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2026 Volume 11, Issue 4
Advances in Precision Medicine
ISSN: 2424-9106 (Online)
ISSN: 2424-8592 (Print)

Analysis of Surgical Nursing Cooperation and Experience in Laparoscopic Radical Resection of Rectal Cancer

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Abstract: *Objective:* To explore the application effect of optimized surgical nursing cooperation in laparoscopic radical resection of rectal cancer. *Methods:* Research time was from January 2024 to December 2025, the research subjects were 66 patients who underwent laparoscopic radical resection of rectal cancer in our hospital. They were divided into the experimental group and the control group according to the computer randomization method, with 33 cases in each group. The control group used conventional surgical nursing cooperation, and the experimental group used optimized surgical nursing cooperation to explore the effects of the intervention in the two groups. *Results:* The surgery-related indicators of the experimental group were better than those of the control group, $P < 0.05$. The vital signs of the experimental group at T1 were more stable than those of the control group, $P < 0.05$. The incidence of postoperative complications in the experimental group was lower (6.06% vs 24.24%), $P < 0.05$. The nursing quality score of the experimental group was higher, $P < 0.05$. *Conclusion:* Optimizing surgical nursing cooperation can effectively shorten the operation time of laparoscopic radical resection of rectal cancer, reduce the amount of intraoperative bleeding, maintain the stability of intraoperative vital signs, thereby reducing the incidence of postoperative complications and improving the overall quality of care.

Keywords: Laparoscopic radical resection of rectal cancer; Surgical nursing cooperation; Vital signs; Complications; Quality of care

Online publication: April 26, 2026

1. Introduction

Rectal cancer is a common malignant tumor of the digestive system. Its incidence rate has increased year by year in recent years, which has seriously threatened patients' physical and mental health. With the continuous development of minimally invasive surgical technology, laparoscopic radical resection of rectal cancer has become the preferred surgical method for the clinical treatment of rectal cancer due to its advantages of small trauma, fast postoperative recovery, and minimal damage to surrounding tissues [1]. This surgery requires high precision in the operation, including the precise use of laparoscopic instruments, strict execution of aseptic procedures, and dynamic monitoring of the patient's vital signs. Therefore, the professionalism and standardization of surgical nursing cooperation can directly affect the surgical process, treatment effect, and patient prognosis [2]. The conventional clinical surgical nursing cooperation model is relatively

simple, mostly focusing on basic nursing operations, which is difficult to fully meet the refined needs of laparoscopic surgery. Problems such as delayed delivery of instruments, large fluctuations in patients' vital signs, and high incidence of postoperative complications may occur [3]. To this end, this study analyzes the implementation effect of optimizing surgical nursing cooperation, which is summarized as follows.

2. Materials and methods

2.1. General information

Research time was from January 2024 to December 2025, the research subjects were 66 patients who underwent laparoscopic radical resection of rectal cancer in our hospital. They were divided into the experimental group and the control group according to the computer randomization method, with 33 cases in each group. In the control group, 18 and 15 cases of male and female patients were counted; the age range was 42 to 68 years old, with an average age of 50.23 ± 6.15 years; the disease duration was 3 to 12 months, with an average disease duration of 7.35 ± 2.18 months; tumor stage: 8 cases in stage I, 16 cases in stage II, and 9 cases in stage III. There were 17 and 16 male and female patients in the experimental group; the age range was 43 to 69 years old, with an average age of 51.12 ± 5.89 years; the disease duration was 2 to 13 months, with an average disease duration of 7.52 ± 2.09 months; tumor staging: 7 cases in stage I, 17 cases in stage II, and 9 cases in stage III. Comparison of baseline data between the 2 groups, $P > 0.05$.

Inclusion criteria: (1) Diagnosed with rectal adenocarcinoma by histopathological examination; (2) Meet the surgical indications for laparoscopic radical resection of rectal cancer; (3) Clear consciousness and able to cooperate in completing nursing operations; (4) Patients and their families agree to participate in the study; (5) Good compliance; (6) Normal coagulation function and no bleeding tendency.

Exclusion criteria: (1) Important organ failure, unable to tolerate surgery and anesthesia; (2) Coagulation dysfunction, immune system disease, or acute infectious disease; (3) Mental disorder, cognitive dysfunction; (4) The tumor has metastasized far away and does not meet the indications for radical resection, and only palliative treatment is possible; (5) Severe abdominal adhesion, history of intra-abdominal bleeding, severe abdominal wall defects, etc.; (6) History of major abdominal surgery.

2.2. Methods

The control group adopted the routine surgical nursing cooperation model. The nursing staff conducted a routine visit one day before surgery, briefly informed them of the surgical procedures, precautions, and possible adverse reactions, and completed routine preoperative work such as skin preparation and intestinal preparation. Strictly implement aseptic operations during the operation, deliver surgical instruments according to the surgical process, closely monitor the patient's vital signs, and respond to the doctor's operational needs in a timely manner. Assist the patient in being transferred to the recovery room after surgery. After the patient wakes up from anesthesia and his vital signs are stable, he will be transferred to the ward and complete relevant handovers with the ward nursing staff.

