

Commonly administered physiotherapy techniques in thoracic surgery clinics in Turkey

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Abstract

Aim: The aim of this study was to investigate the physiotherapy techniques in the thoracic surgery clinic in Turkey.

Materials and Methods: The data of this research was obtained through the online questionnaire created by the authors. The questions in the questionnaire were created by the researcher in parallel with the literature (14 questions). In the questionnaire, descriptive information was asked using multiple-choice question types about chest surgery clinics and applied physiotherapy. A chest surgeon from each participating clinic was asked to respond to the questionnaire.

Results: A total of 62 clinics participated in the study. The mean number of monthly operations of these clinics is 0-20 in 51.6%, 21-40 in 19.4%, and 41-60 in 19.4%. 64.5% of the clinics participating in the study perform regular physiotherapy practices to their patients. The clinics that applied pulmonary rehabilitation to their patients, 65% of them additionally performed pulmonary rehabilitation in the preoperative period. The most common applications were early mobilization, airway cleaning techniques, deep breathing exercises, assisted coughing, humidification of the airway, incentive spirometer exercises, forced expiration, and exercise practices. 53.3% of the clinics where routine physiotherapy was administered benefited from assistive devices for pulmonary rehabilitation.

Conclusion: Although physiotherapy practices are performed in the thoracic surgery clinic in Turkey, they are not at the desired level. Preoperatively pulmonary rehabilitation practice in thoracic surgery is even rarer. Moreover, the content of pulmonary rehabilitation programs is not standard. The prevalence of evidence-based physiotherapy applications should be increased in thoracic surgery clinics.

Keywords: Physiotherapy; pulmonary rehabilitation; thoracic surgery

INTRODUCTION

Pain after thoracotomy is very severe, probably the most severe pain experienced after surgery. When pain is not effectively treated after thoracotomy, it causes a decrease in pulmonary compliance, coughing, and respiratory insufficiency (1). Postoperative pulmonary complications (PPCs) have been defined as "any pulmonary abnormality occurring in the postoperative period that produces identifiable disease or dysfunction that is clinically significant and adversely affects the clinical course" (2). PPCs are the main cause of morbidity, mortality, and long-term hospital stay and increase the cost of care in the treatment of the operated patient (3). The incidence of PPCs varies greatly in the published literature and has been reported to between 2% and 19% (4). Patients undergoing thoracic surgery are usually high-risk patients. These patients are mostly elderly, physically weak due to malnutrition, and have concurrent medical comorbidities. Most of these patients are smokers, have occupational

exposure, and therefore have a higher risk of developing pulmonary complications (5). A mucus plug may cause atelectasis and pneumonia (4). Changes in respiratory function may be related to both the procedure and the patient. Besides, these changes may occur during and after the operation (5).

Maximizing the patient's condition before surgery, minimizing PPCs, and improving the patient's health-related quality of life are the main factors that pulmonary rehabilitation aims to achieve. For the prevention of complications, early mobilization, airway cleaning (humidification, aspiration, forced expiration, assisted coughing), oxygen therapy, deep breathing exercises, controlled breathing, incentive spirometer exercises, posture, and general exercises are used after the surgery (6,7). The important clinical and economic impact of pulmonary rehabilitation is thought to be limiting the development of PPCs and preventing intense shoulder dysfunction following thoracotomy (8).

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However, there is a large heterogeneity of the components of the proposed pulmonary rehabilitation programs and the timing for their implementation (before and/or after surgery). The aim of this study was to examine the existing pulmonary rehabilitation practices in thoracic surgery clinics in Turkey.

MATERIALS and METHODS

The Local Ethics Committee approval was obtained. These clinics were invited via e-mail groups to participate in a web-based online survey. This e-mail included a hyperlink that directed the participants to an online survey page with Informed Consent Form and those consenting to participate could access the survey. Only one physician from each clinic was asked to complete the survey. A period of 2 weeks was given to the physician to fill in the survey in an attempt to ensure a good response rate. If no response was obtained within the stipulated period, text-message or email reminders were sent and those who did not respond were waited for another 2 weeks to be excluded from the study. The data collection period was two months in 2018 (September and October). There was no tool approved to investigate pulmonary rehabilitation practices related to thoracic surgery, a survey was designed for this purpose. The survey consisted of 14 questions such as the number of thoracic surgeons working in thoracic surgery clinics, the number of surgical operations per month, the type of physiotherapy practices, and when pulmonary rehabilitation practices were performed. Closed questions were used for completion and ease of analysis.

