

Research Article

Application of Rapid Rehabilitation Nursing in Perioperative Period of Laparoscopic Radical Prostatectomy for Prostate Cancer Patients

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The purpose of the study is to explore the application of rapid rehabilitation nursing strategy in the perioperative period of laparoscopic radical prostatectomy for patients with prostate cancer. A total of 120 patients with prostate cancer undergoing laparoscopic radical prostatectomy were randomly divided into two groups, with 60 cases per group. The control group was given routine nursing care, and the experimental group received rapid rehabilitation nursing strategies. The stress hormone (cortisol and norepinephrine) levels, patient satisfaction, length of hospitalization, hospitalization costs, and postoperative complication were compared between the two groups before and after nursing. The serum cortisol and norepinephrine levels in the control group before nursing were similar to those in the experimental group ($P > 0.05$). The stress hormone levels in the experimental group were lower than those in the control group ($P < 0.05$). It was found that the experimental group had reduced operation time, less intraoperative blood loss, shortened exhaust time, and hospitalization stay and was earlier to eat and to get out of bed than the control group ($P < 0.05$). The time for the patients in the experimental group to pull out the drainage tube was significantly shorter than that of the control group ($P < 0.05$), and the hospitalization costs were fewer than the control group ($P < 0.05$). The rates of postoperative complications including nausea, vomiting, bleeding, and fever in the experimental group were significantly lower than those in the control group ($P < 0.05$). In conclusion, the study suggests that rapid rehabilitation nursing strategies can reduce the stress hormone levels, shorten the length of hospitalization, reduce hospitalization costs, reduce postoperative complication rates, and improve patient satisfaction for prostate cancer patients undergoing laparoscopic radical prostatectomy, in support of clinical application.

1. Background

Prostate cancer is one of the most common malignant tumors of the urinary system in men, with high incidence [1]. Prostate cancer presents several clinical manifestations including difficulty in urinating, frequent urination, painful urination/ejaculation, or burning sensation [2]. Surgery remains a mainstay in the management of localized prostate cancer [3]. Radical prostatectomy is associated with improvements in cancer-specific mortality and metastasis-free survival, while all aggressive therapy for prostate cancer negatively impacts erectile function and urinary continence [4]. Fast track surgery (FTS) is a new concept that integrates

perioperative measures with evidence-based medical evidence and combines the latest evidence in anesthesia, nursing, and surgery disciplines to relieve surgical trauma and stress response and to promote the early recovery of organ function, thereby reducing postoperative complications, shortening the length of hospitalization, and achieving rapid recovery of patients [5]. Its contents are summarized as preoperative patient education, effective anesthesia, pain relief, precise surgical operations, and early postoperative rehabilitation treatment [6]. In recent years, our department has integrated the concept of rapid rehabilitation surgery and clinical pathways into the perioperative nursing of laparoscopic radical prostatectomy and achieved satisfactory

results. Rapid rehabilitation surgery has been involved in urology at home and abroad including laparoscopic adrenalectomy, percutaneous nephrolithotomy, radical cystectomy, urethral diversion, laparoscopic nephrectomy, laparoscopic surgery, radical nephrectomy, and living donor kidney transplantation [7]. A research [8] reported that the implementation of FTS can reduce the incidence of surgical complications and readmission, shorten the hospital stay, and reduce the cost of hospitalization. In this study, the standardized perioperative care plan guided by the FTS concept was applied to prostate cancer patients undergoing laparoscopic radical prostatectomy. In response to this, our hospital has focused on prostate cancer patients undergoing laparoscopic radical prostatectomy in recent years by giving rapid rehabilitation care or conventional care to compare the value of different nursing models.

2. Material and Method

2.1. Study Subjects. A total of 120 patients who were diagnosed with prostate cancer and underwent laparoscopic radical prostatectomy in our hospital were randomly divided into the experimental group and control group, with 60 cases in each group. The inclusion criteria are as follows: diagnosis with prostate cancer by imaging, prostate-specific antigen (PSA) screening, and biopsy; TIM stage T1c-T2c and NOM0; complete data; and signed an informed content. The exclusion criteria are as follows: patients with severe liver and kidney dysfunction, patients with severe inflammation and infection, patients with immune system disease or coagulation dysfunction, and patients with lung metastasis and lymph node metastasis. This study was approved by the Ethics Committee of our hospital.