The experimental group adopted optimized surgical nursing cooperation (1) Preoperative nursing cooperation: Nursing staff visit 2 days in advance to comprehensively assess the patient's mental state and understanding of the surgery, formulate a personalized health education plan for the patient, and explain the surgical advantages, operating procedures, key points of intraoperative cooperation and postoperative recovery skills of laparoscopic radical resection of rectal cancer in an easy-to-understand way using pictures and text, patiently answer the questions of patients and their families, alleviate anxiety, fear, and other emotions, and improve the patient's cooperation. At the same time, the integrity and performance of laparoscopic surgery equipment are strictly checked, strict disinfection is performed, and the equipment is classified and placed according to surgical needs. Intestinal preparation should be done well before surgery, and the intestinal cleaning plan should be adjusted according to the patient's constitution to avoid improper intestinal preparation affecting the surgical process. (2) Intraoperative nursing cooperation: Nursing staff enter the operating room 30 minutes in advance to

adjust surgical equipment, monitors, and other instruments to ensure that the instrument parameters are normal; place soft pillows on the patient's pressure areas to avoid the occurrence of pressure ulcers, and ensure that the patient's position is comfortable and does not affect the surgical operation and blood circulation of the limbs. Familiar with the steps of surgical operations, prepare various surgical instruments and consumables in advance to reduce errors in instrument delivery; strengthen aseptic management of the surgical area, and replace contaminated instruments and dressings in a timely manner to avoid infection. Closely monitor the patient's vital signs and record them every 5 minutes. If any abnormalities are found, notify the doctor in a timely manner. At the same time, keep nursing records during the operation to ensure that the records are complete and accurate. (3) Postoperative care cooperation: Nursing staff strengthen condition monitoring, focus on observing the patient's incision bleeding, abdominal pain, anal exhaust, and defecation, and record vital signs every 2 hours; guide the patient to perform early bed activities, and assist the patient to turn over and move his limbs 6 hours after the operation to promote the recovery of gastrointestinal function and reduce the occurrence of complications such as lung infection and urinary retention. Carry out perianal care, clean the perianal area with warm water every day, keep the perianal skin dry and clean, and prevent perianal edema. Develop a personalized diet plan based on the patient's recovery. They can drink a small amount of water 6 hours after the operation, and gradually transition to a liquid or semi-liquid diet.

2.3. Observation indicators

Record the relevant indicators of the operation in detail; record the vital signs when entering the operating room (T0) and the end of the operation (T1); count the postoperative complications.

The self-made "Laparoscopic Surgery Nursing Quality Evaluation Scale" was used for evaluation. The reliability coefficient was 0.89, the validity coefficient was 0.86, and the total score for each item was 100 points. Scoring criteria: 90–100 is considered excellent, 80–89 is considered good, 60–79 is considered qualified, and less than 60 is considered unqualified.

2.4. Statistical methods

SPSS 26.0 statistical software was used for data processing. Measurement data were expressed as mean ± standard deviation (SD), and *t*-test was used for comparison between groups; count data were expressed as number of cases (rate) [*n* (%)], and χ^2 test was used for comparison between groups. All data processing processes were completed by professional statisticians to ensure data accuracy. $P < 0.05$ was considered a statistically significant difference.

3. Results

3.1. Comparison of surgery-related indicators

The surgery-related indicators of the experimental group were all better than those of the control group, $P < 0.05$ (**Table 1**).

Table 1. Comparison of surgery-related indicators between the two groups (mean ± SD)

Group	*n*	Operation time (min)	Intraoperative blood loss (ml)	Postoperative anal exhaust time (h)	Days of hospitalization (d)
Control group	33	158.67 ± 25.32	132.45 ± 24.56	47.89 ± 8.76	15.67 ± 2.34
Experimental group	33	132.45 ± 20.18	89.78 ± 18.45	36.54 ± 7.89	12.34 ± 1.89
t	-	4.652	7.980	5.531	6.360
P	-	0.000	0.000	0.000	0.000

3.2. Comparison of vital signs

The vital signs of the experimental group at T1 were more stable than those of the control group, $P < 0.05$ (**Table 2**).

Table 2. Comparison of vital signs between the two groups (mean ± SD)

Group	*n*	Systolic blood pressure (mmHg)		Diastolic blood pressure (mmHg)		Heart rate (beats/min)	
		T0	T1	Before treatment	After treatment	Before treatment	After treatment
Control group	33	125.67 ± 10.23	138.78 ± 12.34	78.56 ± 8.12	86.78 ± 9.23	76.45 ± 9.34	88.67 ± 10.45
Experimental group	33	126.34 ± 10.56	128.45 ± 11.23	79.23 ± 8.45	81.34 ± 8.76	77.12 ± 9.56	80.23 ± 9.87
t	-	0.262	3.557	0.328	2.456	0.288	3.373
P	-	0.794	0.001	0.744	0.017	0.774	0.001

3.3. Comparison of postoperative complications

The incidence of postoperative complications in the experimental group was lower (6.06% vs 24.24%), $P < 0.05$ (**Table 3**).

