

## **ABSTRACT**

### **TITLE OF STUDY:**

**PRE-OPERATIVE ASSESSMENT TO PREDICT POST-OPERATIVE  
COMPLICATIONS IN PATIENTS UNDERGOING LUNG RESECTION  
SURGERIES IN A TERTIARY HOSPITAL IN INDIA.**

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**Background:** Post-operative complications that are commonly encountered following lung resection surgeries are atelectasis, pneumonia and bronchopleural fistula and increased ICU stay. Previous studies have shown that FEV-1, ppo (predicted post-operative) FEV-1 and DLCO have value in predicting cardiopulmonary complications. We evaluated the potential of pre-operative Spirometry parameters, primarily FEV-1 and other pulmonary function tests, six

minute walk test and cardiopulmonary exercise testing and also quality of life questionnaire (SGRQ – St George Respiratory Questionnaire) to predict these post operative complications.

**Aims:**

- A) To show that pre-operative tests, mainly FEV-1 can predict post-operative complications like atelectasis, pneumonia, bronchopleural fistula, increased duration of post-operative hospital stay, duration of admission in HDU and mortality rates.
- B) To show that other pulmonary function tests like FVC, 6min walk test and also Cardiopulmonary testing like V02 max and VE/VCO2 can predict these outcomes.
- C) To obtain a clinical profile of patients undergoing lung resection surgery.
- D) To evaluate actual post-operative lung function and exercise capacity and its correlation with the predicted post operative lung function.

**Methods:** It is a prospective observational study done in a single tertiary centre with co-ordination between the departments of Thoracic Surgery and Pulmonary Medicine. Patients who were planned for lung resection surgery were included. Sample size was 99 and data collection began from March 29<sup>th</sup> 2016. Patients were monitored for perioperative and post-operative complications and after discharge monitoring was done via phone calls or email.

**Results:** A total of 49 post operative patients have reviewed till date with repeat pulmonary function testing and quality of life questionnaire assessments done. The most common indication for lung resection surgery was malignancy (37%) with Carcinoid tumors being the most common type. Lobectomy was the most common type of lung resection surgery performed. The spirometrical parameters which showed statistical significance in predicting post operative fever were - FVC(Forced vital capacity), TLC(Total lung capacity), RV(residual volume), PEFR(Peak expiratory flow rate) and DLCO% (diffusion capacity of the lung for carbon monoxide %). For atelectasis, RV, RV% and TLC had statistically significance. PPO FEV-1 had a strong Spearman's correlation co-efficient with both FEV-1 pre op and FEV-1 post op with values of 0.910 and 0.838 respectively.

**Conclusion:** In our series of 100 patients of lung resection surgery the morbidity and mortality is low and comparable to published international literature. Only in 37% of patients, surgery was done for resection of neoplasm. Remaining surgeries were done for infections and post infective sequelae. Although FEV-1 could not predict post lung resection surgery complications, they are valuable to select appropriate patients and to achieve good outcomes and low mortality. Quality of life as measured by SGRQ, exercise capacity as measured by six minute walk test and DLCO/VA ratio had improved, which could imply that resecting the diseased lung improved overall functional capacity of the patient. FEV1/FVC ratio can

affect duration of ICU stay. Predicted post-operative FEV-1 (ppo FEV-1) correlated very strongly with the actual post-operative FEV-1. It is accurate to predict FEV1 within - 76 ml to + 76 ml of actual post-operative FEV-1 but using the anatomical formula for the prediction of post-operative VO2 max and DLCO were not so accurate.