

Rapid Rehabilitation Surgery Program In Perioperative Management Of Radical Cystectomy And Ileal Conduit Diversion

Hualei Chen (✉ dochualei@sina.com)

<https://orcid.org/0000-0001-9894-4728>

Xiaoan Zhuo

The People's Hospital of Hainan Province

Xianping Che

The second affiliated hospital of hainan medical university

Jun Gu

The second affiliated hospital of hainan medical university <https://orcid.org/0000-0001-8700-9531>

Research article

Keywords: rapid rehabilitation surgery; bladder cancer; total bladder resection; ileum bladder surgery;

Posted Date: March 11th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-16747/v1>

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Abstract

Background: To evaluate the clinical effect of rapid rehabilitation surgery in the perioperative period of radical resection of bladder cancer by using the comparison with traditional perioperative treatment scheme. **Methods** In this study, 80 patients who underwent bladder cancer with bladder cancer from August 2010 to October 2017 were collected, and the rapid rehabilitation Surgical treatment program and traditional treatment plan were adopted respectively during perioperative period, and the hospitalization cost, first exhaust time and after operation were compared between the two groups of patients. Clinical indexes such as hospitalization time and the incidence of postoperative complications to evaluate the application of both in the perioperative period of the radical ileum bladder surgery for bladder cancer. **Results** Both groups of patients were cured and discharged. Compared with the traditional control group, the first exhaust time of the patients in the rapid recovery group was significantly earlier (3.10 ± 0.45 D vs 3.88 ± 0.91 d $P < 0.05$), the hospitalization cost (4.80 ± 0.56 million vs 5.62 ± 0.76 million $P < 0.05$), and the length of hospital stay (8.86 ± 1.23 d vs 14.47 ± 3.58 d $P < 0.05$). However, there was no significant difference in the number of complications between the two groups (6 vs $P > 0.05$). **Conclusions** It is safe and effective to have rapid rehabilitation surgery for the perioperative period of radical resection of bladder cancer, and the rapid rehabilitation Surgical treatment program has the advantage of shortening the length of hospital stay and reducing the cost of hospitalization compared with the traditional treatment plan, which is beneficial to the recovery of patients after operation.

Background

Rapid rehabilitation Surgery is a new concept in recent years, which refers to the application of various proven and effective methods before, during and after operation to reduce surgical stress and complications and accelerate postoperative rehabilitation of patients. He is a combination of effective measures that have produced synergies, many of which have been used in clinical applications such as perioperative nutritional support, attention to oxygen supply, early feeding, application of growth hormone, minimally invasive surgery, and so on. It includes several important elements: 1 pre-operative patient education; 2 better anesthesia, pain relief and surgical techniques to reduce surgical stress response, pain and discomfort; and 3 intensive postoperative rehabilitation treatment, including early bed activity and early bowel internal nutrition. At present, rapid rehabilitation surgical treatment program in general surgery, orthopaedic, gynecology and other successful applications, in urology is not yet common.

Methods

Subjects of study

In this group, 80 patients with bladder cancer radical ileum bladder surgery, all from the second affiliated Hospital of Hainan Medical College urology, preoperative pathological diagnosis are confirmed as high-grade bladder urinary tract skin cancer, tumor invasion of the inherent layer or muscle layer. After

admission, all patients were divided into two groups according to the random number table, of which 42 cases (group A) and 38 cases (group B) were treated in the rapid rehabilitation group. The first exhaust time, hospitalization time, hospitalization cost and postoperative complications of the two groups were observed and compared. There were no urethral and distant metastasis in the two groups, no serious organ dysfunction such as diabetes mellitus and heart disease. There was no statistically significant difference in sex, age composition and the comparison of the combined diseases between the two groups ($P>0.05$), and all surgical operations and perioperative management were performed by the same group of physicians.

Table 1 Comparison of general data between two groups of patients

General Information	Group A (n=42)	Group B (n=38)
Age	62.22±9.51	63.01±9.65
Sex(Male/Female)	38/4	36/2
Smoking	30	29
TNM Staging		
T2N0M0	19	18
T3N0M0	15	14
T3N1M0	4	4

Research Methods

Intestinal preparation before operation

Group A (42 cases) all patients with preoperative 1d fluid intake diet, afternoon oral laxative compound polyethylene glycol electrolyte dispersion 2 box, no mechanical enema treatment. A diet is banned 8 hours before surgery. Group B (38 cases) preoperative intestinal preparation method: 3d Intestinal Preparation Program: Oral metronidazole 3 times/day, each 0.2g, a total of 3 days, gentamycin 3 times/day, each 8wU, a total of 3 days of medication, intestinal preparation for the first day to take half fluid, the next day to take remaining prepared fluid, the third day completely fasting through parenteral venous fluids administration to replenish energy, Wash the intestine to the net the night before the operation. The research program was approved by the Ethics Committee of the Second Affiliated Hospital of Hainan Medical College, and all the participating patients signed a written informed consent letter.

