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폐 절제술 후 걷기 운동을 경험한 폐암 환자의 수술 후 회복 관련 요인

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Factors Associated with Postoperative Recovery among Lung Cancer Patients with Walking Exercise after Lung Resection

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Background: Treatment for lung cancer, which has high incidence and mortality rates, involves lung resection; however, the risk of postoperative pulmonary complications is high. Early walking exercise is a core strategy for preventing complications and promoting postoperative recovery, which is essential for returning to everyday life. This study aims to identify the factors associated with the postoperative recovery of patients who performed walking exercises in an intensive care unit after having a lung resection.
Methods: This cross-sectional study collected data from 90 patients on the day before discharge at a tertiary hospital in Seoul between April and June 2019. Patients' postoperative recovery was measured using the Postoperative Recovery Profile.
Results: The mean score for postoperative recovery was 0.70±0.41 out of 3, 0 being none of the problems. Among the five subcategories, the psychological dimension had the highest recovery level at 0.57±0.58, while physical symptoms were rated lowest at 0.89±0.50. As a result of regression analysis, employment status (β=4.353, P=0.005), symptoms of nausea and vomiting during walking (β=0.596, P=0.043), and perceived exertion during walking (β=1.105, P=0.007) were associated with postoperative recovery.
Conclusions: The study indicated unemployed patients, those with more nausea and vomiting, and those who perceived severe exertion during walking showed lower perceived postoperative recovery levels. Not only multidisciplinary, patient-tailored interventions to facilitate return to work after surgery but also interventions to control physical symptoms actively should be developed and implemented to achieve higher postoperative recovery levels. Patients also need to exercise at an appropriate subjective level of perceived exertion.
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INTRODUCTION

Lung cancer has the fourth-highest incidence rate among cancer types in Korea.[1)] Cancer was the leading cause of death in Korea in 2018, and lung cancer, which had the

highest mortality rate, accounted for 22.5%.[2] Surgery is a core method for treating lung cancer patients; however, lung resections can lead to pulmonary complications such as atelectasis, prolonged air leak, pneumonia, and acute respiratory distress syndrome.[3,4] It can also result in other complications such as atrial fibrillation, acute myocardial ischemia, cardiac infarction, pneumothorax, hemothorax, and bronchopulmonary fistula.[3] Furthermore, thoracic surgery carries higher risks of postoperative pulmonary complications (PPCs) than do other surgeries.[5] PPCs could increase early postoperative mortality and admission rates to intensive care units (ICUs) and prolong the length of stay in the ICU and hospital,[6] which eventually delays patients' postoperative recovery.

Postoperative recovery is a process that requires energy to recover to normal health by regaining physical, psychological, social, and habitual functions and returning to the levels of patients' independence and psychological well-being before surgery.[7] It includes not only the physical but also emotional and social domains. Therefore, healthcare providers need to help improve patients' postoperative recovery process to enable them to return to their daily lives as soon as possible.[8]

As a way to promote postoperative recovery, Enhanced Recovery After Surgery (ERAS) protocols, including treatment and nursing, are the leading example of interventions provided by a multidisciplinary team.[9] Interest in ERAS has been increasing, as studies have demonstrated its effectiveness in reducing lengths of hospital stay, patients' complications, and medical costs.[10] The ERAS 2018 guidelines for lung surgery consist of 45 items in the pre-admission, admission, intraoperative, and postoperative phases to improve patients' recovery.[11] Among the ERAS items, early mobilization in the postoperative phase is associated with reducing immobilization-related complications and the length of stay in hospital.[11] It was found that early mobilization was effective in reducing the incidence of PPCs such as atelectasis and pleural effusion at postoperative day (POD) 2-3.[12]

