

# A study of the outcome and prognosis of various thoracic surgeries performed on patients with respiratory conditions

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## Abstract

**Background:** India is a vast country with an enormously variable population. There are large differences in geographical, environmental, ethnic, religious, cultural and socioeconomic parameters in different population groups in India which affect the human health and disease occurrence. Therefore, the study of disease epidemiology in India is singularly difficult. **Aims:** a) To study various surgeries performed on patients with respiratory diseases at tertiary health care center b) To study Outcomes of the surgeries c) To study prognosis of the patients who underwent surgical procedures and factors associated with prognosis among the patients of respiratory diseases. **Methodology:** This was retrospective study patients with various respiratory diseases like Ca. Lung,, Neurofibromatosis, Thymoma, RTA, Empyema, Mediastinal tumor, Teratoma, Tracheo Oesophageal fistula, Chest wall abscess, Kyphoscoliosis, etc. requiring surgical interventions, admitted under department of Respiratory medicine at SKNMC andGH Pune from January 2011 to June 2017. Out of total 52 operated patients were followed up for the study period and their five year survival rate post operative death and other clinic laboratory parameters was considered and prognosis was categorized into Excellent, Good, Poor prognosis. **Result:** The various surgeries performed were Thoracotomy + Lobectomy in 21.15%, followed by, Thoracotomy + Ligation of Fistula + Esophagotomy+ Gastrectomy in 17.31%, Thoracotomy + Decortication in 13.46%, Thoracotomy + Excision of Lump in 9.62%, Thoracotomy + Excision of Cyst, In 5.77%, Thoracotomy + Excision of Teratoma in 5.77%, Thoracotomy + Excision of tumor in 5.77%, Thoracotomy + Rib resection in 3.85%, Thoracoscopy + LN biopsy in 3.85%, Thoracoscopy + Thymectomy in 3.85%, Decortication in 3.85%, Lobectomy in 1.92%, VATS + Decortication in 1.92%, VATS in 1.92%. The overall outcome patients Improved in 86.54%, Deaths occurred in 9.62 %, and DAMA ( Discharge against Medical advise) done in 3.85%. As per the Prognosis Excellent prognosis was in 61.54% patients followed by Good prognosis in 23.08% and Poor prognosis in 15.38%. The factors associated with the poor prognosis were Old age in 13.46% followed by History of Smoking - 9.62, Ca-Lung in 9.62%, Associated with Diabetes in 5.77%, Obesity (BMI > 30) in 5.77%, COPD in 3.85%, Immunocompromised In 1.92%, Anemia in 1.92%. **Conclusion:** It can be concluded from our study that the majority of the patients underwent Thoracotomy plus Lobectomy procedure, the majority of the patients improved, The factors associated with the poor prognosis were Old age, History of Smoking, Ca-Lung Diabetes, Obesity (BMI > 30), COPD, Immunocompromised(HIV andHBsAg), Anemia etc.

**Key Words:** Ca. Lung, Thymoma, Empyema, Mediastinal tumor, Thoracic surgery, Poor prognosis of thoracic surgery.

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India is a vast country with an enormously variable population. There are large differences in geographical, environmental, ethnic, religious, cultural and socioeconomic parameters in different population groups in India which affect the human health and disease occurrence. Therefore, the study of disease epidemiology in India is singularly difficult. The burden of respiratory diseases in India is huge. Although some epidemiological data is available on major respiratory problems such as asthma<sup>2</sup>, tuberculosis<sup>3</sup>, COPD<sup>4,5</sup> and bronchogenic

carcinoma<sup>6,7</sup> an efficient database for different respiratory diseases is absent. Respiratory diseases constitute a major cause of morbidity and mortality worldwide. The top four respiratory diseases, lower respiratory tract infections, chronic obstructive pulmonary disease (COPD), tuberculosis, and lung cancer, are among the ten leading causes of death worldwide<sup>8</sup>. In India another developing country, pneumonia and pulmonary tuberculosis ranked in the top five causes of death<sup>9</sup>. The surgical problems of above mentioned disease may be because of complications of these diseases or some time the congenital conditions necessitates surgical correction, much of the studies on the surgical procedures and its outcome, prognosis and factors responsible for poor prognosis etc. is not studies so our attempt is to find the answers of this

### MATERIAL AND METHODS

This was retrospective study patients with various respiratory diseases like Ca. Lung,, Neurofibromatosis, Thymoma, Road Traffic Accidents (RTA), Empyema, Mediastinal tumor, Teratoma, Tracheo Oesophageal fistula, Chest wall abscess, Kyphoscoliosis, etc. requiring surgical interventions admitted under the department of Respiratory medicine at SKNMC and GH Pune from January 2011 to June 2017. After Written and explained consent total 52 patients were included into the study. Out of total 52 operated patients were followed up for the study period and their five year survival rate post operative death and other clinic laboratory parameters was considered and prognosis was categorized into Excellent, Good, Poor prognosis.

### RESULT

**Table 1:** Distribution of the patients as per the various surgeries performed

Surgeries	No.	(%)
Thoracotomy + Lobectomy	11	21.15
Thoracotomy + Ligation of Fistula + Esophagotomy+ Gastrectomy	9	17.31
Thoracotomy + Decortication	7	13.46
Thoracotomy + Excision of Lump	5	9.62
Thoracotomy + Excision of Cyst	3	5.77
Thoracotomy + Excision of Teratoma	3	5.77
Thoracotomy + Excision of tumor	3	5.77
Thoracotomy + Rib resection	2	3.85
Thoracoscopy + LN biopsy	2	3.85
Thoracoscopy + Thymectomy	2	3.85
Decortication	2	3.85
Lobectomy	1	1.92
VATS + Decortication	1	1.92
VATS	1	1.92
<b>Total</b>	<b>52</b>	<b>100.00</b>

The various surgeries performed were Thoracotomy + Lobectomy in 21.15%, followed by Thoracotomy + Ligation of Fistula + Esophagotomy+ Gastrectomy in 17.31%, Thoracotomy + Decortication in 13.46%, Thoracotomy + Excision of Lump in 9.62%, Thoracotomy + Excision of Cyst In 5.77%, Thoracotomy + Excision of Teratoma in 5.77%, Thoracotomy + Excision of tumor in 5.77%, Thoracotomy + Rib resection in 3.85%, Thoracoscopy + LN biopsy in 3.85%, Thoracoscopy + Thymectomy in 3.85%, Decortication in 3.85%, Lobectomy in 1.92%, VATS + Decortication in 1.92%, VATS in 1.92%.

