

Original Article

Effect of fast-track surgery nursing on postoperative rehabilitation of patients undergoing laparoscopic radical gastrectomy

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Received October 2, 2019; Accepted December 10, 2019; Epub February 15, 2020; Published February 28, 2020

Abstract: Objective: To explore the effect of fast-track surgery nursing on postoperative recovery, pain and complications of patients undergoing laparoscopic radical gastrectomy. Methods: A total of 146 gastric cancer patients undergoing laparoscopic radical gastrectomy were randomly divided into two groups, the control group which included 73 cases received routine nursing, and the rest 73 cases treated with fast-track surgery nursing were assigned to the observation group. The postoperative recovery indicators, total cost of treatment, postoperative pain score and the prevalence of complications were compared between the two groups. Results: The time of first ambulation, first anal exhaust and defecation, indwelling time of gastric tube and urinary catheter, and the time of hospitalization after operation in the observation group were shorter than those of the control group ($P<0.01$). Besides, the observation group had a significantly lower total cost of treatment ($P<0.01$). In addition, the postoperative visual analogue score (VAS) of patients 3 days after operation in the observation group was significantly lower than that of the control group ($P<0.05$), and so was the case with the incidence of complications of anastomotic fistula, postoperative gastroparesis and adhesive intestinal obstruction ($P<0.05$). Conclusion: Fast-track surgery nursing can effectively promote the postoperative recovery of patients undergoing laparoscopic radical gastrectomy, alleviate postoperative pain, and effectively prevent postoperative complications. It is safe, reliable and worthy of clinical application.

Keywords: Laparoscopic radical gastrectomy, fast-track surgery nursing, postoperative complications

Introduction

Laparoscopic radical gastrectomy remains the mainstream treatment for gastric cancer, which has the advantages of small incision and fast postoperative recovery and has been widely used in the treatment of early and advanced gastric cancer [1, 2]. Clinical studies have shown that early postoperative activity of gastric cancer patients can stimulate gastrointestinal peristalsis, prevent intestinal adhesion, and reduce the incidence of pulmonary infection and other complications [3, 4]. Fast-track surgery (FTS) nursing is a widely used nursing method for perioperative patients, and it is also a further sublimation of traditional nursing which emphasizes and encourages patients to get out of bed early. In view of this, 146 patients undergoing laparoscopic radical gastrectomy in gastrointestinal surgery from February 2018 to

January 2019 were selected to conduct a comparative study of fast-track surgery nursing for the above cases, so as to provide theoretical support for the application of fast-track surgery nursing in patients undergoing laparoscopic radical gastrectomy.

Materials and methods

General information

A total of 146 patients undergoing laparoscopic radical gastrectomy in Ninghai First Hospital from February 2018 to January 2019 were chosen as the study subjects, and were randomly divided into two groups: control group (73 cases) and observation group (73 cases). The patients of the control group received routine nursing after operation, while those of the observation group were treated with fast-track

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Table 1. Comparison of general information (n, %)

Groups	observation group (n=73)	control group (n=73)	χ^2	P
Gender			0.028	0.867
Male	43	42		
Female	30	31		
Average age (years)	56.5±4.7	56.3±4.6	0.260	0.795
TNM stage			0.317	0.853
Stage I	20	23		
Stage II	30	29		
Stage III	23	21		
Surgical treatment			0.111	0.739
Radical distal subtotal gastrectomy	42	40		
Radical total gastrectomy	31	33		

surgery nursing. The study was approved by the Hospital Ethics Committee, and the informed consent was signed by the patient or immediate family. The baseline data compared was shown in **Table 1**.

The inclusion criteria were as follows: (1) Patients aged above 18 years old. (2) Patients without anti-cancer treatment before conduction of the study.

The exclusion criteria were as follows: (1) Patients complicated with organic diseases. (2) Patients complicated with heart failure and respiratory failure. (3) Patients with severe cognitive, listening and psychological disorders. (4) Patients complicated with immune system diseases. (5) Patients with major infectious diseases. (6) Patients with poor coordination and compliance with the arrangements of our hospital's medical staff. (7) Patients in lactation or pregnancy.