2.2. Implementation of Rapid Rehabilitation Nursing Care. The control group was given routine nursing care, and the experimental group was given rapid rehabilitation nursing care. Before surgery, the investigator should understand the patient's psychological state, introduce the qualifications of the chief physician and anesthesiologist, and provide psychological counseling to patients. At the same time, he should monitor the patient's various physiological indicators before surgery to ensure that the patient receives good treatment; inform patients of the operation process, time, and cooperation work; improve patient matching; and speed up the operation process. According to the patient's gastrointestinal motility, oral 400-800 mL maltodextrin drink should be taken before 22:00 before surgery and 200-400 mL in the morning, 20 min. Glycerin enema should be taken in the morning. In intraoperative nursing, the patient's general anesthesia combined with epidural anesthesia, temperature, and humidity should be adjusted appropriately during the operation (temperature: 22-25°C, humidity: 40%-60%). Pay attention to intraoperative infusion management, and keep the infusion temperature at about 37°C, and strictly control the infusion volume and infusion speed. The instrument nurse is familiar with the surgical procedure and cooperates well with the attending doctor. Postoperatively, understand the patient's pain degree according to the main complaint

of the patient, and carry out related analgesic treatment; drink water for 6 hours after the operation, and drink a small amount: the first time is 10-20 mL; observe the patient's response; if there is no maladjustment, increase the amount of water to ensure. The total amount does not exceed 50 mL, and liquid food is given to the patient on the first postoperative day, and it is gradually changed to semiliquid and ordinary food according to the actual situation of the patient. Six hours after the operation, the patient was in a semirecumbent position, guiding the movement of the lower limbs and guiding the family to assist the patient to turn over. Each exercise time should not be too long but gradually increase the exercise time with the extension of the postoperative time and regularly perform leg massage; 3 days before the operation to the postoperative extubation period, guide the patient to complete the pelvic floor muscle training and improve the pelvic floor muscle—contract the pelvic floor muscles—relax the muscles; each action lasts 10 s; repeat 10 times, and gradually extend the contraction time and number of times; you can exercise anytime, anywhere.

2.3. Observation Indicators. The stress hormone level, satisfaction degree, length of hospitalization, hospitalization costs, and complication rate were compared between the two groups before and after nursing.

2.4. Statistical Processing. SPSS17.0 software was used for data processing. The measurement data conforming to the normal distribution is represented by the mean \pm standard deviation, and the comparison was performed by a *t*-test. A level of $P < 0.05$ is regarded as the presence of significant difference.

3. Results

3.1. Comparison of the Stress Hormone Levels of the Two Groups of Patients. The patients in the experimental group, aged 55-75 years old, had an average age of 63.51 ± 2.38 years, and the control group, aged 58-76 years old, had an average age of 62.21 ± 2.34 years. They were age-matched and comparable ($P > 0.05$). At the beginning of nursing, the stress hormone levels of serum cortisol and norepinephrine in the control group were similar to those in the experimental group ($P > 0.05$). The stress hormone level of the experimental group was lower than that of the control group ($P < 0.05$), as shown in Table 1.

3.2. Comparison of Clinical-Related Indicators between the Two Groups of Patients. The experimental group had reduced operation time, less intraoperative blood loss, shortened exhaust time, and hospitalization stay and was earlier to eat and to get out of bed than the control group ($P < 0.05$) (see Table 2 for details).

3.3. Comparison of the Nursing Effect of the Two Groups of Patients. It was found that the time for the patients in the experimental group to pull out the drainage tube was significantly lower than that of the control group ($P < 0.05$), the hospitalization costs were lower than that of the experimental group ($P < 0.05$), and the patient satisfaction of the

TABLE 1: Comparison of the stress hormone levels of between the experimental and control groups before and after nursing care.

| Group | Phase | Serum cortisol level (nmol/L) | Norepinephrine levels (ng/mL) |
|---------------------------------|-------------|-------------------------------|-------------------------------|
| Experimental group ($n = 60$) | Before care | 125.36 ± 12.65 | 65.32 ± 5.27 |
| | After care | 56.35 ± 3.29* [#] | 32.65 ± 2.39* [#] |
| Control group ($n = 60$) | Before care | 125.69 ± 12.68 | 65.51 ± 5.23 |
| | After care | 85.64 ± 10.36* | 45.32 ± 2.58* |

*Compared with before care, $P < 0.05$. [#]Compared with the control group, $P < 0.05$.

TABLE 2: Comparison of clinical indicators of patients undergoing laparoscopic radical prostatectomy between the experimental and control groups.

| Group | Operation time (min) | Intraoperative blood loss (mL) | First exhaust time (h) | Time to start eating (h) | Time of getting out of bed for the first time (h) | Hospitalization time (d) |
|---------------------------------|----------------------|--------------------------------|------------------------|--------------------------|---|--------------------------|
| Experimental group ($n = 60$) | 91.2 ± 14.6 | 73.6 ± 29.8 | 26.5 ± 11.3 | 28.9 ± 10.8 | 24.6 ± 6.9 | 3.5 ± 2.1 |
| Control group ($n = 60$) | 100.3 ± 20.6 | 87.6 ± 35.6 | 44.9 ± 13.6 | 49.8 ± 15.2 | 41.3 ± 19.6 | 5.9 ± 3.4 |
| <i>T</i> value | 2.65 | 2.92 | 6.52 | 7.51 | 8.93 | 3.21 |
| <i>P</i> value | 0.02 | 0.03 | 0.01 | 0.01 | 0.01 | 0.05 |

$P < 0.05$ indicates that the difference is statistically significant.

