

Effects of perioperative individualized nursing on elderly patients undergoing video-assisted thoracoscopic lobectomy

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Abstract. The aim of the present study was to compare the effects of individualized nursing on improving the satisfaction of elderly patients with lung cancer undergoing thoracoscopic lobectomy. A total of 72 elderly patients with lung cancer undergoing thoracoscopic lobectomy in the First Hospital of Qinhuangdao (Qinhuangdao, China) were randomly allocated to a control group (n=36) or an observation group (n=36). The patients in the control group received routine nursing, and the patients in the observation group received individualized nursing. The patients' compliance with respiratory function exercise, the complications after surgery, and nursing satisfaction were recorded. The patients' compliance with respiratory rehabilitation exercise and the patients' satisfaction in the observation group were significantly higher than that in the control group. The length of hospital postoperative stay, the time of drainage tube indwelling, and the incidence of postoperative complications in the observation group were significantly lower than in the control group. Thus, an individualized nursing model can accelerate the rehabilitation of elderly patients undergoing video-assisted thoracoscopic lobectomy and improve patient satisfaction.

Introduction

Thoracoscopic lobectomy is a common method of treatment for patients with lung cancer (1,2). Several studies have shown that compared with thoracotomy lobectomy, video-assisted thoracoscopic lobectomy results in less pain, better postoperative quality of life and shorter hospital stay, in addition without compromising the outcomes of oncological (3-5); however, the resultant reduction in lung volume and postoperative pain caused by the incision affect the quality

of a patient's rehabilitation and increase the incidence of postoperative complications, so it is necessary to provide a cognitive, behavioural and comprehensive way to improve the well-being of these patients (6). Individualized nursing models is patient-centered, which means that all the implementation and decision-making are based on the concept that both the patients and their families are integral and prerequisites for quality healthcare (7). In recent years, individualized nursing models, have been widely adopted to care for patients during the perioperative period (8,9). Thus, the objective of the present study was to investigate the value of an individualized nursing model for elderly patients with lung cancer undergoing thoracoscopic lobectomy.

Materials and methods

The present study was approved by the Medical Ethics Committee of the First Hospital of Qinhuangdao (Qinhuangdao, China; approval no. 20205A160) and informed consent was obtained from all patients involved. A total of 72 elderly patients (median age, 69.8 years; range, 65-76 years) with lung cancer who underwent thoracoscopic lobectomy between January 2021 and December 2021 were included in this study. The inclusion criteria were: Patients undergoing thoracoscopic surgery for lung cancer with pathologically confirmed non-small cell lung cancer who were aged ≥65 years old. The exclusion criteria were: Patients treated with preoperative chemoradiotherapy, thoracotomy lobectomy or pneumonectomy, with severe liver and kidney dysfunction, immune system diseases or coagulation disorders, or with a mental illness.

Patients were randomly allocated to either a control group (n=36) or an observation group (n=36). Randomization was based on computer-generated codes which were kept in sequentially numbered opaque envelopes until the end of the study. The patients in the control group received routine nursing, and patients in the observation group received individualized nursing.

In the control group (traditional nursing group) standard monitoring systems were used, including electrocardiogram, heart rate, invasive arterial blood pressure, and peripheral oxygen saturation (SpO₂); medication was prescribed according to the physician's order, and patients' wards were routinely cleaned (10).

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For the observation group (individualized nursing group), the primary nursing criteria were as follows: Health education, medical and nursing staff provided health education for patients during admission, preoperatively, return to the ward, at the first, the second, and the third day after surgery, and before discharge, whilst also assisting patients with cardiopulmonary exercise and providing nutritional guidance. In addition, the active respiratory circulation technology (11-13) was used throughout the perioperative period, so as to achieve the ultimate goal of reducing the incidence of atelectasis (14). Respiratory tract management was initiated from patient admission (including evaluation, atomization inhalation, respiratory function exercise, row of phlegm in time, pain management, position management, high flow breathing of wetting, and treatment when necessary, to ensure that patients could breathe easier (15). A perioperative blood glucose management path was implemented when patients were admitted to the hospital, and the diabetic patients were treated with an insulin pump to ensure glycemic control. The patient's pain was managed by regular oral non-steroidal anti-inflammatory drugs and a patient-controlled analgesia pump; in addition, light music was played to divert the patient's attention. If the analgesic effect was poor, the anesthesiologist was contacted in a suitable time to ensure a more appropriate analgesic plan was implemented. With regard to cardiovascular care, the patients were evaluated with regard to cardiopulmonary function prior to surgery, and reasonable treatment and nursing methods were adopted based on the cardiopulmonary function of each patient (16). The psychological state of the patients before and after surgery was evaluated, and to reduce the psychological pressure experienced by patients, staged psychological interventions were implemented where necessary. Finally, with regard to postoperative activity and functional exercise, after waking up from general anesthesia, the patients were placed in the semi-decubitus position to facilitate breathing and drainage. When the patients reached a stable hemodynamic profile, they were encouraged and supervised to get up and move on the first day after surgery and to complete the daily activity target. The patients got up and moved for 1-2 h the first day after surgery, and for 4-6 h after discharge. From the first to the fifth day after surgery, progressive functional exercise and systemic aerobic breathing exercises were performed on the affected limb.

