



Nutrition and continuous nursing intervention following radical resection of esophageal cancer in a patient after liver transplantation: a case report

Jiaying Wang¹, Peng Su¹, Zhen Zhang¹, Ziqiang Tian¹, Congying Fu¹, Fengxia Liu²

¹Department of Thoracic Surgery, The Fourth Hospital of Hebei Medical University, Shijiazhuang, China; ²Nursing Department, The Fourth Hospital of Hebei Medical University, Shijiazhuang, China

Contributions: (I) Conception and design: J Wang; (II) Administrative support: F Liu, Z Tian; (III) Provision of study materials or patients: Z Tian, J Wang; (IV) Collection and assembly of data: C Fu; (V) Data analysis and interpretation: P Su, Z Zhang; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

Correspondence to: Fengxia Liu, MSN, Nursing Department, The Fourth Hospital of Hebei Medical University, No. 169 Tianshan Street, Shijiazhuang 050000, China. Email: lfx135246@sina.com.

Background: Reasonable nutritional intervention is very important to promote wound healing and rehabilitation in patients with radical esophagectomy for esophageal cancer. This report aims to summarize the experience of nutritional and continuous nursing intervention in a patient who underwent radical resection of esophageal cancer after liver transplantation, by testing a comprehensive approach to optimize nursing plans in similar clinical practice. We hope that the implementation of home enteral nutrition can improve the nutrition status and quality of life of postoperative patients.

Case Description: A patient with liver transplantation was admitted to The Fourth Hospital of Hebei Medical University for postoperative care. The nursing intervention were subsequently summarized and analyzed. In July 2023, the patient successfully underwent radical resection for esophageal cancer. Following the operation, the patient received regular medication and on-site nutritional intervention with the consent of her family. At discharge, the prealbumin, albumin, total protein and hemoglobin values of the patient were low, and body weight was 91 kg. The patient's nutritional risk screening (NRS2022) score was 5 points, and the Patient-Generated Subjective Global Assessment (PG-SGA) score was 4 points. After discharge, the patient continued to receive family enteral nutrition treatment, dietary guidance and psychological nursing. A follow-up review conducted 4 weeks after discharge showed improvements in the patient's NRS2022, albumin, total protein, hemoglobin, and body weight.

Conclusions: Strengthening postoperative nutritional intervention are vital for promoting rehabilitation in patients who undergo radical resection of esophageal cancer after liver transplantation.

Keywords: Liver transplantation; radical resection of esophageal cancer; nutrition; continuing care; case report

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Introduction

Esophageal cancer is a malignant tumor that originates from the uncontrolled proliferation and malignant transformation of cells in the esophagus (1). Radical surgical intervention is commonly used in the clinical treatment of esophageal cancer. Radical esophagectomy

includes removal of the esophageal tube, excision of the potentially involved locoregional lymph nodes, and skeletonization of the nonresectable vital organs in the mediastinum and upper abdomen (2). However, patients who undergo radical resection often face the challenge of restricted dietary intake, leading to insufficient nutrient

intake, weight loss, and malnutrition (3). Reasonable nutritional intervention is crucial in promoting wound healing and rehabilitation in patients undergoing radical esophagectomy. Adequate protein intake promotes tissue repair and regeneration, while appropriate energy intake and vitamin supplementation enhance resistance and improve postoperative rehabilitation (4,5).

For patients after liver transplantation, it is important to maintain appropriate food safety measures to ensure the patients remain healthy as an immune-compromised individuals. Nutrition recommendations are customized for individual patients with general guidance both pretransplant and posttransplant, with general guidance (6). The side-effects of immunosuppressive medication can be very hard on the body (7). It is particularly challenge for a patient with transplanted liver to have a surgery of radical esophagectomy, which faces the insufficient nutrient.