Methods

The control group adopted routine postoperative nursing: nurses closely monitored the patient's vital signs, strictly followed the treatment prescribed by the doctor, and urged the patient to complete the preoperative examinations. In addition, routine skin preparation, enema and indwelling catheter were performed strictly in accordance with the aseptic principle to ensure that blood glucose and blood pressure were within a reasonable range before the operation. Other issues included informing the patient about postoperative precautions.

The observation group received fast-track surgery nursing: (1) Pre-operation: a. Health education: nurses took the initiative to communicate with patients enthusiastically upon the patients' admission, and informed patients of relevant precautions through health manuals, videos, posters and words, so as to make patients ready for the operation psychologically and face with optimism and good mentality. b. Psychological interven-

tion: nurses conducted personalized psychological counseling based on patients' educational level, personality characteristics, economic conditions etc., and actively summarized the past successful cases of treatment, thus enhancing their confidence in overcoming diseases. c. Dietary guidance: three days before operation, nurses informed the patient to give priority to liquid diet to prevent food retention. d. Gastrointestinal preparation: the patient was fasted 8 h before operation, and 200 mL of glucose solution was orally administered 2 h before operation to improve the patient's energy. (2) Intra-operative: patient was only allowed to enter the operation room after the reconfirmation about clinical information with the nurse, alongside with the patient's signature on related papers. Next, adjusted the operating room temperature to a suitable temperature of about 26°C and humidity of 50-60%. Then, nurses assisted the surgeon to complete the operation and keep the movements gentle to prevent injury to the patient's tracheal mucosa. (3) Post-operative: a. Pain nursing: VAS was used to evaluate the pain degree of patients after the operation, and the score and corresponding nursing were as follows: if VAS<3, distracted the patient's attention by chatting, listening to music, cold compress, hot compress and other forms to relieve the pain. If VAS>3, followed the doctor's advice to give analgesic treatment. b. Intestinal function training: instructed patients to conduct swallowing movement training, such as chewing gum, to accelerate gastrointestinal recovery. On the next day, the patient could gradually eat a small amount

Table 2. Comparison of perioperative indicators of patients ($\bar{x} \pm sd$)

Groups	observation group (n=73)	control group (n=73)	χ^2	P
Time of first ambulation (d)	1.8±0.1	2.2±0.3	0.807	<0.01
Time of first anal exhaust (d)	1.5±0.2	2.1±0.6	8.106	<0.01
Time of first defecation (d)	3.5±0.4	5.1±0.8	15.284	<0.01
Indwelling time of gastric tube (h)	6.8±0.6	30.2±6.8	29.288	<0.01
indwelling time of urinary catheter (h)	7.1±0.5	22.3±1.6	77.473	<0.01
Hospitalization time (d)	10.2±1.5	15.3±2.7	14.108	<0.01
Total treatment cost (/Ten thousand yuan)	1.8±0.1	2.3±0.2	19.105	<0.01

of liquid diet, then gradually transition to a semi-liquid diet, general food, etc. according to the gastrointestinal recovery. c. Rehabilitation exercise: on the 1st day after operation, guided patients to exercise in bed, such as ankle joint movement, toe movement, etc. Besides, instructed patients to cough effectively and breathe deeply to promote sputum discharge, to keep the respiratory tract unobstructed, and to prevent the occurrence of pulmonary infection. Off-bed activity was also conducted according to the patient's tolerance, and no excessive activity should be allowed. On the first day after operation, the amount of off-bed activity was controlled at 160-250 steps and increased by 200-300 steps per day according to the specific conditions. If there were no symptoms such as nausea, dizziness, active bleeding and unbearable pain, assisted the patient to get off the bed and stand beside the bed for 5-10 min after exercise on the bed. While if there were no symptoms of blurred vision, palpitations, dizziness, the patient was assisted from the bed by the nurse or family members. d. Wound care: after the operation, the patient's dressing was changed every day in strict accordance with the aseptic principle, and the incision was closely observed for exudation, bleeding, redness and swelling. Once any abnormality was found, attention was paid with vigilance and symptomatic treatment was carried out in time.

