Effects of application of rapid rehabilitation surgery concept in perioperative nursing on postoperative recovery of gastrointestinal function and shortening of hospital stay of patients with gastric cancer

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ABSTRACT

Objective: To assess the effects of the application of rapid rehabilitation surgery concept in perioperative nursing on the postoperative recovery of gastrointestinal function and shortening of hospital stay of patients with gastric cancer.

Methods: A total of 80 patients with gastric cancer who received radical gastrectomy in the Department of Gastrointestinal Surgery of our hospital from January 2017 to December 2019 were included and randomly divided into two groups (n=40/group). Routine perioperative nursing intervention was given in control group, while the rapid rehabilitation surgery concept was adopted in observation group based on perioperative nursing. The incidence rate of postoperative complications, recovery time of postoperative gastrointestinal function, hospital stay, postoperative pain score, adverse emotion score, life quality score and nursing satisfaction degree were compared between the two groups.

Results: The incidence rate of postoperative complications in observation group (0%) was lower than that in control group (10.00%) (P<0.05). The recovery time of bowel sounds, first exhaust recovery time, first eating time and hospital stay in observation group were shorter than those in control group (P<0.05). The pain scores in observation group were lower than those in control group at 12 h, 24 h, 36 h and 48 h after surgery (P<0.05). After nursing, self-rating anxiety scale (SAS) and self-rating depression scale (SDS) scores in observation group were lower than those in control group, but the life quality score in the former was higher than that in the latter (P<0.05). Observation group exhibited a higher total nursing satisfaction rate (97.50%) than control group (85.00%) (P<0.05).

Conclusion: The concept of rapid rehabilitation surgery applied to perioperative gastric cancer patients can effectively reduce postoperative complications, accelerate the recovery of postoperative gastrointestinal function, shorten the hospital stay, relieve postoperative pain and adverse emotion, improve the quality of life, and make patients more satisfactory with nursing services.

KEYWORDS: gastric cancer; gastrointestinal surgery; nursing; rapid rehabilitation surgery

INTRODUCTION

Gastric cancer is a common clinical malignant tumor of the digestive system, with a high incidence rate [1,2]. It can only be radically cured by radical gastrectomy, during which the tumor progression can be controlled through the removal of gastric cancer foci [3,4]. However, patients are faced with many nursing problems in the perioperative period of gastric cancer, and how to ensure the postoperative rehabilitation effect of gastric cancer patients is crucial, which is associated with the prognosis of patients. The concept of rapid rehabilitation surgery is a new concept of surgical diagnosis and treatment, with the goal of accelerating postoperative rehabilitation [5]. To evaluate the effect of this concept in perioperative nursing of patients with gastric cancer, a randomized controlled study was carried out for 80 patients undergoing gastric cancer surgery.

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MATERIALS AND METHODS
General information

A total of 80 patients with gastric cancer who received radical gastrectomy in Department of Gastrointestinal Surgery of our hospital from January 2017 to December 2019 were included and randomly divided into two groups (n=40/group). In control group, there were 23 males and 17 females aged 30-71 years old, with an average age of (50.79±13.42) years old. Observation group included 24 males and 16 females aged 29-72 years old, with an average age of (50.46±13.51) years old. Gender and age of these patients were comparable (P>0.05). This study was approved by the Medical Ethics Committee, and patients and their families signed the informed consent to the study.

Inclusion criteria: 1) Patients pathologically diagnosed with gastric cancer, 2) those aged ≥18 years old, 3) those whose survival time was estimated to be more than 3 months, and 4) those with indications for radical gastrectomy for gastric cancer and receiving this surgery.

Exclusion criteria: 1) Patients with mental disorder, 2) those with other malignant tumors, or 3) those who were lost to follow-up halfway and dropped out of the study.

Methods

In control group, the patients received routine perioperative nursing intervention and were guided to complete operation-related examination items before surgery. Besides, their information was checked. After the patients returned to the ward after surgery, their vital signs were closely monitored, and the relevant precautions were explained to the patients.

In observation group, the concept of rapid rehabilitation surgery was applied to perioperative nursing, and the specific nursing scheme was as follows: 1. Preoperative nursing: 1) Preoperative education: Doctors made the rounds of the patients' wards to know the patients' cognitive level. Specifically, the doctors explained the related knowledge of gastric cancer and radical gastrectomy in simple and clear language at first, then corrected the patients' misconceptions, elaborated the role and importance of radical gastrectomy in gastric cancer treatment, and informed patients and their families about the precautions in the perioperative period. 2) Fasting for solids and liquids before surgery: Fasting for solids was started at 6 h before operation, and that for liquids was started at 2 h before operation. Then 500 mL of glucose solution (10%) was given to patients at 4 h before operation. 2. Intraoperative