In 2023, a 63-year-old male patient who underwent radical esophagectomy after liver transplantation was admitted to The Fourth Hospital of Hebei Medical University. Given the potential loss of appetite or dietary restriction after liver transplantation, together with the changes in body tissue structure resulting from radical esophageal cancer, the prognosis of these patients can be affected. Therefore, it is crucial to provide nutritional support and subsequent out-of-hospital nursing interventions for such patients. This article presents the nursing experience of implementing nutritional and continuing nursing interventions for the patient who received radical esophagectomy after liver transplantation.

We present this case in accordance with the CARE reporting checklist (available at <https://acr.amegroups.com/article/view/10.21037/acr-24-2/rc>).

Case presentation

The patient, a 63-year-old man with a height of 178 cm and weight of 93 kg, resulting in a body mass index (BMI) of 29.35 kg/m², was admitted to the hospital on June 27, 2023. The patient had a history of liver cancer and alcoholic liver cirrhosis in the decompensated stage. After the liver transplantation at Beijing 302 Hospital, the patient was regularly taking tacrolimus capsules. The patient complained of esophageal cancer and presented with symptoms such as difficulty swallowing, heartburn, acid reflux, nausea, vomiting, hoarseness, and coughing. Examination revealed cancer at the lower end of the esophagus, with ulcer-like neoplasms, raised edges, thickened bases, and nodular changes. Pathological examination confirmed poorly differentiated carcinoma of the esophagus. The patient was diagnosed with lower esophageal cancer and primary liver cancer after liver transplantation. On July 3, the esophagus was separated and the chest lymph nodes were cleaned through right thoracoscopic surgery. Afterwards, laparoscopic gastrectomy and cervical esophagectomy were performed simultaneously. During surgery, the left gastric artery, common hepatic artery, and short gastric artery were severed, while the right gastroepiploic artery was preserved. a slender tubular stomach with a width of 3–5 cm was reconstructed, and end-to-end esophagogastric anastomosis on the left neck using circular anastomosis technique was performed. straight stapler was used to close the tubular residual stomach with 2 cm away from the anastomosis. Nasal feeding tube was used for nutritional support after esophagectomy. Intraoperative blood loss was 120 mL. The operation lasted 8 hours. Preoperative biochemical test results showed prealbumin of 248.1 mg/L, albumin of 44.6 g/L, hemoglobin of 150 g/L, total protein of 73.4 g/L, Patient-Generated Subjective Global Assessment (PG-SGA) score of 2, and NRS2022 score of 2 points.

After surgery, the patient received comprehensive treatments, including anti-infection, expectorant, liver protection, and enteral nutritional support. Once the patient's condition stabilized, the patient was encouraged to engage in ambulation activities and continue receiving enteral nutrition support while still in the hospital. After 17 days of hospitalization, the incision healed well without any postoperative complications.

Highlight box

Key findings

- For postoperative patients with esophageal cancer family enteral nutrition therapy should be strengthened to improve the nutritional status of patients.

What is known and what is new?

- Nutritional therapy after esophageal cancer surgery is often reported.
- For patients who underwent radical resection of esophageal cancer after liver transplantation, in addition to nutritional treatment, patients should continue to monitor their nutrition status after discharge and give effective nutritional treatment.

What is the implication, and what should change now?

- It is important to provide continuous and effective in-hospital and pose-discharge nutritional support for patients with nutritional needs after radical resection of esophageal cancer, which can improve the nutritional status of patients.

At discharge, the patient's prealbumin was 194.8 mg/L, albumin was 31.6 g/L, total protein was 57.4 g/L, hemoglobin was 111 g/L, and body weight was 91 kg. The NRS2022 score was 5, and the PG-SGA score was 4, indicating a risk of malnutrition. Considering the low oral food intake, the patient's family agreed to continue with enteral nutrition support, including oral food and partial enteral nutrition infusion through the nasogastric tube. Continuous nursing intervention was provided during this period. After assessing the patient's condition, the nasointestinal tube was removed. Subsequent review showed that NRS2022 score was 2, the PG-SGA score was 2, the weight was 93 kg, the prealbumin level was 118.2 mg/L, the albumin level was 42.4 g/L, the hemoglobin level was 145 g/L, and the total protein level was 84.2 g/L. The patient's nutritional status improved significantly.