Early walking exercise also facilitates patients' recovery by improving their functional status in an effective, safe, and feasible manner and has a critical role in reducing postoperative complications and improving quality of life after discharge.[13] When patients participated in exercise intervention, it was determined that self-efficacy among the various psychological variables increased walking ability and physical activity.[14] Additionally, self-efficacy triggers changes in health promotion behavior, maintaining exercise, and engaging in self-care for postoperative patients.[15] In other words, self-efficacy can increase physical activity for functional state recovery, which may eventually facilitate postoperative recovery.[16]

Although postoperative recovery is an essential part of returning to daily life, to our knowledge, there have been few studies examining factors associated with postoperative recovery from the patients' perspective, especially lung cancer patients. Identifying factors associated with postoperative recovery would help develop strategies to promote recovery in lung cancer patients. Therefore, using a sample of 90 Korean patients, this study aimed to 1) identify the characteristics of lung cancer patients after lung resection, including the performance of walking exercises in an ICU and 2) explore the factors associated with lung resection patients' postoperative recovery before discharge.

METHODS

1. Study design

This study used a cross-sectional study to identify factors associated with postoperative recovery among patients who underwent lung resection for lung cancer and performed walking exercises while in the ICU.

2. Study setting and participants

Postoperative walking exercise is part of the standard care for thoracic surgery patients in the hospital. Lung resection patients should perform walking exercises at least once to transfer to general wards. If patients had no problems, they performed walking exercises in the order of bedside sitting, standing, and walking around the ICU (about 30 m) with the assigned nurse's help on POD 1. While a patient was walking, the nurse monitored their symptoms, heart rate (HR), and saturation of percutaneous oxygen (SpO_2) via a portable monitor and documented them.

This study used convenience sampling. Participants performed walking exercises in a thoracic surgery ICU after lung resection for lung cancer in a tertiary hospital in Seoul, Korea. The selection criteria included 1) those over 19 years

of age, 2) who had been diagnosed with primary lung cancer, and 3) who had had a lung resection. The sample size was calculated using G*Power software 3.1.9.2 (Heinrich-Heine University, Düsseldorf, Germany) for multiple linear regression, with an effect size of 0.2, α (significance level) of 0.05, a power of 0.8, and nine predictors. The minimum number of participants required was 88. Initially, 91 participants were recruited, but data from only 90 participants were analyzed because one was excluded due to missing data.

3. Measurement

1) Participants' characteristics

(1) General and clinical characteristics

Data were collected regarding participants' general characteristics: age, gender, religion, marital status, main caregiver, education level, employment status, and monthly income. Clinical characteristics were the history of preoperative chemotherapy and radiotherapy, smoking history, American Society of Anesthesiologists' Classification, cancer history, operation history, stage of lung cancer, type of surgical approach, the extent of resection, and length of ICU and postoperative hospital stay.

(2) ICU walking-related characteristics

ICU walking-related characteristics consisted of variables related to walking exercises in POD 1. Walking distance, maximum HR, and minimum SpO_2 recorded during the walking exercise in POD 1 were collected from electronic medical records. Symptoms included pain, fatigue, dizziness, shortness of breath, and nausea and vomiting (N&V) experienced by patients during walking exercises. These were measured on an 11-point numeral rating scale (0=none; 10=very severe). The Category Ratio 10 scale (0=nothing at all; 10=extremely strong) was used to measure perceived exertion during walking;[17] the modified Borg Scale (0=nothing at all; 10=maximal) was also used to measure dyspnea during walking.[18] Through questionnaires, participants selected a number on a vertical scale to indicate their subjective degree of difficulty and dyspnea during walking exercises, respectively.

2) Postoperative recovery

Postoperative Recovery Profile (PRP) was used to measure postoperative recovery as perceived by patients on the day before discharge.[19] The Korean version of the PRP has well-established reliability and validity.[20] It included 17 problems across five dimensions: physical symptoms (five items), physical functions (four items), psychological problems (four items), social problems (two items), and activity problems (two items).[20] Each item was rated on a 4-point scale from 0 (none) to 3 (severe) according to the participant's experience within 24 hours. Higher scores indicate lower levels of postoperative recovery. The Cronbach's α was 0.80-0.88 for the Korean version[20] and 0.84 for this study.

