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Original Article

Effect of comfort nursing on postoperative recovery and life quality of patients undergoing thoracic surgery

Boya Zhang, Lianju Yang, Xiaochen Ji

Department of Anesthesiology I, Cangzhou Central Hospital, Cangzhou 061000, Hebei, China

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Abstract: Objective: To evaluate the effect of comfort nursing on postoperative recovery and life quality of patients undergoing thoracic surgery. Methods: A total of 400 patients undergoing thoracic surgery in our hospital from October 2017 to July 2020 were identified as research subjects and retrospectively studied. These patients were assigned to a control group (Con group, n=196, given conventional nursing) and an observation group (Obs group, n=204, given conventional nursing combined with comfort nursing) according to nursing modality. The following items of the two groups were compared: incidence of adverse reactions after surgery, MOS 36-Item Short-Form Health Survey (SF-36) score, visual analog scale (VAS) scores at 24, 48, and 72 h after surgery, length of stay, first postoperative exhaust time, drainage duration, nursing satisfaction, and systolic blood pressure (SBP), diastolic blood pressure (DBP), mean atrial pressure (MAP), and heart rate before and after the intervention. Results: Compared with the Con group, the Obs group showed a notably lower total incidence of adverse reactions and had higher SF-36 scores after surgery. The Obs group had lower VAS scores at 24, 48, and 72 h after surgery than the Con group. The Obs group also experienced significantly shorter length of stay and drainage duration and earlier first postoperative exhaust time in contrast to the Con group. In addition, the Obs group obtained a higher satisfaction rate than the Con group, and patients in the Obs group had better treatment compliance and emotionalal status than those in the Con group. Moreover, the two groups presented no significant difference in SBP, DBP, MAP, or heart rate before and after intervention (all P>0.05). Conclusion: For patients undergoing thoracic surgery, comfort nursing can greatly improve their life quality and contribute to their postoperative recovery.

Keywords: Comfort nursing, postoperative recovery, thoracic surgery, VAS scores

Introduction

As a surgery widely adopted in clinical practice, thoracic surgery is considered effective in treating thoracic diseases such as lung cancer and esophageal carcinoma [1-3]. However, it is rather time-consuming and traumatic, which may result in pain and a series of respiratory complications such as airway injury and lung function impairment, seriously hindering postoperative recovery [4-6]. Moreover, patients may suffer negative emotions such as fear and anxiety due to preoperative psychological pressure and postoperative complications and discomfort which may compromise postoperative recovery [7, 8].

Current therapeutic regimens underline the importance of patients' survival and also their postoperative quality of life [9]. Thoracic surgery, an invasive surgery, is criticized for its physical and psychological trauma to patients [10]. Therefore, the mitigation of postoperative complications and relief of perioperative adverse reactions serve to enhance patients' postoperative recovery and quality of life [11]. Previous studies [12, 13] have emphasized that effective nursing methods can predominantly improve patients' life quality. Comfort nursing is a nursing model that meets patients' needs through various nursing processes, under which an effective nursing program is implemented before and after surgery to mitigate the perioperative adverse reactions and ensure physiological and psychological comfort, thus improving the patients' postoperative recovery and life quality [14].

Accordingly, this study was designed to evaluate the effect of comfort nursing on postoperative recovery and life quality of patients undergoing thoracic surgery.

Materials and methods

Data about the patients

As a retrospective study, this study was carried out with permission from the Ethics Committee of our hospital and with written informed consent from all enrolled patients or their families. The ethics approval number is 2017-9-20. A total of 400 patients who had undergone thoracic surgery from October 2017 to July 2020 were enrolled. Among them, 196 patients (131 males and 65 females, (48.47±9.11) years old on average) were divided into a control group (Con group) given routine nursing, while 204 patients (127 males and 77 females, (49.07± 8.87) years old on average) were assigned to the observation group (Obs group) given comfort nursing.

Inclusion and exclusion criteria

Inclusion criteria of the study: Patients diagnosed with thoracic diseases and received thoracic small incision surgery; among them, esophageal cancer including the upper, middle and lower segments and the cardia; peripheral and central lung cancers, and patients with normal function of brain, heart, liver, and kidney before surgery.

Exclusion criteria of the study: Patients with coagulation dysfunction or other healing-associated disorders; patients complicated with severe inflammation or infection; patients with cognitive dysfunction, and patients without complete medical records.

