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Review Article

Effects of rapid rehabilitation nursing on postoperative complications and life quality of patients with cholecystitis

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Abstract: This study was designed to determine the effect of rapid rehabilitation nursing on postoperative complications and life quality of patients with cholecystitis. A total of 117 patients with cholecystitis undergoing cholecystectomy in the Affiliated Hangzhou First People's Hospital, Zhejiang University School of Medicine from February 2017 to November 2018 were enrolled; of which 62 patients were assigned to an observation group (obs group) and were nursed under a rapid rehabilitation nursing mode, and the rest of the patients were assigned to a con group (con group) and nursed under a routine nursing mode. The 8-item Morisky Medication Adherence Scale (MMAS-8) was adopted to evaluate the compliance of patients in the two groups, and the MOS 36-Item Short-Form Health Survey (SF-36) was used to evaluate their life quality. The following items between the two groups were also compared: Nursing satisfaction, complication rate after surgery, operation time, hospitalization time, and drainage duration. The MMAS-8 score, SF-36 score, and nursing satisfaction of the obs group were all significantly higher than those of the con group (all $P<0.05$), and the obs group also showed a significantly lower complication rate and experienced shorter operation time, hospitalization time, and drainage tube duration than the con group (all $P<0.05$). Rapid rehabilitation nursing can decrease postoperative complications of cholecystitis patients, and improve their life quality and nursing satisfaction.

Keywords: Rapid rehabilitation nursing, cholecystitis, cholecystectomy, life quality

Introduction

Cholecystitis is a prevalent clinical disease, often originating from the bile duct and gallbladder stones; which may be induced by unfavorable living and eating habits of patients or severe diseases and some operations [1-3]. At present, the incidence of cholecystitis in patients with abdominal pain is about 3%-10%, and the mortality of acute cholecystitis patients is up to 10%, while the mortality of patients with postoperative cholecystitis or acalculous cholecystitis is around 23%-40% [4]. Early and effective treatment of cholecystitis can significantly improve patient survival, and cholecystectomy is an extremely effective treatment method for cholecystitis, which can significantly improve the patient's physical signs [5].

Cholecystectomy is a relatively common surgical operation. It is estimated that about 750,000 patients in the United States have undergone cholecystectomy [6]. Although it is currently well performed and has a good curative effect, a few patients may suffer from complications such as bile duct injury and postoperative hemorrhaging [7, 8]. One study has reported that the probability of postoperative complications of patients undergoing cholecystectomy is as high as 15% [9]. In addition, some studies have shown that adding improved nursing items to the cholecystectomy operation module can effectively reduce the operation time and hospitalization time and lower the complication rate, and thus save costs and time for patients [10, 11].

Life quality should be considered for patients undergoing cholecystectomy, and the pain of patients and differences in treatment methods often affects the life quality of patients. Many studies have revealed that life quality of pa-

tients undergoing cholecystectomy will improve with the remission of their illness. Currently, life quality is evaluated in multiple dimensions, generally including physical function, mental health, and social function, and these factors are also related to the survival of patients [12-14].

This study aimed to determine the effect of rapid rehabilitation nursing on patients with cholecystitis after surgery by nursing them with rehabilitation nursing.

Materials and methods

Clinical data of patients

A total of 117 patients with cholecystitis undergoing cholecystectomy in the Affiliated Hangzhou First People's Hospital, Zhejiang University School of Medicine from February 2017 to November 2018 were enrolled; of which 62 patients were assigned to an observation group (obs group) and nursed under a rapid rehabilitation nursing mode, and the other patients were assigned to a control group (con group) and nursed under a routine nursing mode. The obs group consisted of 38 males and 24 females, with a mean age of (48.4±7.4) years, while the con group consisted of 26 males and 29 females, with a mean age of (48.6±6.8) years. The study was carried out with permission from the Medical Ethics Committee of the Affiliated Hangzhou First People's Hospital, Zhejiang University School of Medicine, and each patient was informed of the study, and signed an informed consent form.

Inclusion and exclusion criteria

The inclusion criteria of the study: Patients diagnosed with acute cholecystitis by imaging, patients meeting the surgical indications, patients without liver and kidney abnormalities, patients with complete clinical information, and those glad to cooperate for the therapy and follow-up.

The exclusion criteria of the study: Patients with congenital immunodeficiency, severe infection or inflammatory diseases, other serious comorbid cardio-cerebrovascular diseases or other malignant tumors, and those with expected survival time shorter than 3 months.