3) Self-efficacy

Self-efficacy was assessed using 10 items from the General Self-Efficacy Scale, which were rated on a 4-point Likert scale (1=not at all true; 4=exactly true),[21,22] with higher scores reflecting higher self-efficacy. The Cronbach's α was 0.88 for the Korean version[22] and 0.86 for this study.

4. Data collection

This study was approved by the Institutional Review Board of a tertiary hospital in Seoul, Korea (SMC 2019-03-137-002). Data were collected using self-reported questionnaires from April to June 2019. The researcher visited patients in the general thoracic surgery wards on the day before discharge and explained the study's purpose and procedure. Subsequently, written informed consent was obtained from patients who agreed to participate in the study voluntarily. If participants had difficulty reading the questionnaire, the researcher read it aloud and obtained answers from them. Some elements of clinical and ICU walking-related characteristics were extracted from electronic medical records by the researcher.

5. Statistical analysis

Statistical analyses were performed using SPSS version 24.0 (IBM Corp., Armonk, NY, USA). This study used descriptive statistics to analyze frequencies, percentages, means, and standard deviations of collected data. *T*-tests and analyses of variance were performed to analyze differences in postoperative recovery according to participants' characteristics. Pearson's correlation was performed to explore the relation-

Table 1. General, clinical, and ICU walking-related characteristics of participants (n=90)

Variable	Value
General characteristics	
Age, y	63.23±8.12
<65	57 (63.3)
≥65	33 (36.7)
Gender	
Male	45 (50.0)
Female	45 (50.0)
Religion	
Yes	60 (66.7)
No	30 (33.3)
Marital status	
Married	72 (80.0)
Other (single, bereaved, divorced, or separated)	18 (20.0)
Main caregiver	
Spouse	61 (67.8)
Other (parents, sibling, or children)	29 (32.2)
Education level	
≤Middle school	28 (31.1)
≥High school	62 (68.9)
Employment status	
Employed	41 (45.6)
Unemployed	49 (54.4)
Monthly income, 10,000 KRW	
<300	38 (42.2)
≥300	52 (57.8)
Clinical characteristics	
Pre-op chemotherapy & radiotherapy	
Yes	12 (13.3)
No	78 (86.7)
Smoking	
Non-smoker	43 (47.8)
Ex-smoker	25 (27.8)
Current smoker	22 (24.4)
ASA classification	
I	5 (5.6)
II	71 (78.9)
III	14 (15.6)
Cancer history	
Yes	19 (21.1)
No	71 (78.9)
Operation history, number	1.06±1.14
Yes	57 (63.3)
No	33 (36.7)
Stage of lung cancer	
I	55 (61.1)
≥II	35 (38.9)
Type of surgical approach	
Thoracotomy	27 (30.0)
VATS	63 (70.0)
Extent of resection	
≤Lobectomy	82 (91.1)
Pneumonectomy/bilobectomy	8 (8.9)
Length of ICU stay, days	1.12±0.42
1	81 (90.0)
≥2	9 (10.0)
Length of postoperative hospital stay, days	6.44±5.50
<6	45 (50.0)
≥6	45 (50.0)
ICU walking-related characteristics	
Walking distance[a], m	61.69±44.97
Maximum HR (beats per minute)	90.87±15.06
Minimum SpO_2, %	95.60±1.92
Pain during walking	4.88±2.39
Fatigue during walking	4.32±2.53
Dizziness during walking	3.71±2.88
Shortness of breath during walking	3.63±2.61
Nausea & vomiting during walking	2.77±3.07
Perceived exertion during walking	3.47±1.99
Dyspnea during walking	1.57±1.62

Values are presented as mean±standard deviation or number (%).
Abbreviations: ASA, American Society of Anesthesiologists; HR, heart rate; ICU, intensive care unit; SpO_2, saturation of percutaneous oxygen; VATS, video-assisted thoracoscopic surgery.
[a]Response was collected from 62 participants because records of the other participants were missing from the electronic medical record.

ships among perceived postoperative recovery and other variables. Finally, a multiple regression analysis was performed to identify the factors associated with postoperative recovery.