After postoperative feeding

Group A actively prevent postoperative nausea and vomiting symptoms, such as the use of gastric complex 10mg intra-muscular injection interval 8 hours 1 times, while encouraging patients to early oral feeding after the 1th day of the daily chewing sugar-containing sugar-free chewing gum, each 0.5h. On the 2nd day after operation, the patient ate slag free flow (200ml,q8h), the 3rd day after surgery, according to the need to eat fluid, the 4th day after surgery to restore the regular diet. Patients in group B were treated with routine postoperative treatment without special treatment. After awaiting exhaustion , gradually restore drinking water, and ensure enteric feeding.

All patients underwent radical resection of bladder cancer, and the ileum was used as the output channel for urinary flow diversions. Iodine volts were used to clean the intestine during the operation, and gastric fistula was performed in all patients. All patients ' surgeries were performed by two experienced urology surgeons. All patients underwent the same intraoperative and postoperative routine treatment. The first exhaust time, length of stay, hospitalization expenses and postoperative complications were recorded by the doctor after the operation.

Statistical analysis

Statistical analysis using SPSS23.0 software, data comparison using T test, to $P < 0.05$ for the difference is significant.

Results

In the rapid rehabilitation group, 42 cases and 38 cases in the traditional group were operated smoothly and died without perioperative period. The rapid recovery group was superior to the traditional group in the first exhaust time ($P = 0.003$), postoperative hospitalization time ($P < 0.001$), hospitalization cost ($P = 0.004$) and Pain Treatment ($P < 0.001$), and the difference was statistically significant, while the postoperative complications of patients with rapid rehabilitation group were less than that of traditional group, But there was no statistical significance ($P = 0.134$). (Table 2-3)

Table 2 2 Comparison of postoperative indicators between groups

Project	Group A	Group B	P value
First Exhaust time (d)	3.10±0.45	3.88±0.91	P=0.003
Hospitalization Expenses (million yuans)	4.80±0.56	5.62±0.76	P=0.004
Time of hospitalization after operation (d)	8.86±1.23	14.47±3.58	P<0.001

Postoperative pain	4	28	P<0.001
Complications	6	10	P=0.134
Nausea	3	4	
Vomiting	1	3	
Intestinal obstruction	0	0	
Pneumonia	0	1	
Urinary tract Infection	1	1	
Incision infection	1	1	

Table 3 2 Comparison of hospitalization expenses of patients in group

	Group A	Group B	P Value
Drug costs	1.35 ±0.12 [29.98%]	1.89±0.69 [32.98%]	P=0.003
Other fees*	3.15±0.35	3.68±0.77	P=0.198
Total Cost	4.80±0.56	5.62±0.76	P=0.004

Other costs: including surgical costs, material costs, inspection costs, anesthesia costs, etc.

Discussion

Since Kehlet[1], a Danish surgeon, has proposed the concept of rapid rehabilitation surgery, the concept of rapid rehabilitation surgery based on evidence Medicine has been successful in many surgical procedures, such as colorectal surgery, hepatobiliary surgery, and thoracic surgery. But so far, the use of rapid rehabilitation surgery in the field of urology has been limited. Researchers at Vanderbilt University, who first applied the concept of rapid rehabilitation surgery to urological surgery, were pioneers in the implementation and development of rapid rehabilitation surgery in the field of urology. Radical total cystectomy of bladder cancer as one of the most complex surgeries in urology, the incidence of postoperative complications in patients is as high as 30%~64%, and its perioperative nursing has been in the research hotspot of urology. Studies in foreign countries have shown that the application of the

concept of rapid rehabilitation surgery in radical total cystectomy can effectively promote the recovery of gastrointestinal function, reduce the incidence of complications, shorten the length of hospital stay and reduce hospital costs, e.t.c[2-5].

In the traditional group, the routine intestinal preparation program, such as oral intestinal bacteriostatic agent, mechanical bowel washing and long time restriction diet, was aimed at reducing the incidence of complications such as intraperitoneal infection and anastomotic fistula after operation. Recent systematic analysis shows that intestinal preparation is not beneficial to intestinal surgery patients, does not reduce the risk of intestinal anastomosis after surgery, but also may delay the recovery of intestinal function, increase the patient's postoperative hospitalization time. The use of intestinal bacteriostatic agents destroys the growth of normal intestinal flora and weakens the inherent ability of the gut to resist bacterial invasion. Mechanical bowel washing is a stress response to patients, increasing the psychological burden of patients, especially the elderly, but also may cause dehydration, electrolyte disorders, intestinal edema and other adverse reactions. Long time limit diet makes the patient consume more, the nutritional status decreases, will produce many adverse reactions such as: irritability, hunger and thirst, hypoglycemia and so on, thus reduces the patient's tolerance to the operation, is not conducive to postoperative recovery. And the rapid Recovery group using one day (1d) intestinal preparation program, simple and easy to avoid the above adverse reactions, and from the results of this study can be seen, in meeting the requirements of surgery, and did not increase the incidence of postoperative complications, and rapid recovery group in the recovery of intestinal function is better than the traditional group, The first exhaust time after operation in the rapid group was 0.69 days earlier than that of the traditional group ($P < 0.003$).

