panel of recognized pancreatic surgeons and pancreatologists decided that the topic of nutritional support was of importance in pancreatic surgery. Thus, they reviewed the best contemporary literature and worked to develop a position paper to provide evidence supporting the integration of appropriate nutritional support into the overall management of patients undergoing pancreatic

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resection. Strength of recommendation and quality of evidence were based on the approach of the grading of recommendations assessment, development and evaluation Working Group.

Results: The measurement of nutritional status should be part of routine preoperative assessment because malnutrition is a recognized risk factor for surgery-related complications. In addition to patient's weight loss and body mass index, measurement of sarcopenia and sarcopenic obesity should be considered in the preoperative evaluation because they are strong predictors of poor short-term and long-term outcomes.

The available data do not show any definitive nutritional advantages for one specific type of gastrointestinal reconstruction technique after pancreatoduodenectomy over the others. Postoperative early resumption of oral intake is safe and should be encouraged within enhanced recovery protocols, but in the case of severe postoperative complications or poor tolerance of oral food after the operation, supplementary artificial nutrition should be started at once. At present, there is not enough evidence to show the benefit of avoiding oral intake in clinically stable patients who are complicated by a clinically irrelevant postoperative pancreatic fistula (a so-called biochemical leak), while special caution should be given to feeding patients with clinically relevant postoperative pancreatic fistula orally. When an artificial nutritional support is needed, enteral nutrition is preferred whenever possible over parenteral nutrition.

After the operation, regardless of the type of pancreatic resection or technique of reconstruction, patients should be monitored carefully to assess for the presence of endocrine and exocrine pancreatic insufficiency. Although fecal elastase-1 is the most readily available clinical test for detection of pancreatic exocrine insufficiency, its sensitivity and specificity are low. Pancreatic enzyme replacement therapy should be initiated routinely after pancreatoduodenectomy and in patients with locally advanced disease and continued for at least 6 months after surgery, because untreated pancreatic exocrine insufficiency may result in severe nutritional derangement.

Conclusion: The importance of this position paper is the consensus reached on the topic. Concentrating on nutritional support and therapy is of utmost value in pancreatic surgery for both short- and long-term outcomes.

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Introduction

The metabolic stress response is a physiologic consequence of tissue damage and the resultant inflammatory response. Major surgery produces intense changes in metabolism and nutritional status through the activation of an inflammatory cascade and the release of stress hormones and cytokines; this response appears to be proportional to the extent of the operative trauma. Pancreatic resections are recognized as one of the most challenging operations because of the magnitude of the dissection and resection, the resultant global stress, and the relatively high rate of morbidity. Appropriate tissue healing and recovery/maintenance of organ function after such operations can lead to an effective and efficient metabolic response, which in turn necessitates adequate qualitative and quantitative nutritional substrates to be effective.

Malnourished patients or those who experience major complications after surgery may exhaust their nutritional reserves rapidly and thereby compromise their functional recovery and healing. Moreover, other pre-existing comorbidities of many cancer patients, such as diabetes, subclinical organ dysfunction, a defective immune response, and consequences of neoadjuvant treatments, may impair the functional reserve and lead to loss of muscle mass (sarcopenia) and its effects on recovery.

The aim of the present position statement is to provide evidence supporting the integration of appropriate nutritional support into the overall management of patients undergoing pancreatic resection and to define when and how appropriate nutritional support should be prescribed to provide substrates for an optimal metabolic response to improve both the short- and long-term outcomes.

Methods

Given the paucity of specific guidelines on optimal nutritional in the field of pancreatic surgery, a group of internationally recognized surgeons and pancreatologists with confirmed experience in the treatment of pancreatic diseases decided that the topic of nu-

tritional evaluation and support was of importance in pancreatic surgery; therefore, a review of the existing literature, best practices, and any evidence-based studies was undertaken to develop recommendations on perioperative and long-term nutritional care.

In May 2016, all members of the International Study Group of Pancreatic Surgery (ISGPS) were contacted via e-mail to explore their interest in the topic; the first meeting of this group was held in July 2016 at the European Pancreatic Club in Liverpool, UK. During the meeting, several key questions were formulated to acquire and address detailed answers to topics that were undefined or controversial in this particular area of research.

Open queries were assigned to small groups of the authors, who then performed an extensive, web-based literature search focused on specific areas that had been identified by the ISGPS. MEDLINE, Embase, PubMed, Cochrane, and Scopus libraries were queried, and all papers analyzing the relationship between nutrition and pancreatic operations or enzyme supplementation written in English and published since 1980 were considered for inclusion. The terms used for the literature search are reported in the supplementary Table 1. The process of inclusion and exclusion criteria according to the preferred reporting items for systematic reviews and meta-analyses statement¹ is summarized in the Figure.

Several revised versions of the first draft of the manuscript were circulated through electronic mail for critical analysis and modification until the final version before submission was approved by all authors in February 2018.

The strength of recommendation and the quality of evidence of the proposed statements are described according to Guyatt et al² and reported in Table 1.

Discussion

Is routine preoperative evaluation of the nutritional status and malnutrition risk indicated?

Although most patients undergo pancreatic surgery for cancer, the indications for pancreatic resection include a variety of benign and malignant diseases, each with a different impact on the pre-

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