Nursing methods

Patients in the Con group were given routine nursing as follows: 1. Preoperative nursing: Before surgery, nursing staff introduced knowledge and precautions of thoracic surgery to the patients to help them understand the disease and treatment plans and thus relieve their emotional stress. 2. Postoperative nursing: The surgical wounds and drainage were closely observed in case of abnormalities. Airway patency was closely monitored, and oral cavity nursing was performed regularly. Guidance on drugs, diet, and resting was also provided to facilitate recovery. 3. Preventing complications: The patients were educated about relevant complications, and their conditions were closely monitored. Necessary and proper treatment was performed for the occurrence of complications.

Patients in the Obs group were given comfort nursing as follows: 1. Psychological nursing: Nursing staff paid close attention to the psychological changes in patients, and provided guidance when they suffered negative emotions such as anxiety, fear, and tension. Successful rehabilitation cases were introduced to improve the patients' confidence. Health education including the causes, treatment methods, efficacy, and prognosis of the diseases was provided for the patients to help them understand their conditions. The patients' families were also timely informed of the treatment information and guidance. 2. Preoperative preparations: The physical condition of each patient was evaluated timely to predict and effectively treat possible complications. 3. Perioperative nursing: The perioperative vital signs of the patients were closely monitored, and abnormalities were reported timely. 4. Postoperative nursing: Regular communication with the patients and follow-up visits were conducted. The patients' conditions were updated timely and regularly among all nurses, and the patients were also lectured on related health knowledge concerning their actual situation, to help them prepare for rehabilitation training. Professional rehabilitation trainers were invited to instruct the patients to perform postoperative functional exercises. Moreover, individualized exercise plans and dietary guidance were also formulated for the patients. 5. Prevention of complications: Patients in need were given oxygen inhalation or ventilator-assisted oxygen inhalation in a semi-recumbent position, and the patients' oxygen saturation, pulse, complexion, heart rate, and other vital indicators were closely monitored. Their drainage fluid, urine status, abdominal wall incision, drainage tube, and wound hygiene were also observed in case of abnormalities. 6. Pain-associated nursing: For patients with mild pain, music or videos were provided to divert their attention. For those with intense pain, analgesics were given, and massage and oxygen inhalation were applied to relieve their pain and discomfort.

Outcome measures

The incidence of adverse reactions after surgery in the two groups was analyzed. The pain of patients at 24, 48, and 72 h after surgery was evaluated using the visual analog scale (VAS), and their quality of life before and after surgery was evaluated using the MOS 36-Item Short-Form Health Survey (SF-36). The SF-36

Table 1. Clinical data of patients

	Con group (n=196)	Obs group (n=204)	$Z/\chi^2/t$	*P*-value
Age (Y)	48.47±9.11	49.07±8.87	0.667	0.505
Gender			0.920	0.338
Male	131 (66.84)	127 (62.25)		
Female	65 (33.16)	77 (37.75)		
BMI (kg/m^2)	23.7±3.2	24.2±2.4	1.772	0.077
American Society of Anesthesiologists classification			2.749	0.253
I	42 (21.43)	31 (15.20)		
II	149 (76.02)	166 (81.37)		
III	5 (2.55)	7 (3.43)		
Surgery type			1.531	0.216
Open surgery	72 (36.73)	63 (30.88)		
Laparoscopic surgery	124 (63.27)	141 (69.12)		
Surgery mode			2.347	0.799
Pneumonectomy	66 (33.67)	74 (36.27)		
Esophagectomy	31 (15.82)	40 (19.61)		
Gastrectomy	37 (18.88)	32 (15.69)		
Esophageal dilation	20 (10.20)	19 (9.31)		
Bronchial dilatation	18 (9.18)	14 (6.86)		
Others	24 (12.25)	25 (12.26)		