Table 3. Comparison of postoperative complications between the two groups [*n* (%)]

Group	*n*	Incision infection	Lung infection	Urinary retention	Perianal edema	Incidence rate (%)
Control group	33	3(9.09)	2(6.06）	2(6.06)	1(3.03)	8(24.24)
Experimental group	33	1(3.03)	0(0.00)	1(3.03)	0(0.00)	2(6.06)
χ^2	——	——	——	——	——	4.243
P	——	——	——	——	——	0.039

3.4. Comparison of nursing quality scores

The nursing quality score of the experimental group was higher, $P < 0.05$ (**Table 4**).

Table 4. Comparison of nursing quality scores between two groups (mean ± SD, points)

Group	*n*	Instrument preparation quality	Intraoperative cooperation and tacit understanding	Postoperative care timeliness	Health education effect	Total score
Control group	33	19.67 ± 2.15	19.23 ± 2.34	18.95 ± 2.21	18.76 ± 2.45	76.61 ± 7.89
Experimental group	33	23.15 ± 1.28	22.87±1.35	22.69 ± 1.42	23.21 ± 1.23	91.92 ± 4.56
t	-	7.990	7.740	8.179	9.325	9.651
P	-	0.000	0.000	0.000	0.000	0.000

4. Discussion

Laparoscopic radical resection of rectal cancer is a minimally invasive and efficient surgical method that has been widely used in the clinical treatment of rectal cancer. However, due to the high degree of sophistication of the surgical operation, the requirements for surgical nursing cooperation are also more stringent. As an important auxiliary link in surgical treatment, surgical nursing cooperation runs through the entire process of surgery and can directly affect the smooth progress of the surgery, the treatment effect, and the patient's postoperative recovery. Conventional surgical nursing cooperation models mostly focus on passively performing nursing operations, lacking pertinence and refinement, and are difficult to fully meet the clinical needs of laparoscopic surgery [4].

In this study, the experimental group adopted an optimized surgical nursing cooperation model, which was comprehensively optimized from three stages: preoperative, intraoperative, and postoperative, and achieved good clinical results [5]. The results of the study show that the key reason why the operation-related indicators of the experimental group are better than those of the control group is that the preoperative nursing staff not only alleviated the negative emotions of the patients and improved the cooperation during the operation through advance visits, personalized health education and complete equipment preparation, but also avoided the delay of the operation due to improper equipment preparation and poor patient cooperation, thereby shortening the operation time and reducing the amount of intraoperative bleeding. Optimization of preoperative bowel preparation also effectively reduces intestinal interference during surgery, further improves surgical efficiency, and lays a good foundation for patients' postoperative recovery [6]. The stability of vital signs is an important guarantee for a smooth operation. During laparoscopic surgery, patients may experience fluctuations in vital signs due to anesthesia, surgical stimulation, position changes, and other factors.

If monitoring and treatment are not timely, serious complications may occur and affect the safety of the surgery. The experimental group strengthened the dynamic monitoring of vital signs during the operation and recorded relevant indicators every 5 minutes, which allowed them to detect abnormalities in time and cooperate with the doctor to deal with them. At the same time, the posture was optimized, which could reduce the discomfort of the compressed parts and reduce the impact of surgical stimulation on vital signs. The fluctuation range of vital signs at T1 of the patient was significantly smaller than that of the control group, effectively ensuring the safety of the operation [7]. The experimental group strictly implemented aseptic operating procedures during the operation and strengthened aseptic management in the surgical area, which effectively reduced the occurrence of incisional infections; guiding patients in early bed activities after surgery can promote the recovery of gastrointestinal function and discharge of sputum from the lungs, reducing the occurrence of urinary retention and lung infection; at the same time, good perianal care was performed to keep the perianal skin clean and dry, which effectively prevented the occurrence of perianal edema, resulting in a lower incidence of postoperative complications in the experimental group and improved patient prognosis. Improving nursing quality is the core of improving nursing effects. Optimizing the surgical nursing cooperation model improves the nursing staff's sense of responsibility and professional ability by refining the nursing process and clarifying the key points of nursing. All nursing quality scores in the experimental group were higher than those in the control group, fully reflecting the superiority of the optimized nursing cooperation model [8].

5. Conclusion

In summary, optimizing surgical nursing cooperation can effectively shorten the operation time of laparoscopic radical rectal cancer surgery, reduce intraoperative blood loss, maintain stable intraoperative vital signs, thereby reducing the incidence of postoperative complications and improving the overall quality of care.

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Disclosure statement

The author declares no conflict of interest.

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