**Table 2:** Distribution of the patients as per the Outcomes

Outcome	No.	Percentage (%)
Improved	45	86.54
Deaths	5	9.62
Lost to Follow-up	2	3.85

The overall outcome patients Improved in 86.54%, Deaths occurred in 9.62 %, and Lost to Follow-up in 3.85%.

**Table 3:** Distribution of the patients as per the Prognosis

Prognosis	No.	Percentage (%)
Excellent	32	61.54
Good	12	23.08
Poor	8	15.38
<b>Total</b>	<b>52</b>	<b>100.00</b>

As per the Prognosis Excellent prognosis was in 61.54% patients followed by Good prognosis in 23.08% and Poor prognosis in 15.38%. This was based on patients survival after surgery and self assessment of Quality of life of patients.

**Table 4:** Factors associated with the Poor prognosis\*

Associated Factors	No.	Percentage (%)
Old age	7	13.46
History of Smoking	5	9.62
Ca-Lung	5	9.62
Associated with Diabetes	3	5.77
Obesity (BMI > 30)	3	5.77
COPD	2	3.85
Immunocompromised	1	1.92
Anemic	1	1.92

(\* More than one factor was associated with the poor prognosis so total may be more)

The factors associated with the poor prognosis were Old age in 13.46% followed by History of Smoking 9.62, Ca-Lung in 9.62%, Associated with Diabetes in 5.77%, Obesity (BMI > 30) in 5.77%, COPD in 3.85%, Immunocompromised In 1.92%, Anemia in 1.92 %.

### DISCUSSION

Benefits of pulmonary surgical treatment are well-established. Life expectation of patients with non-small

cell lung cancer is increased to 48 months, compared to 17 months of survival of patients submitted only to medical treatment<sup>1</sup>. Furthermore, surgery for bronchiectasis increases the quality of life<sup>2</sup> and survival of these patients<sup>3</sup>. However, postoperative complications are a significant cause of morbidity and mortality in patients submitted to thoracic or abdominal surgeries<sup>4</sup>. Managing of these patients requires an understanding of the predictable changes in pulmonary physiology occurring with surgery and anesthesia as well as a knowledge of factors associated with development of postsurgical complications. The surgical procedure causes reduction of lung capacity (represented by forced vital capacity [FVC] and forced expiratory volume in one second [FEV<sub>1</sub>]) diaphragm dysfunction, impairs gas exchange, and cough and mucociliary clearance leading to development of microatelectasis and postoperative hypoxemia<sup>4,5</sup>. These modifications are exacerbated in chronic obstructive pulmonary disease [COPD]<sup>6,7</sup>, as well as in older patients<sup>8</sup>, survivors of recent myocardial infarction<sup>9</sup>, in starvation<sup>10</sup> and smoking patients<sup>11</sup>. The patients submitted to pulmonary resection procedures developed severe and frequent postoperative complications, so these patients frequently are submitted to the preoperative risk evaluation<sup>12</sup>. The various surgeries performed were Thoracotomy + Lobectomy in 21.15%, followed by Thoracotomy + Ligation of Fistula + Esophagotomy + Gastrectomy in 17.31%, Thoracotomy + Decortication in 13.46%, Thoracotomy + Excision of Lump in 9.62%, Thoracotomy + Excision of Cyst in 5.77%, Thoracotomy + Excision of Teratoma in 5.77%, Thoracotomy + Excision of tumor in 5.77%, Thoracotomy + Rib resection in 3.85%, Thoracoscopy + LN biopsy in 3.85%, Thoracoscopy + Thymectomy in 3.85%, Decortication in 3.85%, Lobectomy in 1.92%, VATS + Decortication in 1.92%, VATS in 1.92%. The overall outcome patients Improved in 86.54%, Deaths occurred in 9.62 %, and Lost to Follow-up in 3.85%. As per the Prognosis Excellent prognosis was in 61.54% patients followed by Good prognosis in 23.08% and Poor prognosis in 15.38%. The factors associated with the poor prognosis were Old age in 13.46% followed by History of Smoking 9.62, Ca-Lung in 9.62%, Associated with Diabetes in 5.77%, Obesity (BMI > 30) in 5.77%, COPD in 3.85%, Immunocompromised In 1.92%, Anemia in 1.92 %. These findings are similar to Eduardo Oliveira Fernandes<sup>22</sup> *et al* they found presence of anemia (p < 0.01, RR 2.13), and prolonged protrombine time [PT] (p = 0.03, RR 1.77). Infection complications were related to smoking (p < 0.01, RR 2.69), airway obstruction by spirometry (p = 0.01, RR 3.31), presence of anemia (p < 0.01, RR 2.10), and prolonged PT (p = 0.03, RR 2.29). Cardiovascular problems were related with older age (p <

0.01, RR 2.66), cigarette smoking (p < 0.01, RR 4.55), and hypoxemia (p = 0.03, RR 2.43). The postoperative mortality rate was 7.1%.

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