covers eight items, namely physiologic functioning, physical role, bodily pain, health status, vitality, social functioning, role emotional, and mental health. Each item was scored 100 points, and the average value was recorded for comparison. The score was positively correlated with life quality. The self-rating anxiety scale (SAS) and self-rating depression scale (SDS) were adopted to evaluate adverse emotions of each patient before and after the intervention. Higher scores indicated a worse mood. Additionally, a self-made nursing satisfaction questionnaire of our hospital was adopted to evaluate the nursing satisfaction of patients mainly from comfort, health knowledge, work ability, service attitude, and comprehensive level, and the patients or their families were required to fill in it truthfully according to the actual situation, with a total score of 100 points. Very satisfied: >90 points, satisfied: 70-90 points, and dissatisfied <70 points. The overall nursing satisfaction rate = (the number of very satisfied patients + the number of satisfied patients)/ total number of patients *100%. The nursing satisfaction of the two groups was compared. Moreover, the two groups were compared as to the length of stay, first postoperative exhaust time, and drainage duration that were adopted to evaluate their postoperative recovery. After six months of intervention, the non-compliance of patients and the main reasons for it were recorded. The systolic blood pressure (SBP), diastolic blood pressure (DBP), mean atrial pressure (MAP), and heart rate before intervention and 72 hours after intervention were also compared.

Statistical analyses

This study adopted SPSS21.0 (SPSS, Chicago) for statistical analyses of all collected data. Counted data, expressed as utilization rate (%), were analyzed by the chi-square test. Rank sum test was used for grade data comparison. Measured data were expressed by Mean ± SD. All measured data in this study were in a normal distribution and were compared between groups by the independent-samples T-test; Paired t test was used for intra-group comparison. $P<0.05$ suggested a significant difference.

Results

Clinical data of patients

The two groups were not greatly different in clinical data such as age, gender, body mass index (BMI), American Society of Anesthesiologists (ASA) classification, operative time, blood loss, surgery type, or surgery mode (all $P>0.05$) (**Table 1**).

Table 2. Comparison of postoperative adverse reactions

	Pulmonary infection	Abdominal distension pain	Anastomotic fistula	Arrhythmia	Total adverse reactions
Con group (n=196)	16 (8.16)	11 (5.61)	6 (3.06)	10 (5.10)	43 (21.94)
Obs group (n=204)	9 (4.41)	6 (2.94)	4 (1.96)	8 (3.92)	27 (13.24)
χ^2					5.550
P-value					0.019

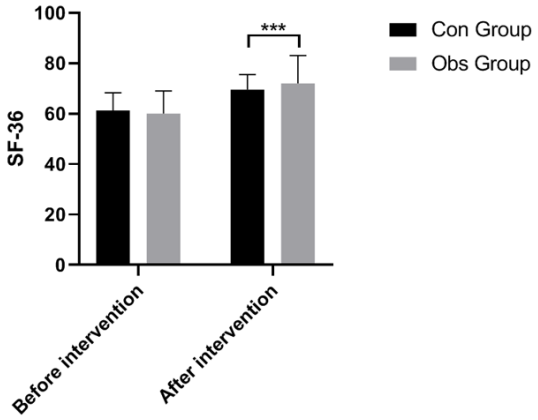

Figure 1. Comparison of quality of life. ***indicates *P*<0.001.

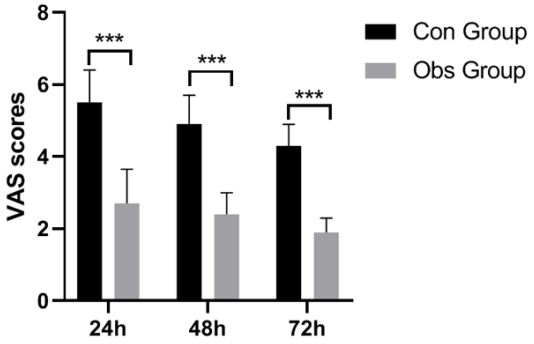

Figure 2. Comparison of postoperative pain. ***indicates P<0.001.

Adverse reactions after surgery

Both groups suffered adverse reactions such as pulmonary infection, abdominal distending pain, anastomotic fistula, and arrhythmia. The Obs group showed a total incidence of adverse reactions of 13.24% (27 cases) after surgery, which was significantly lower than the rate of 21.94% (43 cases) in the Con group (*P*<0.05) (**Table 2**).

Life quality

Before nursing intervention, there was no significant difference between the two groups in SF-36 score (t=1.269, *P*=0.205). After the nursing, the SF-36 scores of both groups increased, with markedly higher results obtained in the Obs group than those of the Con group (t=6.096, *P*<0.001) (**Figure 1**).

Postoperative pain

The Obs group had significantly lower VAS scores than the Con group at 24 h, 48 h, and 72 h after surgery (all *P*<0.001) (**Figure 2**).