RESULTS

1. General, clinical, and ICU walking-related characteristics of the participants

The mean age of participants was 63.23±8.12 years, ranging from 37 to 79 years. Half of them were male, and 54%

were unemployed. A quarter of the participants were current smokers; about one-third had no previous operation history, and nearly two-thirds were diagnosed with the first stage of lung cancer. The mean length of ICU stay was 1.12±0.42 days, and the mean postoperative hospital stay was 6.44±5.50 days. The mean walking distance was 61.69±44.97 m, based on an analysis of the data from 62 participants because records of the other participants were missing from the electronic medical record. Among the symptoms experienced during walking exercises, participants reported pain as the most severe, while N&V was the weakest. The mean score for perceived exertion during walking was 3.47, indicating moderate to strong exertion. The mean score for dyspnea during walking was 1.57, indicating slight dyspnea (Table 1).

2. Postoperative recovery and self-efficacy of the participants

Table 2 shows participants' scores for postoperative recovery and self-efficacy. As to postoperative recovery, higher scores reflect lower levels of recovery. The mean score for postoperative recovery was 0.70±0.41 out of 3, indicating a high level of perceived recovery. Among the five dimensions, the physical symptoms indicated the lowest, and the psychological dimension indicated the highest recovery level. Among the problems, the pain ranked at the lowest recovery level, followed by appetite changes and gastrointestinal function, whereas bladder function was ranked highest, followed by nausea and personal hygiene. The mean self-efficacy score of the participants was 3.06±0.42 out of 5.

3. Postoperative recovery according to the characteristics of the participants

There was no significant difference in postoperative recovery according to age, gender, marital status, stage of lung cancer, and extent of resection (Table 3). However, there were significant differences in postoperative recovery according to employment status (t=-2.689, P=0.009) and operation history (t=2.008, P=0.048).

Table 2. Participants' postoperative recovery and self-efficacy (n=90)

Variable	Value	Ranking
Postoperative recovery[a]		
Physical symptoms		
Pain	1.34±0.69	1
Appetite changes	1.10±1.08	2
Fatigue	0.96±0.76	4
Sleeping difficulties	0.84±0.99	6
Nausea	0.20±0.52	16
Subtotal	0.89±0.50	
Physical functions		
Gastrointestinal function	1.01±1.13	3
Mobilization	0.78±0.73	7
Muscle weakness	0.74±0.71	8
Bladder function	0.16±0.42	17
Subtotal	0.67±0.52	
Psychological		
Feeling down	0.74±0.74	8
Anxiety and worry	0.67±0.82	10
Difficulty in concentration	0.57±0.70	13
Feeling lonely/abandoned	0.30±0.63	14
Subtotal	0.57±0.58	
Social		
Dependence on others	0.66±0.77	11
Interest in surroundings	0.58±0.76	12
Subtotal	0.62±0.68	
Activity		
Re-establishing everyday life	0.90±0.91	5
Personal hygiene	0.29±0.66	15
Subtotal	0.59±0.65	
Total recovery	0.70±0.41	
Self-efficacy[b]	3.06±0.42	NA

Values are presented as mean±standard deviation.
Abbreviation: NA, not applicable.
[a]As measured by the Postoperative Recovery Profile on a 4-point Likert scale, 0 (none) to 3 (severe).
[b]As measured by the General Self-Efficacy Scale on a 4-point Likert scale, 1 (not at all true) to 4 (exactly true).