nursing: 1) Intraoperative body temperature nursing: The patients' body temperature should be closely monitored during surgery. If their body temperature dropped, a fan heater and a heated mattress pad would be provided, and the intraoperative infusion fluid should be heated to ensure that the patients' intraoperative temperature was above 36°C. 2) Intraoperative infusion nursing: Guided by the concept of target-oriented liquid therapy, the amount of inflow and outflow should be closely monitored and recorded during operation, and vasoconstrictors (such as norepinephrine) should be given to patients in light of their specific conditions, so as to ensure that their intraoperative blood pressure was not lower than 20% of preoperative blood pressure. 3. Postoperative nursing: 1) Guidance for early postoperative mobilization: On the premise of full analgesia, the awake patients were instructed to move in bed. In brief, the patients started from passive exercises of limbs in bed to sitting exercises, bedside standing exercises, exercises of walking out of bed, daily life project training, etc. 2) Postoperative pain nursing: In light of the patients' age characteristics, education level and understanding ability, the causes of postoperative pain were explained to patients in detail. In addition, some operable analgesia methods should be listed, and the patients were instructed to take a deep breath and relax muscles as much as possible. 3) Postoperative diet nursing: Nurses should make a diet plan for patients. They provided the patients with liquid food and gradually gave them semi-liquid food and ordinary food according to the patients' conditions. The nurses chose digestible and high-protein foods as much as possible and ensure vitamin supplementation, so as to guarantee adequate intake of nutrients every day.

Observation indices

The incidence rate of postoperative complications, postoperative recovery time of gastrointestinal function (recovery time of bowel sounds, first exhaust recovery time and first eating time), hospital stay, postoperative pain score, adverse emotion score, life quality score and nursing satisfaction degree were compared between the two groups.

Pain score: At 12 h, 24 h, 36 h and 48 h after operation, visual analogue scale (VAS) was used to evaluate the degree of pain. In VAS, digits 0-10 represent the degree of pain, corresponding to 0-10 points, and the score is directly proportional to the degree of pain.

Adverse emotion score [6]: The scores of self-

rating anxiety scale (SAS) and self-rating depression scale (SDS) range from 0 to 100 points, which are directly proportional to the degrees of anxiety and depression.

Life quality score [7]: The quality of life was assessed by the World Health Organization Quality of Life (Brief Scale) (WHOQOL-BREF). The scale covers four fields, i.e. physiology, psychology, environment and social relations, with scores ranging from 0 to 100 points in each field, and the scores are directly proportional to the quality of life.

Nursing satisfaction degree: A self-made nursing questionnaire was used to investigate the patients' nursing satisfaction degree. The score of the questionnaire ranges from 0 to 100 points (0-59 points: dissatisfactory, 60-80 points: generally satisfactory, and 81-100 points: very satisfactory). Proportion of generally satisfactory patients + proportion of very satisfactory patients = total proportion of satisfactory patients.

Statistical analysis

All data were statistically analyzed by SPSS 26.0 software. The quantitative data ($\overline{x} \pm s$) were subjected to the t test. P<0.05 was considered statistically significant.

RESULTS
Incidence of postoperative complications

The incidence rate of postoperative complications in observation group (0%) was lower than that in control group (10.00%) (P<0.05) (Table 1).

Postoperative recovery time and hospital stay of gastrointestinal function

The recovery time of bowel sounds, first exhaust recovery time, first eating time and hospital stay in observation group were shorter than those in control group (P<0.05) (Table 2).

Postoperative pain scores

the pain scores in observation group were lower than those in control group at 12 h, 24 h, 36 h and 48 h after surgery (P<0.05) (Table 3).

Adverse emotion scores

After nursing, SAS and SDS scores in observation group were lower than those in control group, but the life quality score in the former was higher than that in the latter (P<0.05) (Table 4).

Quality of life scores

After nursing, observation group had higher life quality score than that in control group (P<0.05)

(Table 5).

Nursing satisfaction rates

Observation group exhibited a higher total nursing satisfaction rate (97.50%) than control group (85.00%) (P<0.05) (Table 6).

DISCUSSION

Gastric cancer is one of the most common tumors of the digestive system, which has a high incidence rate and has become a major disease that seriously threatens the life and health of residents in China [8-10]. Radical gastrectomy is the first choice for the treatment of gastric cancer in patients with indications for gastric cancer surgery, which mainly aims to excise the gastric cancer foci and clean the lymph nodes in the foci, so as to remove the tumor, inhibit the metastasis and diffusion of cancer cells, and prolong the life span of patients [11].

However, patients often have postoperative complications, postoperative pain and perioperative adverse emotion in the perioperative period of radical gastrectomy, which are not conducive to postoperative rehabilitation of patients with gastric cancer and adversely affect their prognosis [12,13]. To better improve the prognosis of patients receiving gastric cancer surgery, nursing intervention should be performed in the perioperative period. The routine nursing measures for patients with gastric cancer in the perioperative period are mainly dominated by preoperative preparation and postoperative observation. The non-targeted nursing measures have poor intervention effects on patients, especially on the postoperative rehabilitation of patients. The concept of rapid rehabilitation surgery is a new concept of diagnosis and treatment. In recent years, the concept of rapid rehabilitation surgery has been introduced in the diagnosis and treatment in the clinical nursing, forming a new nursing model, i.e. "rapid rehabilitation surgery nursing". This nursing model aims to "accelerate postoperative rehabilitation" and achieves the nursing goal through nursing intervention [14.] Compared with perioperative routine nursing, rapid rehabilitation surgery nursing is richer in content and has more strongly targeted nursing measures. In rapid rehabilitation surgery nursing, it is advocated to intervene in all risk factors affecting the progression of postoperative rehabilitation, and with more comprehensive nursing measures, it can provide more thoughtful perioperative nursing services for patients [15]. In this study, the observation group received rapid rehabilitation surgery nursing, and all aspects of