Postoperative recovery

The Con group experienced a notably longer length of stay than the Obs group, and also experienced notably later first exhaust time and longer drainage time than the Obs group (all *P*<0.001) (**Table 3**).

Comparison of adverse mood between the two groups

Before nursing intervention, there was no notable difference between the two groups in SAS and SDS scores (both *P*>0.05). After the nursing, the SAS and SDS scores of both groups decreased, and the reductions in the Obs group were more obvious as compared to the Con group (*P*<0.05) (**Figure 3**).

Nursing satisfaction

According to the comparison of nursing satisfaction between the two groups, the overall nursing satisfaction of the Obs group was notably higher than that of the Con group (90.69% *vs.* 80.10%) (**Table 4**).

Treatment compliance

In the Con group, there were 32 cases of non-compliance, including 7 cases of poor efficacy, 5 cases of irregular living, 6 cases of long-time medicine, 4 cases of high cost, and 8 cases of confidence loss. In the Obs group, there were 12 cases of non-compliance, including 3 cases

Table 3. Comparison of rehabilitation effects

	Length of stay (d)	First exhaust (h)	Drainage time (d)
Con group (n=196)	9.28±1.57	41.28±9.24	5.37±1.25
Obs group (n=204)	8.12±1.18	35.58±7.39	4.59±0.83
t	8.375	6.827	7.379
P-value	<0.001	<0.001	<0.001

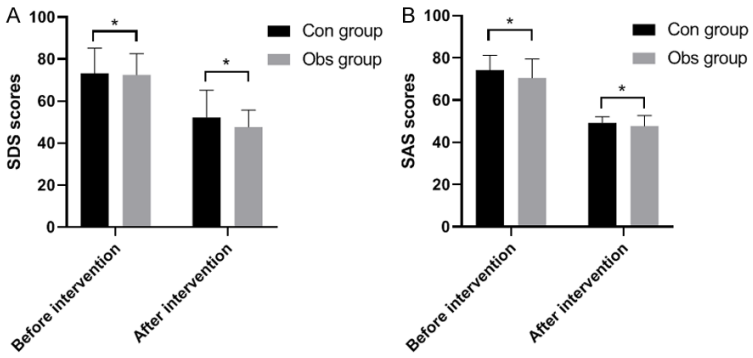

Figure 3. Comparison of adverse mood between the two groups. Note: A. Comparison of SDS between the two groups before and after treatment; B. Comparison of SAS between the two groups before and after treatment.

of poor efficacy, 1 case of irregular living, 2 cases of long-time medicine, 3 cases of high cost, and 3 cases of confidence loss. The total non-compliance rate of the Obs group was lower than that of the Con group (*P*<0.001) (**Table 5**).

Comparison of SBP, DBP, MAP, and heart rate

No significant difference was found between the two groups in terms of SBP, DBP, MAP or heart rate (P>0.05) (**Table 6**).

Discussion

Thoracic surgery is used for thoracic cavity diseases of organs such as the esophagus, lung, and mediastinum [15, 16]. Though thoracic surgeries have attained major improvement due to the advancement of medical technology, complications are still critical issues to be addressed [17]. Intraoperative complications due to unsatisfactory sputum excretion and impaired lung function compromise the postoperative recovery and prognosis of patients [18, 19]. Moreover, patients tend to suffer negative emotions such as tension, anxiety, depression, and pessimism in the face of the disease and surgery, which impairs their treatment compliance and takes a toll on their sleep quality and postoperative rehabilitation [20, 21]. Therefore, in this study, active communication, health education about the disease and surgery, and the introduction of rehabilitation cases were conducted before surgery to alleviate these negative emotions.

We compared adverse reactions between the two groups after surgery. According to the results, both groups suffered adverse reactions including pulmonary infection, abdominal distending pain, anastomotic fistula, and arrhythmia, and the incidence of adverse reactions after surgery in the Obs group was significantly lower than that in the Con group (13.24% *vs.* 21.94%). Furthermore, we analyzed the VAS scores between the two groups at 24, 48, and 72 h after operation and found significantly lower VAS scores of the Obs group than those of the Con group. After nursing, both groups showed an increase of SF-36 scores, with higher results in the Obs group than those of the Con group. The above results indicate the promising efficacy of comfort nursing in improving the quality of life in patients after thoracic surgery. Postoperative complications and unbearable pain will seriously compromise patients' life quality and postoperative recovery, which underlines the importance of the mitigation of complications [22, 23].