Statistical Analysis

All closed data were of the nominal/ordinal form and were analyzed by use of Statistical Package for the Social Sciences (SPSS) version 20.0 (IBM Corp. Released 2012, Armonk, Newyork, United States of America) for Windows using a variety of descriptive statistical methods.

RESULTS

Question 1–2: Demographics

Sixty-two thoracic surgery clinics participated in the study. Only one surgeon from the same surgery clinic answered the questions. Table 1 presents the demographic data of surgery clinics. Most of the participants reported that there were 2 thoracic surgeons in their clinics (n=21; 33.9%) and 0-20 surgical operations were performed per month (n=35; 51.6%).

Question 3: Are there any physiotherapy treatments for your patients in your clinic?

Of all the participants, 64.5% stated that physiotherapy treatments have been administered in their clinics.

Question 4: How many physiotherapists are working in your clinic?

Physiotherapists did not work in 66.1% of the clinics and only 33.9% of clinics physiotherapists administer pulmonary rehabilitation.

Question 5: Have the physiotherapists working in your clinic been trained on pulmonary rehabilitation?

A higher percentage of respondents (65,1%) reported that the physiotherapist had not received training on pulmonary rehabilitation.

Table 1. Demographic data of thoracic surgery clinics

Number of thoracic surgeons working in thoracic surgery clinics	n	(%)
1	9	(14.5)
2	21	(33.9)
3	11	(17.7)
4	5	(8.1)
>5	16	(25.8)
Number of surgical operations (per month)	n	(%)
0-20	32	(51.6)
21-40	12	(19.4)
41-60	12	(19.4)
61-80	2	(3.2)
>80	4	(6.5)

Question 6: Who administers pulmonary rehabilitation in your clinic?

The physiotherapists administered pulmonary rehabilitation in only 35.5% of clinics.

Question 7: Do you recommend pulmonary rehabilitation before surgery in your clinic?

The majority of respondents (58.7%) stated that they did not start pulmonary rehabilitation before surgery.

Question 8: Is there enough opportunity for your patients to apply physiotherapy in your clinic?

A higher percentage of respondents (64.5%) reported that they had the opportunity to administer to physiotherapy to all their patients in their clinics.

Question 9: Do you have a suitable environment to administer pulmonary rehabilitation?

The number of thoracic surgery clinics that were a suitable place for physiotherapy was 30 (48.4%).

Question 10: When do you start pulmonary rehabilitation?

23 (40.4%) of the thorax surgery clinics began pulmonary rehabilitation in the preoperative period. 24 (42.1%) of the thorax surgery clinics began pulmonary rehabilitation while the patient was in the intensive care unite. 10 (17.9%) of the thorax surgery clinics began pulmonary rehabilitation when the patient was discharged to the service (Figure 1).

Question 11: Are regular physiotherapy programs available in your clinic?

Following surgery, 40 (64.5%) respondents reported that all patients were routinely administered physiotherapy.

Question 12: What is the physiotherapy techniques administered in your clinic?

The most common physiotherapy techniques were early mobilization 98.4%, airway cleaning techniques 85.5%, deep breathing exercise 77.4%, assisted cough 79.0%,

respiratory air humidification 61.3%, incentive spirometer exercises 59.7%, forced expiration 59.7%, general exercises 50.0%, aspiration 50.0% and controlled breathing 32.3% (Figure 2).

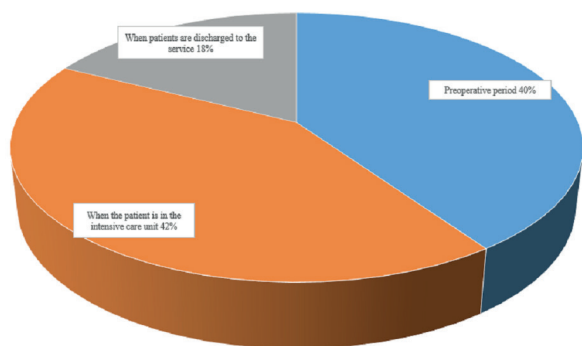


Figure 1. Time to begin pulmonary rehabilitation in thoracic surgery clinics

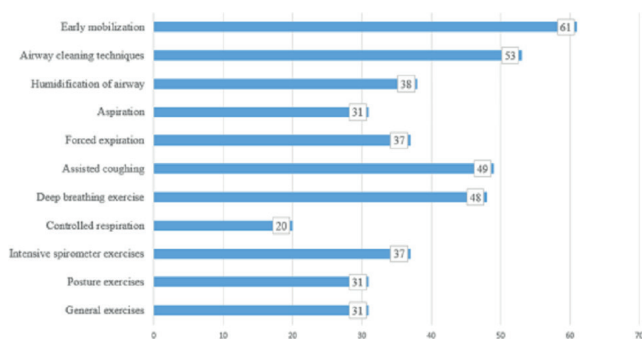


Figure 2. Physiotherapy techniques commonly used in thoracic surgery clinics

Question 13: Do you use assistive devices for pulmonary rehabilitation?