4. Correlation among postoperative recovery, self-efficacy, and ICU walking-related characteristics

Postoperative recovery and self-efficacy had a negative correlation (r=-0.230, P=0.029), which indicates that the higher the self-efficacy, the higher the level of recovery. In addition, postoperative recovery was positively correlated to

Table 3. Differences in postoperative recovery by participants' general and clinical characteristics (n=90)

Variable	Postoperative recovery[a]	
	Value	*t* or *F* (*P*)
General characteristics		
Age, y		0.356 (0.723)
<65	0.68±0.41	
≥65	0.72±0.42	
Gender		-1.525 (0.131)
Male	0.63±0.40	
Female	0.76±0.42	
Religion		0.411 (0.682)
Yes	0.71±0.44	
No	0.67±0.36	
Marital status		0.597 (0.552)
Married	0.71±0.44	
Other (single, bereaved, divorced, or separated)	0.64±0.29	
Main caregiver		0.037 (0.970)
Spouse	0.70±0.45	
Other (parents, sibling, or children)	0.69±0.33	
Education level		-0.376 (0.708)
≤Middle school	0.72±0.42	
≥High school	0.69±0.42	
Employment status		-2.689 (0.009)
Employed	0.58±0.29	
Unemployed	0.80±0.47	
Monthly Income, 10,000 KRW		0.443 (0.659)
<300	0.67±0.43	
≥300	0.71±0.41	
Clinical characteristics		
Pre-op chemotherapy & radiotherapy		1.193 (0.236)
Yes	0.56±0.39	
No	0.72±0.42	
Smoking		1.911 (0.154)
Non-smoker	0.77±0.41	
Ex-smoker	2.79±0.57	
Current smoker	0.57±0.37	
ASA classification		2.146 (0.123)
I	1.01±0.49	
II	0.70±0.41	
III	0.57±0.39	
Cancer history		-0.006 (0.995)
Yes	0.70±0.44	
No	0.70±0.41	
Operation history		2.008 (0.048)
Yes	0.63±0.40	
No	0.81±0.41	
Stage of lung cancer		-0.608 (0.545)
I	0.67±0.41	
≥II	0.73±0.43	
Type of surgical approach		-0.767 (0.445)
Thoracotomy	0.64±0.39	
VATS	0.72±0.42	
Extent of resection		-0.454 (0.651)
≤Lobectomy	0.70±0.41	
Pneumonectomy/bilobectomy	0.63±0.49	
Length of ICU stay, days		-1.330 (0.187)
1	0.72±0.41	
≥2	0.52±0.44	
Length of postoperative hospital stay, days		-1.869 (0.065)
<6	0.78±0.41	
≥6	0.62±0.40	

Values are presented as mean±standard deviation unless otherwise indicated.
Abbreviations: ASA, American Society of Anesthesiologists; ICU, intensive care unit; VATS, video-assisted thoracoscopic surgery.
[a]As measured by the Postoperative Recovery Profile on a 4-point Likert scale, 0 (none) to 3 (severe).

pain during walking (r=0.296, P=0.005), dizziness during walking (r=0.355, P=0.001), fatigue during walking (r=0.352, P=0.001), N&V during walking (r=0.424, P<0.001), perceived exertion during walking (r=0.428, P<0.001), and dyspnea during walking (r=0.232, P=0.028). This indicates that the more severe the symptoms, the lower the level of postoperative recovery. On the other hand, postoperative recovery and self-efficacy had a negative correlation (r=-0.230, P=0.029), which indicates that the higher the self-efficacy, the higher the level of recovery (Table 4).

5. Factors associated with postoperative recovery

The results of the multiple regression model found that unemployment (β=4.353, P=0.005), more N&V during walking (β=0.596, P=0.043), and severe perceived exertion during walking (β=1.105, P=0.007) influenced postoperative recovery (F=4.692, P<0.001). The adjusted R^2 indicated that this

regression model explained their perception of postoperative recovery before discharge by 31.3% (Table 5).