In comfort nursing, professional rehabilitation trainers were invited to provide professional guidance and intervention on patients' postoperative rehabilitation training. The patients' families were also instructed to provide necessary assistance to enhance patients' compliance with rehabilitation exercise and set the stage for postoperative exercise, which contributes to enhancing their rehabilitation and life quality [24]. We compared postoperative recovery between the two groups and found that patients in the Obs group experienced notably shorter length of stay and drainage duration and much earlier first postoperative exhaust time than those in the Con group. Furthermore,

Table 4. Comparison of nursing satisfaction between the two groups

	High satisfaction	Satisfaction	Dissatisfaction	Overall satisfaction
Con group (n=196)	50 (25.51)	107 (54.59)	39 (19.90)	157 (80.10)
Obs group (n=204)	67 (32.84)	118 (57.85)	19 (9.31)	185 (90.69)
χ^2				9.033
P-value				0.003

Table 5. Comparison of treatment compliance

	Poor efficacy	Irregular life	Long time medicine	High cost	Confidence loss	Total noncompliance rate
Con group (n=196)	7 (3.57)	5 (2.55)	6 (3.06)	4 (2.04)	8 (4.08)	32 (16.33)
Obs group (n=204)	3 (1.47)	1 (0.49)	2 (0.98)	3 (1.47)	3 (1.47)	12 (5.88)
χ^2						11.14
P-value						<0.001

Table 6. Comparison of SBP, DBP, MAP and heart rate

Index	Time	Con group	Obs group	t	P
SBP (mmHg)	Before intervention	130.63±11.63	128.26±10.23	4.455	0.867
	After intervention 72 h	132.22±10.14	126.35±7.63	5.456	0.564
DBP (mmHg)	Before intervention	80.25±8.34	78.93±9.01	7.574	0.354
	After intervention 72 h	81.4±7.11	77.29±4.31	8.454	0.246
Heart rate (Heart beat/min)	Before intervention	78.81±9.72	78.46±8.88	9.745	0.147
	After intervention 72 h	80.07±9.11	77.41±5.36	2.887	0.361
MAP (mmHg)	Before intervention	97.54±8.99	96.68±6.24	6.587	0.254
	After intervention 72 h	97.94±10.11	96.55±7.11	6.777	0.365

results of this study also revealed markedly higher nursing satisfaction among patients receiving comfort nursing than those given routine nursing. A prior study has stated that comfort nursing staffs have a thorough understanding of the patients' family, environment, culture, social and economic conditions, which contributes to alleviating the burden of patients and ensuring a high quality of overall management of patients and the nursing process [25]. Pazar et al. [26] believe that the application of comfort nursing in perioperative nursing not only optimizes the traditional medical model but also improves the psychological and physiological comfort of patients, especially for elderly patients undergoing thoracic surgery. Active communication and a series of preoperative, perioperative, and postoperative comfortable care measures can significantly alleviate the patient's anxiety and harmonize the nurse-patient relationship, which ensures a positive attitude and stable vital signs of the patients, and a proper environment for surgery. The application of "comfort" nursing on the basis of holistic nursing can improve the comfort and safety of operation for elderly patients, thereby further enhancing the quality of perioperative nursing.

Our study has explored the application of comfort nursing in patients undergoing thoracic surgery, but it has the following limitations. For example, healthy individuals are not included for analysis and comparison, for which the difference of nursing efficacy between patients after nursing and healthy individuals is not elucidated. Secondly, the degree of disease risk of patients was not classified, which indicates that the difference of comfort nursing in different types of patients still remains elusive. Moreover, this study did not investigate related factors of complications in patients undergoing thoracic surgery. Therefore, future studies will be conducted to address these problems to reinforce our results and conclusions.

In conclusion, for patients undergoing thoracic surgery, comfort nursing can greatly improve

their life quality and contribute to postoperative recovery.

Disclosure of conflict of interest

None.

Address correspondence to: Boya Zhang, Department of Anesthesiology I, Cangzhou Central Hospital, 16 West Xinhua Road, Cangzhou 061000, Hebei, China. Tel: +86-15103172901; E-mail: zhangboya01@163.com

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