Nursing methods

Patients in the con groups were nursed under a routine nursing mode: 1. Nursing staff were trained to provide information and guidance on related drugs to each patient, understand the patient's symptoms and medication plan, and actively observe the patient's condition. 2. The patients were instructed to have a balanced diet for nutrition maintenance, and the ward was kept comfortable and quiet, so that patients could enjoy sufficient rest. 3. Health knowledge about cholecystitis was introduced to the patients and correct post-operative nursing knowledge was popularized. 4. Telephone numbers of relevant nursing staff and relevant contacts were provided to each patient, and the patient was contacted every 3 months within 1 year after the operation.

Patients in the obs group were nursed under a rapid rehabilitation nursing mode: 1. Preoperative preparation: The physical condition of each patient was evaluated in a timely manner to assess and effectively treat possible complications. 2. Psychological nursing: Nursing staff were trained to pay close attention to the psychological changes of the patients, enlighten them in real time when the they suffered from anxiety, fear, tension and other adverse emotions, nurses shared successful rehabilitation cases to improve the confidence of patients, introduced the causes, treatment methods, efficacy, and prognosis of the disease to help patiens understand the disease, provide treatment information and guidance, communicate with the patients' families, and enlightened the patients together with their families. 3. Intraoperative nursing: The nursing staff was also instructed to closely observe the characteristic indexes of the patients during the operation, inform the doctors in real time if there were any abnormalities, and they took any necessary corresponding measures. 4. Diet intervention: The patients were required to eat a balanced and nutritious diet, mainly including foods that are light and digestible, under the conditions of satisfying energy demand. 5. Nursing for prevention of complications: The nursing staff was instructed to pay close attention to abdominal wall incision, drainage tube, wound hygiene, and bile extravasation of each patient after surgery and treat the patients in real time if they had any adverse phenomena.

Outcome measures

Primary outcome measures: The MOS 36-Item Short-Form Health Survey (SF-36) was adopted to evaluate the life quality of patients in the two

groups from eight aspects, physiological function, physiological role, physical pain, health status, energy, social function, emotional function, and mental health, 100 points for each item The complication rate of the two groups after surgery was compared, and the 8-item Morisky Medication Adherence Scale (MMAS-8) was adopted to evaluate the compliance of the patients. A higher score indicates a higher compliance.

Secondary outcome measures: The clinical data was compared between the two groups, and a self-made nursing satisfaction questionnaire from the Affiliated Hangzhou First People's Hospital was used to evaluate the nursing satisfaction of patients mainly from their comfort level, health knowledge, work ability, service attitude, and comprehensive level. Patients or their family members were asked to fill in the questionnaire truthfully according to the actual situation. It has a total score of 100 points; a score more than 90 points indicating high satisfaction, a score between 70 and 90 points for satisfaction, and a score less than 70 points for dissatisfaction (the overall nursing satisfaction = high satisfaction and satisfaction). The nursing satisfaction and operation situation of the two groups were compared.

Statistical analyses

In our study, the collected data were statistically processed through the medical statistics analysis software, SPSS 20.0, (Chicago SPSS Company, United States), and illustrated into figures using GraphPad Prism 7 (San Diego Graphpad Software Co., Ltd., United States). The utilization rate of enumeration data (%) was analyzed using the chi-square test, and presented by Σ^2. Measurement data were presented by the mean ± standard deviation (Mean ± SD). All measurement data were normally distributed. Inter-group comparison was conducted through the independent-samples T test, and expressed by t, and ranked data were analyzed using the rank sum test, and presented by Z. $P<0.05$ implies a significant difference.

Results

Clinical data of patients

Comparison between the two groups for the clinical data revealed that there was no significant difference between them in age, sex, body mass index (BMI), smoking history, drinking history, place of residence, anesthesia, complications (hypertension and diabetes), and gallbladder wall thickness. **Table 1**.

Comparison of postoperative complications

Comparison between the two groups in postoperative complications revealed that there was no significant difference between the two groups in the incidence rates of hemorrhage, bile leakage, wound infection, and vomiting; but the overall complication rate of the obs group was significantly lower than that of the con group. **Table 2**.

Comparison of life quality between the two groups after surgery

The life quality of the two groups was evaluated based on their SF-36 scores, and it came out that the scores of the obs group were all significantly higher than those of the con group in 8 dimensions (all $P<0.05$). **Table 3**.