Observed indicators. Patient compliance with respiratory function exercise was evaluated based on the following evaluation criteria. Non-compliance was defined as patients actively participating in <39% of respiratory function exercises after reminders; lack of compliance was defined as patients actively participating in 40-59% of the respiratory function exercises. Relative compliance was defined as patients actively participating in 60-79% of respiratory function exercises. Finally, compliance was defined as patients actively participating in >80% of the respiratory function exercises. Non-compliance and lack of compliance were collectively bundled as low compliance; relative compliance and compliance were collectively bundled as high compliance.

The length of postoperative hospital stay, the time of drainage tube indwelling, postoperative complications such as arrhythmia, atelectasis, pulmonary infection, pulmonary

embolism, lower extremity venous thrombosis, and chest distress were recorded.

The satisfaction of patients 5 days into their hospital stay and 7 days after discharge were assessed based on a satisfaction questionnaire and a telephone follow-up questionnaire. Satisfaction scores ranged from 0 to 100 and scores were graded as follows: Scores >95, very satisfied; scores 86 to 95, satisfied; and scores ≤85, dissatisfied. *Statistical analysis.* SPSS version 21.0 (IBM Corp.) was used for all statistical analyses. Continuous variables are presented as the mean ± SD and an unpaired independent samples t-test was used for comparison between two groups. The enumerated data are expressed as the frequency and percentage, and a χ^2 test or Fisher's exact test was used for comparison between groups. A Mann-Whitney U test was used to compare the satisfaction grades of patients 5 days after hospitalization and 7 days after discharge. $P < 0.05$ was considered to indicate a statistically significant difference.

Results

General information. There was no significant difference in the characteristics of patients between the two groups (all $P > 0.05$; Table I).

Patient compliance with respiratory function exercise. Patient compliance regarding respiratory function exercise in the observation group was significantly better than the control group ($P < 0.05$). The time of postoperative hospital stays and the time of drainage tube indwelling in the observation group were significantly shorter than in the control group. Additionally, the incidence of postoperative complications in the observation group was significantly lower than in the control group ($P < 0.01$; Table II).

The satisfaction of patients 5 days after hospitalization and 7 days after discharge in the observation group was significantly higher than that in the control group ($P < 0.01$; Table III).

Discussion

Thoracoscopic surgery can minimize the stress experienced by elderly patients with lung cancer, reduce trauma, and facilitate postoperative recovery; however, the incidence of postoperative complications remains high (17), moreover, the physiological changes in elderly patients with lung cancer result in a higher incidence of postoperative respiratory complications (18). Several studies have shown that perioperative pulmonary rehabilitation exercise can reduce the degree of pulmonary function reduction, promote recovery, and shorten the length of hospital stay (19,20). Therefore, it is necessary to strengthen health education for patients during the perioperative periods, improve the degree of patients' dependence, and improve perioperative cooperation, so as to improve the chances of accelerated postoperative recovery.

In the present study, the results showed that compared with traditional nursing routines, an individualized nursing model improved patient compliance with regard to respiratory function exercises, shortened the time of drainage tube indwelling postoperatively, decreased the incidence of

Table I. Clinicopathological characteristics of the patients.