Observation indicators and criteria

Postoperative rehabilitation indicators, which included the time of first ambulation, first anal exhaust, first defecation, indwelling time of gastric tube and urinary catheter, and the time of hospitalization after operation were compared between the two groups. What's more, the total cost of treatment, pain score of patients 3 days after operation, and complications (anastomotic fistula, gastroparesis and adhesive intestinal obstruction) within three months after opera-

tion were compared between the two groups, among which the postoperative pain score was assessed by VAS score, with a total score of 10 points. The higher the score, the more severe the pain was.

Statistical methods

SPSS26.0 software was used to process t-test measurement data (indicators of postoperative rehabilitation), which was expressed as ($\bar{x} \pm sd$), VAS score was tested by Mann-Whitney U test. The counting data were compared by χ^2 test or Fisher exact probability test, which was represented by the number of cases/percentage (n, %) P<0.05 was statistically significant.

Results

Comparison of general information

There were no significant differences in general information of patients between the two groups, including gender, age, TNM staging, and operation methods (P>0.05), as shown in **Table 1**.

Comparison of perioperative indicators of patients

The time of first ambulation, first anal exhaust, defecation, indwelling time of gastric tube and urinary catheter, and the time of hospitalization after operation in the observation group were less than those of the control group. Besides, the observation group had a lower total cost of treatment (P<0.01), as shown in **Table 2** and **Figures 1-3**.

Comparison of pain VAS scores of patients 3 days after operation

The postoperative pain score of patients in the observation group was significantly lower than

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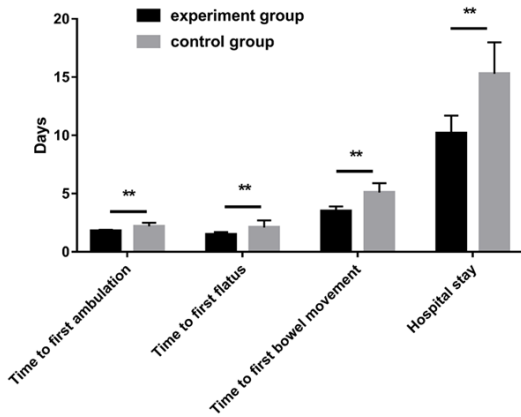


Figure 1. The time of first ambulation, first anal exhaust, defecation and the time of hospitalization after operation in the observation group were less than those of the control group. ** indicates compare to control group, $P < 0.01$.

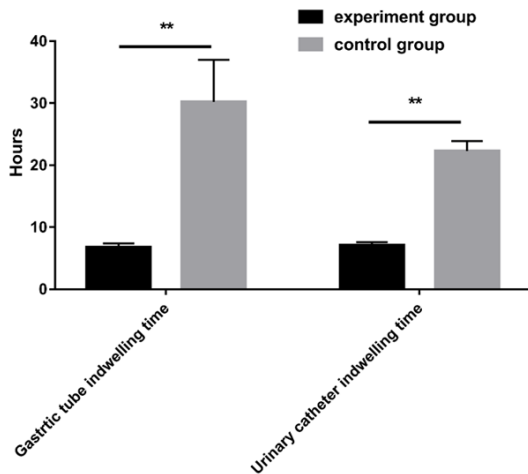


Figure 2. The indwelling time of gastric tube and urinary catheter in the observation group were less than those of the control group. ** indicates compare to control group, $P < 0.01$.

that of the control group ($P < 0.05$), as shown in **Figure 4**.

Comparison of incidence of complications

The incidence of complications in the observation group (2.74%) was significantly lower than that of the control group (15.07%), $P < 0.05$, as shown in **Table 3**.