DISCUSSION

The study was conducted to examine the factors associated with perceived postoperative recovery in lung cancer patients after lung resection. In this study, the level of postoperative recovery before discharge was relatively high, and results showed higher levels of postoperative recovery among lung resection patients compared to gastrectomy,[23] gastrointestinal surgery,[20] and cardiac surgery[24] patients.

Table 4. Correlation among postoperative recovery, self-efficacy, and ICU walking-related characteristics (n=90)

	Postoperative recovery
Self-efficacy	-0.230 (0.029)
Walking distance	-0.031 (0.812)
Maximum HR during walking	-0.074 (0.491)
Minimum SpO_2 during walking	0.098 (0.358)
Pain during walking	0.296 (0.005)
Shortness of breath during walking	0.180 (0.089)
Dizziness during walking	0.355 (0.001)
Fatigue during walking	0.352 (0.001)
Nausea and vomiting during walking	0.424 (<0.001)
Perceived exertion during walking	0.428 (<0.001)
Dyspnea during walking	0.232 (0.028)

Values are presented as *r* (*P*).
Abbreviations: ICU, intensive care unit; HR, heart rate; SpO_2, saturation of percutaneous oxygen.

The patients analyzed actively performed walking exercises to promote postoperative recovery as a part of the ERAS, emphasizing the postoperative phase.[9,25] According to the ERAS guideline, exercising within 24 hours after surgery can help improve postoperative recovery despite several obstacles such as chest tube, foley catheter, and pain.[11] As exercise has positive effects on patients' physical and psychological aspects,[9,11] the study participants who participated in walking exercises early on also showed positive postoperative recovery levels.

Among the five dimensions of postoperative recovery perceived by participants before discharge, the psychological dimension had the highest recovery level, while physical symptoms had the lowest level. Previous studies also reported psychological recovery as having the highest level,[23,24] which can be attributed to the belief that patients can be treated by surgery and return to their daily lives after discharge.[24]

In this study, 70% of the participants underwent surgery through VATS, a minimally invasive method, and their extent of resection was mostly below lobectomy. Compared to thoracotomy, patients who had lung resection through VATS showed relatively lower pain in a previous study.[26] Despite the high percentage of the VATS method, the results of this study indicated that the recovery level for physical symptoms was the lowest, of which pain was the lowest among all problems. In the process of lung resection, surgeons cut or retract muscles, fracture or sever ribs, and insert chest tubes that irritate or damage the pleura or inter-

Table 5. Factors associated with postoperative recovery (n=90)

Variable	β	SE	t	P
Age, y	-0.169	0.087	-1.930	0.057
Gender	-1.621	1.561	-1.038	0.302
Employment status	4.353	1.496	2.909	0.005
Previous operation	1.801	1.343	1.341	0.184
Self-efficacy	-0.298	0.164	-1.821	0.072
Pain during walking	0.377	0.312	1.210	0.230
Dizziness during walking	-0.060	0.330	-0.182	0.856
Fatigue during walking	0.076	0.364	0.210	0.834
Nausea and vomiting during walking	0.596	0.290	2.053	0.043
Perceived exertion during walking	1.105	0.397	2.779	0.007
Dyspnea during walking	-0.346	0.484	-0.714	0.477

R^2=0.398, adjusted R^2=0.313, F=4.692, P<0.001.
Abbreviations: SE, standard error.

costal muscles, which may cause more pain than other operations.[11] Pain is a common physical symptom that patients frequently experience after lung resection, and this pain can be further aggravated by walking exercises. Other symptoms with lower recovery levels, such as appetite changes and gastrointestinal function, also did not meet the patients' expectation of recovery during the postoperative phase. Therefore, nursing interventions to alleviate and control these symptoms need to be implemented to enhance postoperative recovery.

