

Prophylactic laparoscopic cholecystectomy in lung transplant candidates: Single center outcomes

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ABSTRACT

Introduction: Cholecystitis is associated with an increased risk of morbidity and mortality in patients under immunosuppressive therapy after lung transplantation. Therefore, cholecystectomy is recommended in patients with asymptomatic cholelithiasis who are candidates for lung transplantation. A pre-transplant prophylactic laparoscopic cholecystectomy approach may reduce this morbidity and mortality in lung transplant candidates with cholelithiasis. In this study, we aimed to examine our experience with laparoscopic cholecystectomy before lung transplantation.

Materials and Methods: The data of eight lung transplant candidates who underwent prophylactic laparoscopic cholecystectomy for asymptomatic cholelithiasis were evaluated retrospectively.

Results: Of the cases examined, 2 (25%) were female and 6 (75%) were male. The mean age was 34.5 for women and 44.16 for men. No postoperative morbidity or mortality was observed.

Conclusion: Prophylactic laparoscopic cholecystectomy can be safely performed before transplantation in patients who are candidates for lung transplantation.

Keywords: Cholelithiasis, Laparoscopic cholecystectomy, Lung transplant candidate

Introduction

Gallstones are a common public health problem, especially in developed countries. Due to increased awareness and increased use of imaging, the number of patients diagnosed with gallstones is increasing, and 22.6–80% of gallstone patients are asymptomatic at the time of diagnosis. Despite being asymptomatic, risky patients, such as those undergoing organ transplants using immuno-

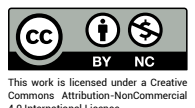
suppressants, are at risk of developing lifelong symptoms and complications such as acute cholecystitis, cholangitis, and acute biliary pancreatitis.^[1]

Cholecystectomy is recommended in patients with asymptomatic cholelithiasis who are candidates for lung transplantation, but the timing of cholecystectomy should be taken into account.^[2-6] Acute cholecystitis is an important cause of morbidity and mortality in the early postoper-



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ative period after lung transplantation.^[2] Therefore, it is more rational to perform prophylactic cholecystectomy in the pre-transplant period. In this study, we aimed to evaluate the results of laparoscopic cholecystectomy performed before transplantation in lung transplant patients in light of the literature.

Materials and Methods

Eight patients who underwent laparoscopic cholecystectomy due to asymptomatic cholelithiasis in the Gastroenterology Surgery Clinic of Kartal Koşuyolu High Specialization Training and Research Hospital were candidates for lung transplantation between January 2021 and June 2023 and were recorded retrospectively. Preoperative blood tests, chest X-rays, tomography data, ultrasound, respiratory function tests, and blood gas results were evaluated. In addition, patients' age, gender, and pathology data were also noted.

The postoperative 30-day morbidity and mortality rates of the patients were evaluated. Follow-up results were obtained by reviewing hospital records.

The inclusion criteria in this study are listed as follows

- a. Patients who underwent elective laparoscopic cholecystectomy in our center due to asymptomatic cholelithiasis and are candidates for lung transplantation
- b. Patients with complete clinicopathological features and follow-up data

The exclusion criteria are as follows:

- a. Patients undergoing emergency surgery
- b. Patients with insufficient clinicopathological data

Results

Of the patients, 2 (25%) were female and 6 (75%) were male. The mean age was 34.5 in women, 43.7 in men, and 41.75 in all patients. The primary diagnoses of the patients were 2 cystic fibrosis, 2 silicosis, 1 chronic obstructive pulmonary disease, 1 pulmonary alveolar microlithiasis, 1 chronic interstitial lung disease, and 1 idiopathic pulmonary fibrosis. The mean of the patients was FEV1: 0.70 liter (%39) and FVC/FEV1: 73.38. In the ultrasound findings of the patients, 3 (37.5%) had a single stone and 5 (62.5%) had multiple stones. In addition, nissen fundoplication due to hiatal hernia was performed on two the patients, and umbilical herniorrhaphy was additionally

performed in one patient. A drain was placed in a sub-hepatic area in 4 (50%) patients. The pathology reports of all patients showed chronic calculous cholecystitis. The mean duration of anesthesia was 145 min, and the mean operation time was 125 min. The mean length of stay was 2.37 days. No morbidity or mortality was detected in any patient (Table 1).