Characteristics of Patients	Observation group (n=36)	Control group (n=36)	P-value
Sex (male/female), n	18/18	19/17	1.00
Age, years	69.5±3.7	70.1±3.4	0.47
Height, cm	164.1±7.2	164.5±8.4	0.94
Weight, kg	63.5±8.3	65.1±9.5	0.45
Underlying diseases, n	33	27	0.11
Hypertension	13	18	
Diabetes	14	3	
Coronary heart disease	6	6	

Table II. Postoperative recovery and complications.

Factor	Observation group (n=36)	Control group (n=36)	P-value
Postoperative hospital stay in days, mean ± SD	5.0±0.9	9.1±3.8	<0.01 ^a
Time of drainage tube indwelling in days, mean ± SD	3.9±0.9	9.9±5.9	<0.01 ^a
Postoperative complications, n (%)	2 (5.4)	17 (47.2)	<0.01 ^a
Arrhythmia	0 (0.0)	5 (13.9)	
Pulmonary atelectasis	0 (0.0)	1 (2.7)	
Pulmonary infection	1 (2.7)	6 (16.7)	
Shortness of breath	1 (2.7)	5 (13.9)	

^aP<0.01.

Table III. Results of the satisfaction survey 5 days after hospitalization and 7 days after discharge.

Factor	Observation group, (n=36)	Control group, (n=36)	P-value
In hospital 5 days, n (%)			0.01 ^a
Very satisfied	33 (91.7)	23 (63.9)	
Satisfied	2 (5.6)	8 (22.2)	
Dissatisfied	1 (2.8)	5 (13.9)	
After discharge 7 days, n (%)			<0.01 ^a
Very satisfied	32 (88.9)	18 (50.0)	
Satisfied	4 (11.1)	9 (25.0)	
Dissatisfied	0 (0.0)	9 (25.0)	

Satisfaction scores ranged from 0 to 100 and graded as follows: scores >95, very satisfied; scores 86-95, satisfied; scores ≤85, dissatisfied.

^aP≤0.01.

postoperative complications, shortened the length of hospital stay, and reduced the burden experienced by the patient's family members.

The possible reasons for these results may be that the quality of oncological nursing care was high regarding the three dimensions of care, 'being supported and confirmed', 'being respected' and 'having a sense of belonging' (21,22). In the observation group, the psychological state of patients before and after surgery was evaluated, and the results showed that the psychological pressure experienced by patients was

reduced by the staged psychological interventions. Such individualized practices allow the patients to feel supported and confirmed (23), makes them feel that they were someone worthy and gives them the motivation to adhere to postoperative procedures, improving compliance and thus improving the chance of recovery. That is, the psychological burden experienced by patients is reduced, and this increases cooperation with treatment and postoperative care.

Educating patients regarding the treatments and the need for their willing participation; alongside respiratory tract

management, perioperative blood glucose management, pain management, and cardiovascular care, postoperative activity and functional respiratory exercise were the targeted treatment methods for patients undergoing lobectomy. Using this individualized nursing model, patients were more likely to cooperate with and participate in the treatment, and as a result, the incidence of postoperative complications was lower, the length of hospital stay was shortened and patient satisfaction was significantly higher.

The individualized nursing model supported patients in having a voice in their care, which required nurses to pay more attention to the patients' previous experiences and habits, and this was associated with improvements in nurses' problem-solving skills (24). However, individualized nursing increases the workload of nurses, which may have a negative impact on the support provided to patients.

The present study has some limitations. First, this study was a single-center study, and the overall sample size was small. Second, it was not possible to blind the nurses and patients, and consequently, the possibility of biases cannot be ruled out. Third, this study only compared an individualized nursing model with the traditional nursing methods but did not incorporate other innovative care models. Future studies should take these limitations into consideration.

In conclusion, the individualized nursing model used in the present study improved rehabilitation, reduced the number of complications experienced by patients, and improved the satisfaction of elderly patients undergoing thoracoscopic lobectomy.

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Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Authors' contributions

LZ, ZL and XC designed the study and revised the manuscript. LL, LM, and ZL participated in the study design, analyzed the data and drafted and revised the manuscript. XC and LL participated in study design, data collection, data analysis and writing of the manuscript. All authors read and approved the final manuscript. LZ, ZL, LL, LM and XC confirm the authenticity of all the raw data.

Ethics approval and consent to participate

The Ethical Review Committee of the First Hospital of Qinhuangdao approved the present study (approval no. 20205A160). All the patients provided written informed consent.

Patient consent for publication

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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