Comparison of nursing satisfaction

Inter-group comparison of nursing satisfaction revealed that there was no significant difference in satisfaction rate, but the number of high satisfaction rate and overall satisfaction rate of the obs group were significantly higher than those of the con group. **Table 4**.

Comparison of compliance between the two groups

The compliance of the two groups was compared based on MMAS-8 score, and it turned out that the compliance rate of the obs group was significantly higher than that of the con group ($P<0.05$). **Figure 1**.

Operation

The operation time, hospitalization time, and drainage duration of the two groups were compared, and it came out that the obs group experienced shorter operation time, hospitalization time, and drainage duration than the con group. **Figure 2**.

Discussion

Cholecystitis is a common clinical disease, with a great impact on the quality of life of patients due to its twinge effect [15-17]. Cholecyst-

Table 1. Clinical data

Factor	The observation group (n=62)	The control group (n=55)	T/2/X^2/value	*P*-value
Age (Y)	48.4±7.4	48.6±6.8	0.152	0.880
Sex			2.311	0.128
Male	38 (61.29)	26 (47.27)		
Female	24 (38.71)	29 (52.73)		
BMI (kg/m^2)	20.75±2.62	21.04±2.97	0.561	0.576
Smoking history			0.001	0.973
Yes	10 (16.13)	9 (16.36)		
No	52 (83.87)	46 (83.64)		
Alcohol abuse history			1.055	0.304
Yes	9 (14.52)	12 (21.82)		
No	53 (85.48)	43 (78.18)		
Place of residence			0.339	0.560
Urban area	53 (85.48)	49 (89.09)		
Rural area	9 (14.52)	6 (10.91)		
Anesthesia methods			0.909	0.340
Inhalation-based maintenance	40 (64.52)	40 (72.73)		
Venous-based maintenance	22 (35.48)	15 (27.27)		
Complication				
Hypertension	14 (22.58)	10 (18.18)	0.346	0.557
Diabetes mellitus	8 (12.90)	9 (16.36)	0.281	0.596
Gallbladder wall thickness (mm)			3.518	0.061
≤4	36 (58.06)	41 (74.55)		
>4	26 (41.94)	14 (25.45)		

Table 2. Complications

	The observation group (n=62)	The control group (n=55)	X^2 value	*P*-value
Hemorrhage	2 (3.23)	4 (7.27)	0.981	0.322
Bile leakage	1 (1.61)	3 (5.45)	1.303	0.254
Wound infection	1 (1.61)	2 (3.64)	0.478	0.490
Vomiting	2 (3.23)	4 (7.27)	0.981	0.322
Overall complications	6 (9.68)	13 (23.64)	4.175	0.041

Table 3. SF-36 score

	The observation group (n=62)	The control group (n=55)	T value	*P*-value
Physiological function	73.37±16.93	65.46±17.25	2.500	0.014
Physiological role	61.76±16.64	51.37±22.15	2.888	0.005
Physical pain	74.84±12.75	64.64±15.36	3.923	<0.001
Health status	65.40±9.28	54.33±12.85	5.384	<0.001
Energy	67.74±16.26	57.49±13.86	3.645	<0.001
Social function	58.77±12.94	52.46±13.65	2.566	0.015
Emotional function	71.46±15.24	63.45±14.85	2.872	0.005
Mental health	67.94±17.15	51.27±15.92	5.427	<0.001

ectomy is the most effective clinical treatment for cholecystitis, but some patients will still suffer from pain for a period of time after it [18, 19]. Furthermore, some patients will have more

Table 4. Nursing satisfaction

	The observation group (n=62)	The control group (n=55)	X^2-value	*P*-value
High satisfaction	21 (33.87)	9 (16.36)	4.685	0.030
Satisfaction	35 (46.05)	32 (41.03)	0.396	0.529
Dissatisfaction	6 (9.68)	14 (25.45)	5.119	0.024
Overall satisfaction	56 (90.32)	41 (74.55)		