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this case report. A copy of the written consent is available for review by the editorial office of this journal.

Discussion

In-hospital nutritional support intervention

Accurate nutritional assessment and individualized nutritional intervention plans

Following radical resection of esophageal cancer, patients often encounter difficulties in dietary intake, such as swallowing difficulties and reduced food consumption (6,7). To address this, a thorough nutritional assessment is crucial to identify malnutrition risks or early signs of malnutrition and implement appropriate intervention measures (8).

This information included age, sex, height, weight, and the patient's medical history, including the diagnosis and treatment of esophageal cancer. The patients were also asked about their dietary intake in the past week or month, including the type, quantity, and details of the food consumed. Assessment of food intake can be performed using standardized food recording charts, 24-hour recall tests, or food frequency questionnaires. In addition, it is important to understand the dietary habits and preferences of patients given the potential presence of swallowing difficulties and eating disorders following esophageal cancer surgery. Furthermore, biochemical indicators such

as albumin, total protein, hemoglobin, and NRS2022 score were analyzed to evaluate nutritional status. Based on the assessment results, an individualized nutritional intervention plan was developed.

Ongoing nutritional intervention

During radical esophagectomy, the placement of an indwelling nasointestinal tube was necessary. On the first day after surgery, 500 mL of 5% glucose solution was administered, and the patient's response was closely monitored. No gastrointestinal reactions were observed. On the second day after surgery, the patient was started on 500 mL of enteral nutrition suspension. As there were no gastrointestinal reactions, the dose was increased to 1,250 mL on the third postoperative day and to 1,500 mL on the fourth postoperative day. However, based on the patient's performance on the first day, it was determined that enteral nutrition intervention alone was insufficient to meet the patient's nutritional needs. Therefore, parenteral nutrition support was initiated on the second day and continued until the seventh day after surgery. This is the administration of glucose through the central vein, along with an intravenous nutrition solution containing amino acid dipeptides and various nutrients to provide the necessary nutrients to the patient. The infusion was continued until the seventh day after surgery, while closely monitoring the patient's intestinal peristalsis and anal exhaust function.

Postoperative comprehensive care

Targeted care

By enhancing patients' understanding of nutritional support, nurses can improve patients' compliance and enhance their quality of life (9-11). During the process of nutritional support, nursing staff should inform patients about precautions and encourage them to address issues such as intestinal gas and stool.

Nursing of rejection

Post liver transplant rejection refers to the immune system's response against the newly transplanted liver, resulting in damage and destruction of the transplanted liver tissue. Consequently, patients require appropriate treatment after surgery, specifically anti-rejection intervention. The goal of antirejection intervention is to minimize damage to the transplanted liver and prolong its survival. Therefore, nurses should closely monitor changes in patients' signs and provide them with necessary information regarding

precautions during antirejection interventions. Any adjustment or discontinuation of the medication without medical advice should be avoided to prevent organ rejection.

Furthermore, blood tests and liver function monitoring should be conducted at 10-day intervals after surgery to evaluate the effectiveness of immunosuppressants and liver function. Therefore, nursing staff should educate patients on the importance of personal hygiene, frequent handwashing, avoidance of contact with potential sources of infection, and the use of masks when going outside to minimize contact with infected individuals.

Psychological care

Psychological care is crucial for patients following transplantation. The implementation of psychological nursing can assist patients in developing effective coping strategies, enhancing their coping abilities, and better managing various difficulties.

Emotional support

Establishing a positive nurse-patient relationship is essential. Nurses should pay close attention to patients' emotional changes, provide comfort and understanding, listen attentively to their problems and confusion, and actively respond to their needs.

Psychoeducation

Providing patients with comprehensive knowledge regarding rehabilitation, drug side effects, dietary management, and activity restrictions after transplantation is essential. Additionally, explaining the expected results of the surgery and common physiological responses can help reduce patients' fear of the unknown.

Coping skills training

Assisting patients in acquiring effective coping skills is essential. Techniques such as deep breathing, progressive muscle relaxation, mindfulness exercises, and attention shifting should be taught. Furthermore, patients should be encouraged to utilize positive psychological coping strategies.