intervention were adopted for perioperative patients to avoid and eliminate all kinds of nursing risk factors in the perioperative period, thus ensuring the postoperative rehabilitation speed to the maximum extent. The results of this study showed that: 1) The incidence rate of postoperative complications in observation group (0%) was lower than that in control group (10.00%). The recovery time of bowel sounds, first exhaust recovery time, first eating time and hospital stay in observation group were shorter than those in control group. In addition, the postoperative pain score in observation group was lower than that in control group. The above results indicate that the rapid rehabilitation surgery nursing intervention can effectively reduce the risk of postoperative complications of gastric cancer patients, avoid affecting the recovery of postoperative gastrointestinal function, avoid prolonging the hospital stay and relieve the postoperative pain. 2) After nursing, observation group had lower SAS and SDS scores but a higher quality of life score than control group. The total proportion of patients satisfactory with nursing in observation group (97.50%) was higher than that in control group (85.00%). This is mainly because the rapid rehabilitation surgery nursing accelerates the postoperative recovery and alleviates the postoperative physical pain, thus reducing the influence of physical discomfort on the patients' psychological state and quality of life, and making patients more satisfactory with nursing services.

In conclusion, the concept of rapid rehabilitation surgery applied to perioperative gastric cancer patients can effectively reduce postoperative complications, speed up the recovery of postoperative gastrointestinal function, shorten the hospital stay, alleviate postoperative pain and adverse emotion, improve the quality of life, and make patients more satisfactory with nursing services.

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Table 1. **Incidence rates of postoperative complications [case (%)]**

Group	Case No.	Gastroparesis	Anastomotic fistula	Pulmonary infection	Total incidence rate
Control	40	2 (5.00)	1 (2.50)	1 (2.50)	4 (10.00)
Observation	40	0 (0)	0 (0)	0 (0)	0 (0)*

Compared with control group, *P<0.05.

Table 2. **Postoperative recovery time and hospital stay of gastrointestinal function ($\overline{x} \pm s$, d)**

Group	Recovery time of bowel sounds	First exhaust recovery time	First eating time	Hospital stay
Control (n=40)	1.71±0.48	1.98±0.60	3.57±0.76	17.65±3.26
Observation (n=40)	1.23±0.39*	1.35±0.43*	2.80±0.69*	14.21±2.87*

Compared with control group, *P<0.05.

Table 3. **Postoperative pain scores ($\overline{x} \pm s$, point)**

Group	Pain score			
	Postoperative 12 h	Postoperative 24 h	Postoperative 36 h	Postoperative 48 h
Control (n=40)	4.52±1.07	3.97±0.94	3.42±0.81	2.95±0.78
Observation (n=40)	3.46±0.91*	2.92±0.85*	2.49±0.74*	2.10±0.67*

Compared with control group, *P<0.05.

Table 4. **Adverse emotion scores ($\overline{x} \pm s$, point)**

Group	Time	SAS score	SDS score
Control (n=40)	Before nursing	54.57±6.91	55.28±6.74
	After nursing	47.23±5.47[#]	48.37±5.86[#]
Observation (n=40)	Before nursing	54.43±6.95	55.16±6.80
	After nursing	41.68±4.83[#]*	42.40±5.19[#]*

Compared with the same group before nursing, [#]P<0.05; compared with control group, *P<0.05.

Table 5. **Quality of life scores ($\overline{x} \pm s$, point)**

Group	Time	Physiology	Psychology	Environment	Social relations
Control (n=40)	Before nursing	69.56±5.09	70.38±5.20	69.27±4.81	70.09±5.18
	After nursing	77.09±6.53[#]	78.12±6.17[#]	76.35±5.03[#]	77.94±5.23[#]
Observation (n=40)	Before nursing	69.68±5.04	70.52±5.13	69.38±4.75	70.20±5.04
	After nursing	83.45±6.37[#]*	84.39±6.28[#]*	82.46±5.14[#]*	83.57±5.69[#]*

Compared with the same group before nursing, [#]P<0.05; compared with control group, *P<0.05.

Table 6. **Nursing satisfaction rates**

Group	Case No.	Very satisfactory	Generally satisfactory	Dissatisfactory	Total satisfaction rate
Control	40	16 (40.00)	18 (45.00)	6 (15.00)	34 (85.00)
Observation	40	20 (50.00)	19 (47.50)	1 (2.50)	39 (97.50)*

Compared with control group, *P<0.05.