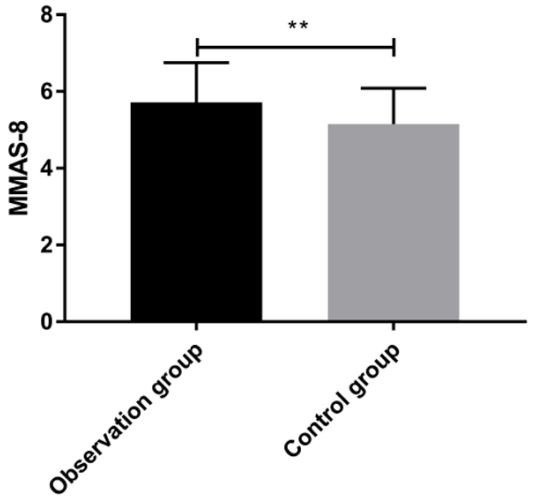

Figure 1. Comparison of compliance. The MMAS-8 score of the obs group was significantly higher than that of the con group (t=3.126, *P*=0.002). ** means P<0.01.

severe psychological, physical and economic burdens when they suffer from complications such as hemorrhage, infection, and bile leakage, and they will also need more treatment over time which will compromise their life quality and increase their burden [20]. Although routine nursing intervention can improve the postoperative recovery of patients to a certain extent, there are still some deficiencies. Patients often suffer from certain psychological burdens after illness and surgery. With routine nursing methods, it is difficult to eliminate that burden; while under rapid rehabilitation nursing, there is corresponding psychological nursing, which can better eliminate psychological stress, promote postivie treatment effects and enhance treatment confidence. Therefore, timely consolation for patients and preparation for the prevention of complications before operation can reduce the incidence of complications, and effectively and timely prevent treatment complications after surgery, which can better reduce the impact on patients' life quality [21]. In this study, we first evaluated the life quality of the patients in the two groups through SF-36 in 8 dimensions including physiological function, physiological role, physical pain, health status, energy, social function, emotional function, and mental health, and found that the scores of the obs group were all higher than those of the con group in the 8 dimensions; indicating that patients nursed under the rapid rehabilitation nursing mode experienced higher life quality than those nursed under the routine nursing mode. One study by Hsueh et al. [22] has also revealed that the quality of life after cholecystitis surgery depends on the level of postoperative health nursing, so providing better nursing is also conducive to the quality of life of patients after surgery. In addition, we also compared the complication rates between the two groups, and found that the complication rate of the obs group was significantly lower than that of the con group; implying that rapid rehabilitation nursing for preoperative and intraoperative measures could effectively lower the occurrence of complications. In the pre-operative nursing process of the observation group, the nursing staff were trained to share monitoring-related knowledge to the patients, explain the possible complications to the patients in detail, and instruct the patients to carry out functional rehabilitation training after the operation. In addition, the staff were also instructed to observe the abdominal-wall incision and drainage tube at all times and pay attention to wound hygiene to reduce the incidence rate of postoperative complications, and improve the curative effect. What's more, nursing staff in our fast-track surgery department had a thorough understanding of the patients' family, environment, cultural, social and economic conditions at the beginning of nursing; which also helped lower the pressure of nursing staff, and the economic and social burden of patients, which is helpful for the overall management of the patients and the nursing process [23].