32 (53.3%) of the thoracic surgery clinics were using assistive devices for pulmonary rehabilitation.

Question 14: What kind of assistive devices do you use for pulmonary rehabilitation?

According to the information collected, a majority of respondents (55.9%) use flutter. The distribution of other answers is the following: PEP therapy (44.1%), Triflow breathing device (20.5%), Cough assist airway clearance device (11.8%), Acapella vibratory device (8.8%), and balloon inflation method (2.9%).

DISCUSSION

This study provides information about pulmonary rehabilitation techniques in thoracic surgery clinics in Turkey. The results of this study can be used as a guide for pulmonary rehabilitation practices in other clinics and as an appropriate starting point for future studies investigating the effectiveness of physiotherapy interventions in this patient population. The current study found that pulmonary rehabilitation practices started in the preoperative period and continued during the hospital stay.

This trend is consistent with the literature (9-12). Publications for preoperative physiotherapy protocols are very limited. Postoperative main problems of patients undergoing thoracic surgery include postoperative pulmonary complications that may be incision or pain of drainage tubes, ineffective coughing, decreased lung volume, non-infectious (eg, atelectasis and respiratory failure) or infectious (eg, pneumonia); frozen shoulder on the side of the thoracotomy; postural abnormalities (13). These problems can lead to delayed recovery, prolonged hospitalization, increased morbidity, and mortality. An encouraging finding of the study is that almost all clinics participating in the study use early mobilization activities as a treatment modality. Lower walking distance was reported to be associated with pulmonary complications in the postoperative period (14). In a previous study, early mobilization was reported to increase functional mobility capacity of patients (15). In addition to early mobilization activities, deep breathing exercises, effective coughing techniques, and lower/upper extremity exercises are also part of physiotherapy. Cesairo et al. reported that respiratory function and exercise capacity improved significantly after 4 weeks of pulmonary rehabilitation in the experimental group undergoing intensive rehabilitation programs after lung resection (16).

Although postoperative physiotherapy has been extensively studied in other physiotherapy groups, there is very little literature investigating the physiotherapy management of patients after thoracic surgery. Pulmonary rehabilitation has been recommended by the American Thoracic Society, the European Respiratory Society, and the European Society of Thoracic Surgeons for patients who have undergone thoracic surgery, and they have published protocols that accelerate the functional recovery of patients undergoing thoracic surgery and shorten recovery time (17,18). In the postoperative period, physiotherapy is the focus of patient training, effective cough training, and breathing exercises. Similarly, this study found that after thoracic surgery, the majority of physiotherapists helped to treat patients prophylactically, beginning in the early postoperative period, focusing on lung expansion and airway cleaning.

Post-thoracotomy pain syndrome is a common complication following thoracic surgery. Pain is an important factor affecting respiratory function and well-being. Therefore, effective pain management strategies should be included in patients' rehabilitation programs after thoracotomy. There have been no reports of pain management and physiotherapy in the chest surgery clinics in our country. Transcutaneous electrical nerve stimulation (TENS) has been reported to be useful in reducing postoperative pain after thoracotomy and increasing tolerance for physiotherapy during a hospital stay (19). Also, inspiratory muscle training is not a common method used in the participated clinics. Mans et al. reported that preoperative inspiratory muscle training is effective in reducing pulmonary complications (20).

Nevertheless, incentive spirometry exercise has been widely used in clinics in our country, although evidence has been shown that incentive spirometry exercise has no additional benefit in reducing PPCs in patients undergoing thoracic surgery or in other main surgical methods (21,22).

There are some limitations to this study, one of which is the data from this study, only provides an overview of existing practices. The second limitation of this study, pulmonary rehabilitation practices applied after the patients are discharged from the hospital was not questioned. Questioning the most common pulmonary rehabilitation practices is another limitation of this study.

CONCLUSION

Physiotherapy for patients with thoracic surgery reduces the incidence of pulmonary complications or helps patients recover if there are complications. According to the results of this study, there was a wide variety of patient training, exercise types, and timings. The day after the start of physiotherapy may be an indication of the surgeon's preference. The most commonly used methods in the participating clinics are early mobilization as well as respiratory techniques. Future studies that take into account the effectiveness of physiotherapy practices should have standards.

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