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# Complications During and One Month after Surgery in the Patients Who Underwent Thoracoscopic Surgery

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## ABSTRACT

*Thoracoscopy is a new method in surgery whose role is expanding in a wide range of diagnosis and treatment of chest disorder. Thoracoscopy has many diagnostic and therapeutic benefits, and knowing about the complications of this diagnostic and therapeutic method being broadly used seems necessary. In this study, complications during and one month after surgery in the patients undergoing Thoracoscopy were reviewed. This prospective study was performed on 66 patients who underwent thoracoscopic surgery (VATS) between March 2012 and March 2013 at Rasht hospitals. Patients were assessed after surgery for one month follow–up. 66 patients were evaluated between March 2012 and March 2013 most of whom were male. The mean age of patients was 43.37±17.31 (range, 5 to 82). Intraoperative complications included conversion from VATS to open Thoracotomy in 5 patients (7.6%), bleeding in 3 patients (5.4%), and heart complication in 2 patients (3%). Postoperative complications included air leak in 9 patients (13.6%), Atelectasis in 4 patients (1.6%), Pneumothorax in 2 patients (%3), heart complications in 2 patients (%3), and Empyema in 1 patient (5.1%). the median VAS score in patients was 4. Only 1.5% of the patients who underwent Thoracoscopy died. In this study, patients with pleural effusion with unknown origin, Palmer Hyperhidrosis, Empyema, trauma, and Hemothorax underwent Thoracoscopy. The results showed that complications during and after surgery were minimal and most patients had low postoperative pain.*

**Key words:** Thoracoscopy, Thoracotomy, Air leak, Indication, Complication

## INTRODUCTION

Thoracoscopy is a new method in surgery whose role is expanding in a wide range of diagnosis and treatment of chest disorders previously operated by open Thoracotomy or Sternotomy [1]. At the beginning, Thoracoscopy was used for simple diagnostic means in pleural, pulmonary, and mediastinal diseases though nowadays VATS replaces major surgeries previously needing open Thoracotomy [2]. At present, thoracoscopic surgeries are not limited to lung, pleura and mediastinum, and all intrathoracic structures including heart, large vessels, esophagus, diaphragm, vertebral column and, nerve roots are operated thoracoscopically [3, 4]. Thoracoscopy has numerous diagnostic and therapeutic benefits. Although Thoracotomy is needed, primary Thoracoscopy is used in determining size, shape and

extension of incision [5-9]. Thoracoscopic surgery is gold standard for surgical treatment of Pneumothorax, Pulmonary Bullous diseases, Pleural Effusion, trauma to the esophagus and lung [10-13]. In this study, we assess complications during and one month after surgery in patients who underwent thoracoscopic surgery.

## MATERIALS AND METHODS

This prospective study was performed in 66 patients undergoing thoracoscopic surgery (VATS) between March 2012 and March 2013 at the Rasht hospitals. Patients were assessed through completion of charts about demographic characteristics (age, sex), smoking history, complications during and one month after thoracoscopic surgery. All of the patient information remained secret.

Inclusion criteria were pleural effusions, mediastinal lymphadenopathies, peripheral pulmonary nodules, spontaneous Pneumothorax, Thoracic Sympathectomy, and Mediastinal masses.

An exclusion criterion was protracted Empyema, extensive pleural adhesion, and one lung ventilation intolerance. Data were analyzed by SPSS software (version 19, SPSS Inc., Chicago, IL) and using Fisher's exact test. Statistical results were considered significant in the significance level less than 0.05.

**Findings**

During this study period, 39 patients were male and 27 female**.** The mean age was 43.37±17.31 (range, 5 to 82 years). 34 patients were smoker and only 5 patients were diabetic. Indications of thoracoscopic surgery in our patients were as follows: 40 patients with pleural effusion with unknown origin (60.6%), 18 patients with hand Hyperhydrosis (27.3%), 1 patient with pleural mass (1.5%), 1 patient with Pulmonary Nodule (1.5%), 2 patients with Empyema (4.5%), 1 patient with Trauma (1.5%), and 1 patient with Hemothorax (1.5%).

Majority of patients did not need to ICU admission (89.4%), and only 7 patients (10.6%) were admitted to ICU. The mean length of ICU hospitalization was 5 days. The 8 patients had intraoperative complications including Conversion from VATS to Open Thoracotomy in 5 patients (7.6%), bleeding in 3 patients (4.5%), and cardiac complication in 2 patients (3%) (Figure 1). Only 2 patients had two intraoperative complications. Postoperative complications were as follows: air leak in 9 patients (13.6%), Atelectasia in 4 patients (6.1%), Pneumothorax in 2 patients (3%), and Empyema in 1 patient (1.5%), (Figure 2). Only 1 patient had two postoperative complications.