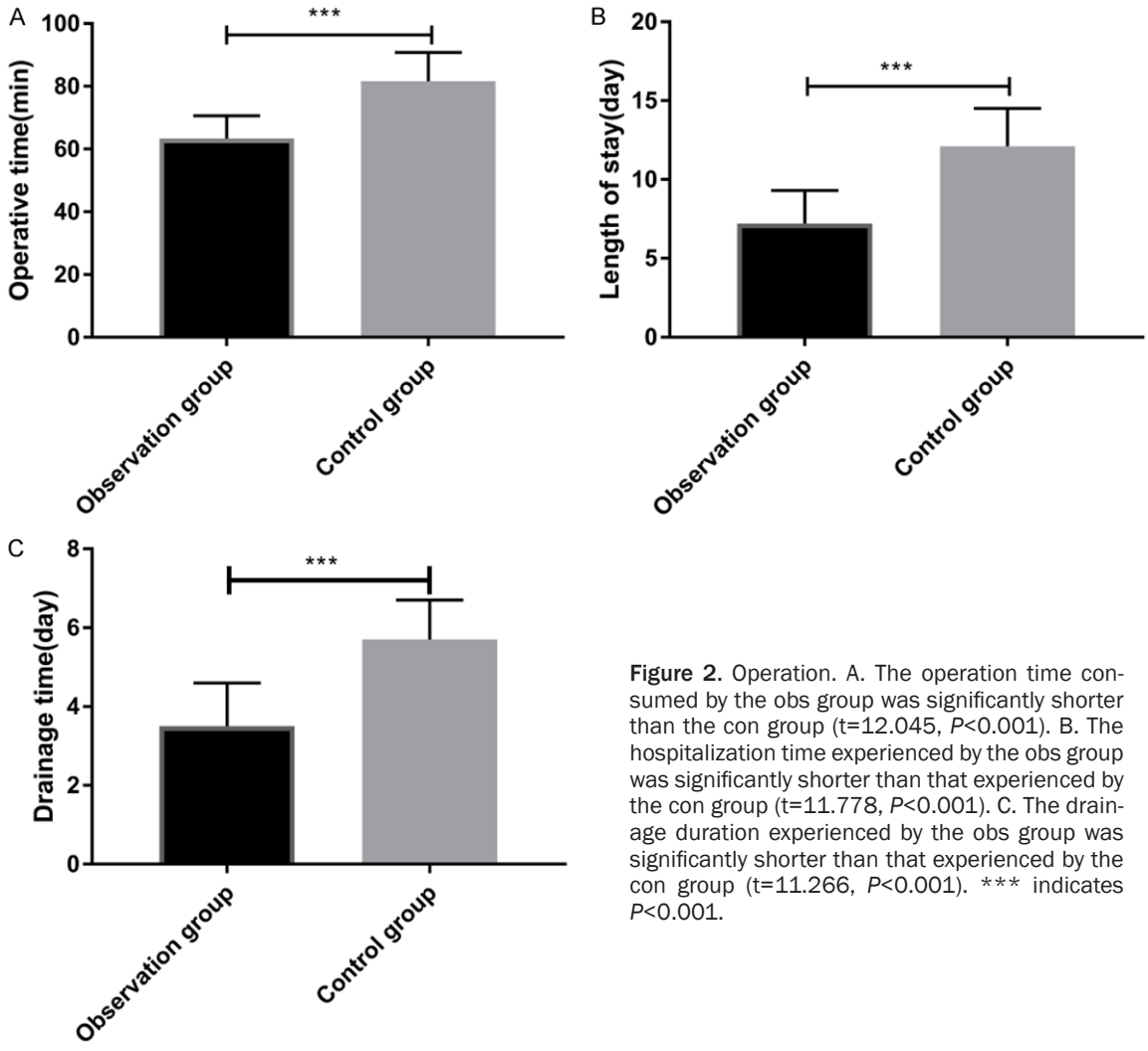

Figure 2. Operation. A. The operation time consumed by the obs group was significantly shorter than the con group (t=12.045, *P*<0.001). B. The hospitalization time experienced by the obs group was significantly shorter than that experienced by the con group (t=11.778, *P*<0.001). C. The drainage duration experienced by the obs group was significantly shorter than that experienced by the con group (t=11.266, *P*<0.001). *** indicates *P*<0.001.

With a low life quality and high burden, patients tend to show a low degree of cooperation with treatment, and also show a low compliance [24]. We compared the compliance between the two groups using MMAS-8, finding that the MMAS-8 score of the obs group was significantly higher than that of the con group, implying that the compliance of patients nursed under the rapid rehabilitation nursing was significantly higher than that of those nursed under routine nursing. Low treatment compliance of patients will also delay their recovery; so in our study, nursing staff were instructed to fully communicate with the patients and their families and share successful treatment cases with patients, so as to dispel their psychological worries, enlighten them together with their families and help take better care of them. In addition, the staff was also trained to teach and supervise the treatment process to the patients to improve their compliance and quality of life. Finally, we compared the nursing satisfaction and operation situation between the two groups, and found that the nursing satisfaction of the obs group was significantly higher than that of the con group, and the obs group experienced significantly shorter hospitalization time, operation time, and drainage duration than the con group; indicating that rapid rehabilitation nursing was effective, and further lowered the treatment time and economic burden of patients.

However, there are still some deficiencies in this study. First, we have not included a healthy population, and we are still not clear about the differences between patients and healthy individuals after nursing. Secondly, some studies have showed that conservative treatment is also an effective treatment for some patients

[25], but we have not further studied the differences between the nursing results of patients undergoing different cholecystitis treatment methods. Finally, we have not explored some related factors for complications of patients undergoing cholecystectomy. Therefore, we hope that we can further address these issues in subsequent studies to improve our conclusion.

To sum up, rapid rehabilitation nursing can reduce postoperative complications of cholecystitis patients, and improve their life quality and nursing satisfaction.

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Disclosure of conflict of interest

None.

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