Discussion

Due to lifelong immunosuppression in transplant recipients with cholelithiasis, the risk of developing acute cholecystitis is higher and may have a more severe course.^[7,9] In the literature, prophylactic cholecystectomy and its timing are controversial in organ transplantation patients with asymptomatic cholelithiasis. Kao et al. recommend prophylactic cholecystectomy in asymptomatic cholelithiasis patients after heart transplantation, while they suggest monitoring in kidney and pancreas transplant recipients.^[6] Martínez-Chamorro et al. reported a 60% mortality rate in lung transplant recipients who underwent cholecystectomy due to acute cholecystitis.^[2] In their study, Gupta et al. report no mortality in patients surgically treated for gallstones before transplantation due to gallbladder stones but a mortality rate of 29% in 7 cases with acute complications from gallstones after transplantation and recommend pre-transplant cholecystectomy.^[8] In our study, asymptomatic cholelithiasis patients awaiting lung transplantation underwent prophylactic laparoscopic cholecystectomy before transplantation, and in line with the literature, there was no morbidity or mortality during the 30-day postoperative period.

In the literature, laparoscopic cholecystectomy in lung transplant patients is reported to have a shorter hospital stay, lower morbidity, and lower mortality rates compared to open cholecystectomy.^[3] Our study found that laparoscopic cholecystectomy's mortality and morbidity are consistent with the literature, demonstrating that it can be safely performed.

Coccolini et al. reported an increase in complications and mortality rates associated with acute gallstones in immunosuppressed patients.^[9] Leonardi et al. reported that out of 52 lung transplant recipients who underwent abdominal surgery for various reasons, 14 (27%) died within 30 days after surgery.^[10] Zywot et al. conducted a retrospective review of 6433 heart and 3015 lung transplant patients undergoing general surgical procedures, revealing that transplant recipients had more complica-

Table 1. Demographic and clinical findings of the patients

	Number	Percentage
Gender		
Female	2	2.5
Male	6	7.5
Diagnosis		
Silicosis	2	2.5
Cystic fibrosis	2	2.5
Chronic obstructive pulmonary disease	1	1.25
Pulmonary alveolar microlithiasis	1	1.25
Idiopathic pulmonary fibrosis	1	1.25
Pulmonary chronic hypersensitivity	1	1.25
Surgical procedure		
Laparoscopic cholecystectomy	5	6.25
Laparoscopic cholecystectomy + Nissen fundoplication	2	2.5
Laparoscopic cholecystectomy + Umbilical herniorrhaphy	1	1.25
Postoperative morbidity	0	0
Postoperative mortality	0	0
	Med (Range)	
Age of all of the patients	41.75 (21–67)	
Males	34.5 (21–67)	
Females	41.75 (41–48)	
Average hospital stay(day)	2.38 (1–4)	

tions and longer hospital stays after some general surgical procedures compared to non-transplanted patients.^[11] In their study, Paul et al. reported that the most common gastrointestinal complication among 208 lung transplant patients was a biliary complication.^[12] In our study, the average hospital stay of lung transplant candidates who underwent prophylactic cholecystectomy before transplantation was determined to be 2.37 days, and no morbidity or mortality was detected in the patients. With all these literature findings, we concluded that performing laparoscopic cholecystectomy before transplantation is safer in terms of morbidity and mortality in patients with asymptomatic cholelithiasis who are candidates for lung transplantation.

Conclusion

In our study, it was concluded that laparoscopic cholecystectomy in the pre-transplant period in asymptomatic cholelithiasis lung transplant candidates is as safe as cholecystectomy in the general population.

Disclosures

Ethics Committee Approval: The study was approved by Kosuyolu Yuksek Ihtisas Training and Research Hospital Local Ethics Committee, 2023/13/714, 12.09.2023.

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

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