Discussion

Gastric cancer, also known as stomach cancer, is a buildup of abnormal cells that form a mass in part of the stomach. In recent years, the inci-

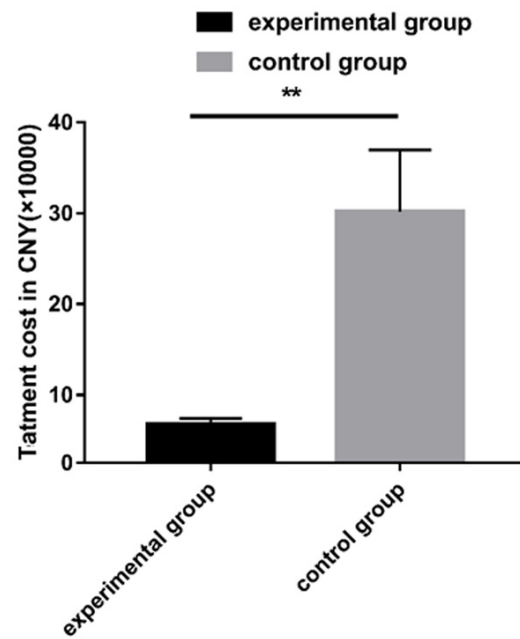


Figure 3. Total treatment cost in the observation group was less than that of the control group. ** indicates compare to control group, $P < 0.01$.

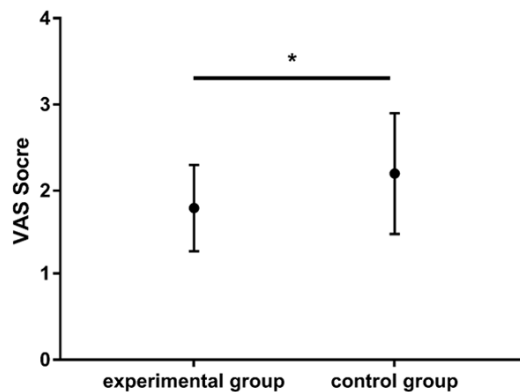


Figure 4. The visual analogue score (VAS) of patients in the observation group was significantly lower than that of the control group. * indicates compare to control group, $P < 0.05$.

dence of gastric cancer has increased significantly under the continuous changes in the life-style and diet structure of Chinese people, presenting a younger trend [6, 7]. Gastric cancer originates from gastric mucosa epithelium and belongs to the category of malignant tumors. The incidence rate of gastric cancer is relatively high among people over 50 years old, and the ratio of male to female incidence is 2:1 [8, 9]. At present, it is generally believed that the occurrence of gastric cancer is closely related to

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Table 3. Comparison of the incidence of complications (n, %)

Groups	observation group (n=73)	control group (n=73)	P
Anastomotic leakage	2 (2.74)	4 (5.48)	
Postoperative gastroparesis	0 (0.00)	4 (5.48)	
Adhesive intestinal obstruction	1 (1.37)	5 (6.85)	
Incidence of complications	3 (4.11)	11 (15.07)	0.023

heredity and genes, precancerous lesions, *Helicobacter pylori* (HP) infection, diet and geographical environment, etc. [10, 11]. The early clinical symptoms of patients with gastric cancer are atypical. Only a few patients have symptoms such as nausea and vomiting, which are easily ignored by patients. As the disease progresses, the tumor gradually increases, and the clinical symptoms of patients gradually show up. Gastric cancer has serious adverse effects on patients' physiology and psychology, and seriously jeopardize the quality of life of patients [12, 13].

Laparoscopic radical gastrectomy for gastric cancer is the primary clinical treatment for gastric cancer at present, which can effectively remove the lesions, prolong the survival time, and reduce the mortality of patients [14]. However, due to the traumatic nature of the surgery, most patients have little knowledge of "gastric cancer" and "laparoscopic radical operation". In the perioperative period, there are various degrees of depression, anxiety and other adverse emotions. Under the influence of surgical trauma, psychological negative emotions, tremendous treatment costs and other factors, patients are prone to present severe stress response, poor cooperation and compliance during the perioperative period, which significantly increases the difficulty of nursing [15, 16]. Traditional nursing is a purely biological model of care, characterized by fixed, passive, and single services. However, the gastrointestinal recovery is slow after operation, and various complications are prone to occur. With the traditional nursing, the hospitalization time is prolonged to some extent, hospitalization costs are increased, a large amount of medical resources are wasted. Moreover, the psychological pressure and economic burden of patients and their families are aggravated, which easily leads to nurse-patient disputes. Thus, traditional nursing can no longer meet the clinical needs.