Continuing care intervention outside of the hospital

Establishment of the continuation of the care team

This team comprised a chief thoracic surgery physician, a deputy chief physician, and a responsible physician. Their primary role entailed assessing the patient's overall health, rehabilitation progress, and gastrointestinal function. Additionally, a nurse with a dietitian qualification was included in the team to conduct a comprehensive nutritional assessment and develop a personalized nutritional plan

based on the patient's condition.

Furthermore, the team consisted of two responsible nurses who were responsible for guiding the patient's family members on posthospital nutrition intervention methods and posthospital health intervention methods. These nurses were also tasked with following up on the discharge plan, establishing a follow-up database, conducting regular telephone follow-ups, and completing the necessary forms. To ensure effective communication and collaboration, the team convened biweekly meetings to review the implementation of enteral nutrition, monitor any complications that may have arisen outside the hospital, and make adjustments to the care plan as needed.

Establishment of a patient report platform

Patient self-report management platforms are innovative methods for health management that have shown effectiveness in improving patient compliance, intervention outcomes, and quality of life (12,13). This study focused on incorporating health records and self-reported information from discharged patients. They include patient sociodemographic data, surgical information, physical examination results, laboratory test outcomes, and details of enteral nutrition infusion.

For a period of 4 weeks after discharge, patients were required to self-report information on a daily basis through their mobile phones or WeChat. The self-reported data included body weight, food calorie intake, enteral nutrition infusion, functional exercises performed, and any gastrointestinal or enteral nutrition-related complications experienced.

A follow-up nurse was responsible for compiling the issues raised in the patients' self-reports and providing customized nursing suggestions on a weekly basis.

By establishing a patient report platform, this study aimed to enhance patient engagement, improve treatment outcomes, and optimize healthcare delivery. The incorporation of self-reported data and follow-up nursing support provided a comprehensive and personalized approach to patient care.

Telephone follow-up

Nurses are required to conduct a weekly follow-up telephone call, with each call lasting for 15 minutes. The follow-up encompasses procedural symptom management, staged health education, and psychological support.

First, procedural symptom management involves assessing the patient's symptoms, categorizing their management, analyzing the underlying causes, and providing nursing

guidance to ensure the correct implementation of home enteral nutrition. This process-oriented approach enables timely control and management of the patient's symptoms.

Second, it involves developing an individualized eating plan, monitoring body weight, food consumption quantity and speed, adjusting the eating plan, emphasizing nutritional ratios, and continuously improving the diet.

Last, psychological support entails providing positive psychological cues to patients and encouraging them, as well as their families, to share their recovery journey and build confidence.

Patient perspective

I'm a beneficiary of home enteral nutrition. I think home enteral nutrition can ensure that I get enough nutrients, and it can improve my quality of life.

Conclusions

Problems faced by patients after liver transplantation are often related to the restriction of food intake due to the surgical removal of part or all of the esophagus. Nutritional intervention plays a crucial role in providing the necessary nutrients, meeting the body's energy and nutritional requirements, and maintaining a normal nutritional status (14,15). This approach may be used as an example for the reference of future similar cases. This intervention is essential for postoperative wound healing, rehabilitation, and the prevention of complications. By implementing rational nutritional intervention and continuous care, patients can accelerate postoperative wound healing, promote muscle repair and tissue regeneration, and reduce the risk of complications and subsequent infections. In this study, patients who received in-hospital nutritional intervention nursing and out-of-hospital continuous care demonstrated significant improvements in body weight, albumin, total protein, hemoglobin, and NRS2022 score, which were observed during the intervention period.

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Footnote

Reporting Checklist: The authors have completed the CARE reporting checklist. Available at <https://acr.amegroups.com/article/view/10.21037/acr-24-2/rc>

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Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at <https://acr.amegroups.com/article/view/10.21037/acr-24-2/coif>). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient for publication of this case report. A copy of the written consent is available for review by the editorial office of this journal.

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