Postoperative Nutritional Support after Pancreatectomy

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Many patients are not able to return to normal diet intake after pancreatectomy. It may delay postoperative recovery. However, an optimal nutritional support (NS) method after pancreatectomy has still not been identified. Pancreas cancer is the 5th most common cause of cancer death, with an overall 5-year survival rate is less than 8% in Korea. Pancreaticoduodenectomy (PD) is the standard surgical treatment for resectable pancreas head cancers. PD is an extensive pancreas resection and alters the digestive process, which may influence nutrition status. Perioperative nutritional status in PD has been recognized as a significant variable in postoperative morbidity and mortality. The goals of nutritional support following PD have become more focused on nutrition therapy: to preserve lean body mass, to attenuate the metabolic response, to prevent oxidative cellular injury, and to favorably modulate the immune response.

Specialized NS after pancreatectomy is controversial. Enteral nutrition (EN) is the preferred route of feeding over parenteral nutrition (PN) after PD for a patient who requires NS therapy. Compared with PN, early postoperative EN may improve electrolyte balance, enhance immune function, reduce infection rates, maintain gut integrity, promote wound healing, and reduce medical cost and length of hospital stay. Enteral feeding can be started early within the first 24-48 hours following PD and advanced toward goal over the next few days depending on the patient' s status. However, the use of EN alone often does not achieve caloric targets. In addition, underfeeding is associated with weakness, infection, and death. If unable to meet energy requirements after 7-10 days by the EN alone, consider initiating supplementary PN. EN combined with supplement PN is a more adequate mode of postoperative nutrition for the patients who have undergone PD. PN should not be terminated until ≥60% of target energy requirements are being delivered by the enteral route. Combining PN with EN constitutes a strategy to prevent nutritional deficit but may risk overfeeding. Routine application of postoperative PN after pancreatectomy is not recommended.

Immunemodulating enteral formulation with arginine, glutamine, nucleic acid, ω-3 fatty acids, and antioxidants can be used after PD. It can reduced wound infection rates and increase the rate of transition to an oral diet compared to a standard enteral formula or PN. In PD patients, the use of probiotics such as Lactobacillus and prebiotic fiber may prevent bacterial translocation related to antibiotic therapy. The amount of nutrient being administered is evolving toward initial permissive hypocaloric feeding, followed

by liberalizing the calories toward the calculated target after the patient has recovered the hyperdynamic response in 3-5 days.

The pancreas plays a vital role in food digestion and glucose homeostasis; patients who have had pancreatic resections are at risk of endocrine and exocrine pancreatic insufficiency and malabsorption. Pancreatic enzyme replacement may be an important part of the long-term management of some of these patients. Long-term effects of PD may include deficiencies in fatsoluble vitamin (A, D, E, K) due to fat malabsorption and changes in body mass index.

In conclusion, pancreatic resection and gastrointestinal reconstruction may further impact nutrition status. Nutrition status is a significant factor in postoperative outcomes. Adequate NS entails reduced complications, medical costs, and hospital stays. NS includes early EN, appropriate macro and micro-nutrient supply are recommended after PD. Enteral and/or combined form of NS was recommended following PD.

REFERENCES

1. McClave SA, Martindale RG, Vanek VW, et al. Guidelines for the Provision and Assessment of Nutrition Support Therapy in the Adult Critically Ill Patient: Society of Critical Care Medicine and American Society for Parenteral and Enteral Nutrition (ASPEN). JPEN 2009;33:277-316.
2. Gianotti L, Meier R, Lobo DN, et al. ESPEN Guidelines on Parenteral Nutrition: Pancreas. Clinical Nutrition 2009;28:428–435.
3. Nagata S, Fukuzawa K, Iwashita Y, et al. Comparison of enteral nutrition with combined enteral and parenteral nutrition in post-pancreaticoduodenectomy patients: a pilot study. Nutrition Journal 2009;8: 24.
4. Pappas S, Krzywda E, Mcdowell N. Nutrition and Pancreaticoduodenectomy. Nutrition in Clinical Practice 2010;25:234-243.
5. Cerantola Y, Grass F, Cristaudi A et al. Perioperative Nutrition in Abdominal Surgery: Recommendations and Reality. Gastroenterology Research and Practice 2011.