TABLE 3: Comparison of time to pull out the drainage, hospitalization costs, and patient satisfaction between the experimental and control groups.

| Group | Time to pull out the drainage tube (d) | Hospitalization costs (ten thousand yuan) | Patient satisfaction |
|---------------------------------|--|---|----------------------|
| Experimental group ($n = 60$) | 6.5 ± 1.56 | 1.60 ± 0.46 | 85.23 ± 2.36 |
| Control group ($n = 60$) | 8.2 ± 1.87 | 1.84 ± 0.58 | 80.21 ± 2.15 |
| <i>T</i> value | 5.46 | 3.21 | 4.56 |
| <i>P</i> value | 0.01 | 0.05 | 0.03 |

$P < 0.05$ indicates that the difference is statistically significant.

TABLE 4: Comparison of postoperative complication rates between the experimental and control group.

| Group | Feel sick and vomit (n (%)) | Bleeding (n (%)) | Fever (n (%)) | Urinary system infection (n (%)) |
|---------------------------------|--------------------------------|---------------------|------------------|-------------------------------------|
| Experimental group ($n = 60$) | 10 (16.7) | 5 (8.3) | 8 (13.3) | 6 (10.0) |
| Control group ($n = 60$) | 18 (30.0) | 16 (26.7) | 19 (31.7) | 9 (15.0) |
| <i>T</i> value | 4.46 | 5.21 | 2.56 | 1.09 |
| <i>P</i> value | 0.05 | 0.03 | 0.04 | 0.08 |

$P < 0.05$ indicates that the difference is statistically significant.

experimental group was significantly better than that of the control group ($P < 0.05$) (see Table 3 for details).

3.4. Comparison of Postoperative Complications between the Two Groups. It was found that the cases of nausea, vomiting, bleeding, and fever in the experimental group were significantly less than those in the control group, and the difference was statistically significant ($P < 0.05$). However, there was no significant statistical difference in urinary system infection between the two groups ($P > 0.05$) (see Table 4 for details).

4. Discussion

Laparoscopic radical prostatectomy is a common type of surgery for patients with prostate cancer. Compared with traditional surgery, laparoscopic radical prostatectomy has the advantages of simple operation, less trauma, fewer complications, and high safety and is easy to be accepted by the majority of patients and medical staff [9]. An effective nursing model can promote the recovery of patients, and accelerated rehabilitation care is a nursing model that implements nursing measures for patients during the perioperative period and

accelerates the recovery of patients [10, 11]. This mode of care can alleviate the patient's stress response. Rapid rehabilitation nursing is to carry out a series of nursing care during the perioperative period of the patient to reduce the patient's stress response, promote the rapid recovery of the body, and reduce the burden on the patient [12]. The concept of rapid recovery is to optimize the perioperative nursing measures to reduce the patient's stress response due to surgical trauma, reduce the risk of complications, shorten the patient's hospital stay, and promote the rapid recovery of the patient [13]. This goal is mainly achieved through anesthesia, minimally invasive surgery and perioperative care. Clinical studies have found that appropriately reducing the amount of infusion under the premise of ensuring the normal vital signs of the patient can not only reduce the occurrence of complications but also shorten the patient's hospital stay and reduce unnecessary hospitalization costs.

In addition, much attention to preoperative psychological care can alleviate patients' anxiety, depression, and stress response, so that patients can maintain a stable emotion during surgery [14]. Intraoperative heat preservation can reduce the risk of complications such as infection and bleeding and improve the safety and feasibility of surgery [15]. The rapid rehabilitation nursing model belongs to the comprehensive treatment model. Comprehensive nursing intervention is performed on patients to achieve psychological health, language, physical health, and overall health. The implementation of the rapid rehabilitation nursing model can effectively shorten the patient's recovery cycle, reduce the patient's economic burden, and reduce the adverse events that occur during the treatment process [16]. Laparoscopic radical prostatectomy is an effective method for the treatment of prostate cancer, but it is easy to be infected and cause complications after the operation. In order to shorten the perioperative period and reduce the complications, FTS nursing program is developed as the situation arises. Through preoperative education, negative emotions can be eliminated, and preoperative evaluation can improve the safety of the patient's surgery. In addition, preoperative preparation can maintain the stability of the patient's intestinal function and avoid problems such as hypoglycemia. Maintaining the stability of his vital signs is conducive to his recovery as soon as possible after the operation. After the operation, it is necessary to carry out nursing interventions in terms of diet, activity training and pipeline care, reasonable intake of water and dietary nutrition, timely training, and removal of drainage pipelines as soon as possible. Finally, nurses need to closely observe the patient's vital signs to prevent complications. In this study, the effect of FTS nursing in the experimental group was better than that in the control group.

In conclusion, the implementation of rapid rehabilitation nursing care during the perioperative period of laparoscopic radical resection of prostate cancer helps to ensure the effect of the operation, promote early recovery of patients after surgery, and effectively improve the quality of life of patients. Further clinical investigations are required due to limitations in the present study, including small sample size and self-reported data.

Data Availability

The data used to support the findings of this study are included within the article.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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