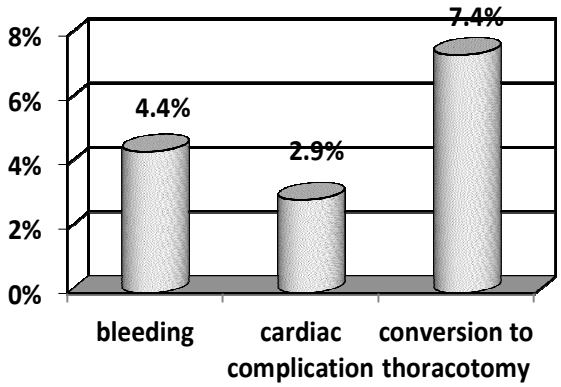


**Figure 1: Frequency distribution of intraoperative complications**

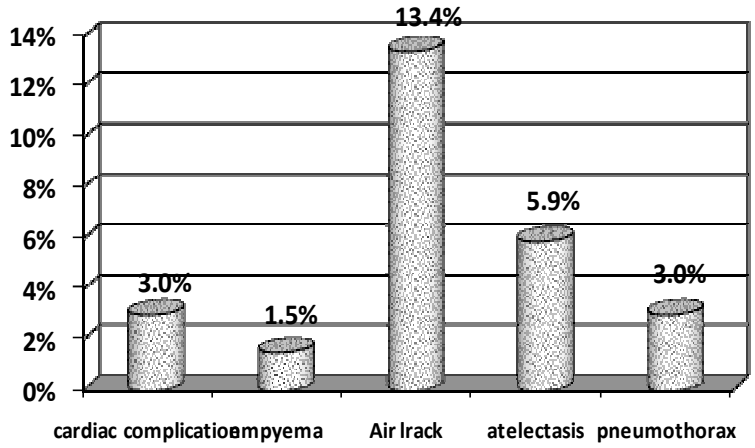


**Figure 2: Frequency distribution of postoperative complications**

In the present study, postoperative pain was assessed through Visual Analogue Scale (VAS) score: mild 1-3, Moderate 4-6, and severe 7-10.

32 patients had moderate VAS score (48.5%) while 8 patients showed severe VAS score (12.1%).The mean VAS score was 4 (range, 2 to 9).

48 patients had pathologic sample while 18 patients with hand Hyperhydrosis did not have pathologic sample. Among 48 patients with pathologic sample, 20 patients had tuberculosis (41.7%), 18 patients had inflammatory origin, and 10 patients had lung or pleural cancer. 1 patient expired.

Majority of patients with more severe postoperative pain had inflammatory pathologic report, and most severe pain was seen in patients with tuberculosis.

## DISCUSSION

Thoracoscopy is a new method in surgery whose role is expanding in a wide range of diagnosis and treatment of chest disorders previously operated through open Thoracotomy or Sternotomy [1].

In the present study, the mean age was 43.37±17.31 (range, 5 to 82 years). Most patients were older than 50 years most of whom were male (59.1%). In Luciano's study [10], the sample size were 282 patients, the mean age was 41, and most patients were male (59.5%). In Yim's study [11], the sample size was 1067 patients, the mean age was 56, and most patients were male (50.8%). In the present study, most patients were smoker though other studies did not mention smoking history. Most patients were not diabetic though in other studies diabetic history was not mentioned.

In the present study, most patients had pleural effusion with unknown origin (60.6%) and hand Hyperhydrosis (27.3%). In previous studies, patients with specific disease were assessed including Lobectomy for lung cancer in Yim's study [11], Empyema in Vejdan's study [14], and Pneumothorax in Luciano's study (2009).

ICU admission rate was 10.6% while in the other studies, ICU admission rate was not considered. 12.1% of our patients had intraoperative complications including conversion to Thoracotomy 7.6%, bleeding 4.5% and 3% cardiac complications. 32% of the Luciano's [10] patients had intraoperative complications including 1.4% conversion to Thoracotomy, 3.5% in Vejdan's study [14], and 1.5% in the Imperatori's study [15].

Most common postoperative complications included air leak (13.6%), Atelectasis (6.1%), Pneumothorax (3%), cardiac complication (3%), and Empyema (1.5%). In Yim's [11] study, most common postoperative complications

were air leak, Arrhythmia, and Pnumothorax. In Luciano's study [10], the most common postoperative complication was air leak.

In the present study, postoperative pain was assessed through VAS score. VAS score of most patients was 4 – 6, and only 12.1% of patients had VAS>7. Severe postoperative pain was seen in patients with inflammatory processes while most severe postoperative pain was seen in patients with tuberculosis. Luciano [10] mentioned that postoperative pain after VATS for Pneumothorax was more than other VATS. In other studies, postoperative pain was not mentioned. In the present study, the most common pathologic report after VATS was tuberculosis while the lowest pathologic report was cancer. In other studies, patients with specific disease type were assessed. In the present study, there was no significant statistical correlation between gender and complication occurrence. However, there was significant statistical correlation between age increase and complication occurrence.

There was no significant statistical correlation between smoking and complication occurrence. However, there was significant statistical correlation between diabetes and intraoperative complication occurrence. There was significant statistical correlation between complication occurrence and length of ICU stay. Additionally, there was significant statistical correlation between complication occurrence and the amount of patient pain.

There was no significant statistical correlation between pathologic results and complication occurrence. Patients with cancer had the longest ICU stay. Intraoperative and postoperative complications rate was minimal in patients, and most patients had low postoperative pain. One of the limitations of the present study is the fact that it was not randomized. Therefore, we recommend to conduct a randomized trial between VATS and open Thoracotomy for the assessment of correlation between complication occurrence and underlying diseases.

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