Compared to the traditional three-day intestinal preparation and oral magnesium sulfate method, it is planned to achieve a day of intestinal preparation and oral sodium phosphate solution, thereby reducing preoperative discomfort or pain. Randomized controlled trials with no bowel preparation and intestinal preparation before surgery were also conducted, arguing that preoperative intestinal preparation was not beneficial to patients, further shortening preoperative preparation time and reducing preoperative discomfort or pain.

Compared with the traditional group, the first exhaust time of patients in the rapid recovery group was about 0.69 days ahead of schedule, the rehabilitation of patients accelerated, and the number of days after operation was shortened by about 2.77 days compared with that of traditional group. The number of hospital days is an important index to assess medical efficiency, and the number of days of hospitalization after operation can directly reflect the effect of treatment. Therefore, we implement a rapid rehabilitation program to promote rapid rehabilitation of the body, shorten the length of hospital stay, speed up the turnover of beds, improve medical efficiency and the utilization of health resources. From table2, we can see that the average cost of hospitalization for patients in the rapid Recovery group is 4.8 ± 0.56 million Yuan, compared with the average cost savings of about 6800 yuan ($P = 0.004$) in the traditional group, of which the main savings are in drug costs, the average savings of 4,200 yuan ($P = 0.003$). Combined with the previous discussion, the reasons are as: 1), rapid rehabilitation surgery to

promote postoperative control of liquid intake, so that clinical drug use tends to standardize. 2), rapid rehabilitation surgery emphasizes early postoperative bed activity, early feeding, e.t.c., to promote the patient's nutritional status and the recovery of the body's immunity, reduce the cost of intravenous supplementary nutrition and the use of antibiotics.

Early oral feeding is the most important part of rapid rehabilitation program. The traditional concept is that patients with total bladder cutting will have to wait until the anus exhaust to eat, the general postoperative 2-3d can not enter the liquid diet. And the concept of rapid rehabilitation surgery [6] believes that bowel sound recovery should not be used as a criterion for restoring eating. Studies have shown that [7][8], early oral feeding will not only not increase the risk of intestinal anastomotic fistula, but also can stimulate intestinal motor function through hormonal nerve reflex, relieve postoperative abdominal distension and promote the recovery of intestinal function. In addition to 3 cases of nausea and vomiting, the rest of the patients in the rapid recovery group were treated with early imported feeding programmes. On the first day after surgery, we drew on the research results of Rogers RC and other [9], and instructed patients to chew gum 2h after anesthesia, to stimulate intestinal motor function and reduce the risk of paralytic intestinal obstruction through gastrointestinal nerve fluid reflex, which is simple, safe and low cost, and conforms to the concept of rapid rehabilitation surgery. The patient can eat fluid on the 2nd day after operation, and gradually resume the regular diet on the 4th day after operation. Shorten the fasting time of patients, effectively meet the desire of patients to eat, improve the trust and satisfaction of patients with medical care, while improving the nutritional status of patients, enhance the immune function of the body, promote postoperative rehabilitation of patients, and can reduce the use of intravenous infusion and antibiotics, reduce medical costs.

Conclusions

Compared with the traditional method, the rapid rehabilitation program has the protection and promotion effect to the organ function, its advantage has the early bed activity, can better preserve the lean meat group, reduces the postoperative lung function damage, restores the gastrointestinal peristalsis function early, increases the activity ability, enhances the cardiovascular function. The rapid rehabilitation programme has also increased patient satisfaction while reducing the cost of treatment. One concept that needs to be highlighted is that rapid rehabilitation surgery is primarily designed to control the pathophysiological response during the perioperative period, with the aim of promoting the rehabilitation of patients, rather than simply for early discharge. Its significance lies not only in reducing the cost of treatment, but also, and more importantly, in improving better and more effective medical services. Although these methods can reduce costs, their main aim is to improve surgical treatment by reducing complications and improving a better prognosis. In a word, the basic concept of rapid rehabilitation program is to control the pathophysiological changes during perioperative period by multi-mode, and to improve the prognosis of surgical patients.

Declarations

Ethical approval and consent to participate

Ethical approval was obtained from Institutional Review Board of the Second Affiliated Hospital of Hainan Medical University

Consent for publication

Not applicable.

Availability of data and material

We declared that materials described in the manuscript, including all relevant raw data, will be freely available to any scientist wishing to use them for non-commercial purposes, without breaching participant confidentiality.

Competing interests

The authors declare that they have no competing interests.

Funding

The study was supported by scientific research project of hainan health and family planning industry (18A200112). The funder is first and corresponding author in the study.

Authors' contributions

HLC conceptualize and design the study. XAZ, XPC and JG involved in data collection, analyses. All authors read and approved the final manuscript and agreed to be 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.

Acknowledgements

The authors would like to thank the patients and their families for their contribution to this study.

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