In the multiple regression analysis, employed participants reported significantly higher postoperative recovery levels than unemployed ones. Jeon et al.[23] found that stomach cancer patients who were employed showed higher postoperative recovery levels. The reason might be that employed patients make more effort to recover to return to daily life quickly after discharge compared to unemployed ones.[27] Moreover, it was identified that females, older adults, and those who had poor health status had difficulty returning to work after the treatment.[28] Consequently, multidisciplinary, patient-tailored interventions should be provided at discharge or in outpatient clinics to assist those who are less likely to return to work after surgery.[29,30]

Furthermore, those who felt less N&V during the walking exercises reported higher levels of postoperative recovery. Postoperative nausea and vomiting are one of the most frequent complications, with negative effects on the early stages of recovery after surgery.[11] Controlling these symptoms could also make early exercise more plausible.[25] When nurses care for patients who perform walking exercises, they need to alleviate N&V to affect postoperative recovery positively.

This study is the first in Korea to investigate subjective postoperative recovery and the associated factors using patients' reports and objective data on walking exercises in an ICU after lung resection. However, this study has several limitations. As convenience sampling was used to recruit patients in a specific ICU after surgery, it is difficult to generalize the results to all post-surgical lung cancer patients. Furthermore, given that more than a 2-day interval passed between the actual walking exercises in the ICU and data collection, a patient's recollection might not reflect their real condition. Another limitation is that this study did not compare results with those who did not engage in walking exercises in ICU. However, such a comparison was impossible because all patients performed walking exercises based on physicians' order in this study site.

In conclusion, our study revealed that unemployed patients, patients who experienced severe N&V during walking, or had high levels of perceived exertion during walking reported lower levels of perceived postoperative recovery. Multidisciplinary, patient-centered interventions should be implemented to support patients who plan to return to work. To enhance patients' recovery following lung resection surgery, nursing interventions should be applied to alleviate physical symptoms and patients also need to exercise at an appropriate level of perceived exertion. These findings can contribute to promoting postoperative recovery among lung resection patients, which can ultimately improve their quality of life.

요 약

연구배경: 발생률과 사망률이 높은 폐암을 치료하기 위해 폐 절제술을 실시하지만, 수술 후 폐 합병증의 위험이 높다. 조기 걷기 운동은 합병증을 예방하고, 일상생활 복귀를 위해 필수적인 수술 후 회복을 향상시키기 위해 중요한 요소이다. 본 연구는 중환자실 내 걷기 운동을 실시한 폐 절제술 환자가 퇴원 전 인식하는 수술 후 회복에 영향을 미치는 요인에 대해 살펴보고자 한다.

방법: 본 연구는 조사 연구로, 서울의 일 상급종합병원에서 폐 절제술을 시행하고 중환자실 내 걷기 운동을 실시한 후 퇴원을 앞둔 폐암 환자 90명을 대상으로 2019년 4월부터 6월까지 자료를 수집하였다. 일반적 특성, 임상적 특성, 중환자실 내 걷기 운동 특성 및 수술 후 회복(역문항)을 조사하였다.

결과: 환자가 인식하는 수술 후 회복의 평균 점수는 3점 만점 중 0.70±0.41점이었고, 심리적 영역이 회복 정도가 가장 높았으며 신체적 증상이 가장 낮았다. 또한 통증, 식욕의 변화, 소화기계 장애 순으로 회복이 부족하다고 나타났다. 수술 후 회복은 직업이 없는 환자인 경우(β=4.353, P=0.005), 걷기 운동 중 오심 및 구토 증상이 심할수록(β=0.596, P=0.043), 주관적 운동자각도가 심각할수록(β=1.105, P=0.007) 수술 후 회복 정도가 낮은 것으로 나타났다.

결론: 폐 절제술 환자의 수술 후 회복을 향상시키기 위해 신체적 증상을 조절하고 직장 복귀를 촉진시킬 수 있는 다학제적, 환자 맞춤형 중재 개발 및 적용이 필요하다. 또한 이들의 수술 후 회복을 위해 적절한 강도로 운동을 실시하는 것이 동반될 필요가 있다.

중심 단어: 조기 운동, 중환자실, 폐암, 폐 절제술, 수술 후 회복

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