In this study, the time of first ambulation, first anal exhaust, defecation, indwelling time of gastric tube and urinary catheter, and the time of hospitalization after operation in the observation group were less than those of the control group, and the total cost of treatment of the observation group was significantly lower than that of the control group. It suggested that fast-track surgery nursing can promote the postoperative recovery of patients with laparoscopic radical gastrectomy. The supporting analysis is as follows: fast-track surgery nursing is a comprehensive nursing intervention. It adheres to the people-oriented concept of care and treats patients as the center of all care services. It focuses on the well-being of patients, providing seamless care for patients before, during and after surgery. It guides patients to develop scientific, healthy, and good eating habits, increase nutrient intake, and significantly improve the body's immune function. Meanwhile, it helps the anus to vent as soon as possible, allowing patients to get out of bed early. In addition, it significantly improves the patient's systemic blood circulation, promotes wound healing, helps patients to leave the hospital early, and shortens the treatment time of patients to a certain extent, thereby reducing hospitalization costs and reducing the economic burden and psychological stress of patients and their families. The fast-track surgery nursing guidance makes up for the deficiency of traditional nursing and constructs a harmonious and good nurse-patient relationship, which is more in line with the needs of current medical model development.

What's more, the pain score of patients in the observation group was significantly lower than that of the control group 3 days after operation, suggesting that fast-track surgery nursing can effectively reduce postoperative pain in patients with laparoscopic radical gastrectomy. The related analysis is as follows: fast-track surgery nursing is a new type of nursing method that effectively integrates perioperative pain control, anesthesia, and nursing to reduce unnecessary operations and injuries, minimize the perioperative stress response, physiological and psychological stress response of patients. VAS score should be reasonably applied

by nurses after operation. According to the specific assessment results, targeted pain intervention should be carried out for patients, such as those with VAS score below 3 to divert attention and those with more than 3 points to follow the doctor's advice to give analgesic treatment [17, 18]. This study showed that the incidence of complications in the observation group (2.74%) was significantly lower than that in the control group (15.07%) within three months after the operation, suggesting that fast-track surgery nursing can effectively reduce the incidence of complications of gastric cancer, anastomotic fistula, gastroparesis, adhesive intestinal obstruction group and other complications. Anastomotic fistula occurs when the suture is over-sparse or over-tight. It is necessary to strengthen the observation of the patient's condition after accelerating rehabilitation surgical nursing, guide the patient to breathe abdominally and ensure the abdominal pressure, which can eliminate the symptoms of exudation and bleeding, and aggregation, thus reducing the incidence of anastomotic fistula to some extent [19]. In terms of dietary guidance, fast-track surgery nursing instructs patients to adhere to the principle of progressive diet, gradually transiting from nasal to oral feeding, and liquid to general feeding, avoiding intestinal obstruction caused by oversized gastrointestinal anastomosis, intestinal fluid accumulation and excessive food intake, and avoiding the occurrence of dumping syndrome, such as hypotension, sweating, nausea, vomiting, and dizziness in patients. It also avoids the slow start of gastric function, promotes the early recovery of gastric electrophysiological function, promotes intestinal peristalsis under the principle of gradual diet, and reduces the incidence of gastroparesis and adhesive intestinal obstruction to a certain extent [20, 21].

To sum up, the application of fast-track surgery nursing in perioperative nursing of laparoscopic radical gastrectomy significantly shortens the hospitalization time of patients, alleviates postoperative pain, and effectively prevents postoperative complications. It is safe, reliable and worthy of clinical application. A serious weakness with this study, however, is that the small sample capacity and the limited research time affect the generality of the results. Thus, further studies remain to be conducted to provide a more scientific basis for clinical evaluation

of the application effect of accelerated rehabilitation surgery in perioperative nursing of laparoscopic radical gastrectomy.

Disclosure of conflict of interest

None.

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