

Assessment of Lung Segmentectomy Preoperative Pulmonary Function Testing Strategies on Postoperative Outcomes

Objective: To evaluate whether in-office portable spirometry (spiro) is an adequate alternative to complete pulmonary function testing (PFT) when comparing patient outcomes after segmentectomy for lung cancer in a real-world setting, as full PFTs are logistically complex to arrange and more difficult to complete for patients.

Methods: A single center retrospective chart review was conducted for adult patients receiving segmentectomy for lung cancer at a quaternary center between 2017-2022. Patients who had not undergone or completed preoperative pulmonary function testing were excluded. A propensity score was developed using relevant preoperative variables, including demographic information, smoking history, and prior thoracic surgeries, to compare spiro and full PFT groups. Pulmonary function testing results and adverse outcomes across groups were evaluated for significance using chi-squared testing for categorical variables and t-testing for quantitative variables.

Results: A total of 266 patients were identified as meeting criteria with 120 patients receiving spiro and 146 patients receiving full PFTs. Overall, the median tumor diameter was 1.5cm for the spiro group and 1.6cm for the full PFT group. No statistical difference was found in the results of pulmonary function testing between groups. There was 1 death from all causes within 30 days in the spiro group compared to none in the PFT group, but this was not statistically significant. There was no statistical difference in length of hospital stay (Spiro: 2.4 days vs PFT: 2.9 days; $p=0.32$) or all postoperative complications (Spiro: 28.7% vs PFT: 30.5%; $p=0.87$). For respiratory specific adverse outcomes, no statistical significance was found for prolonged air leak rate (Spiro: 7.0% vs PFT: 6.1%; $p=0.99$), home oxygen utilization (Spiro: 2.6% vs PFT: 8.0%; $p=0.12$), and rate of pulmonary rehabilitation (Spiro: 4.4% vs PFT: 1.9%; $p=0.50$).

Conclusions: In-office spirometry is an acceptable alternative to full pulmonary function testing when comparing postoperative patient course and complication rate for lung segmentectomy. Therefore, in-office spirometry may represent a cheaper and easier initial option, without a sacrifice in outcomes, for preoperative evaluation during a typical segmentectomy workup.

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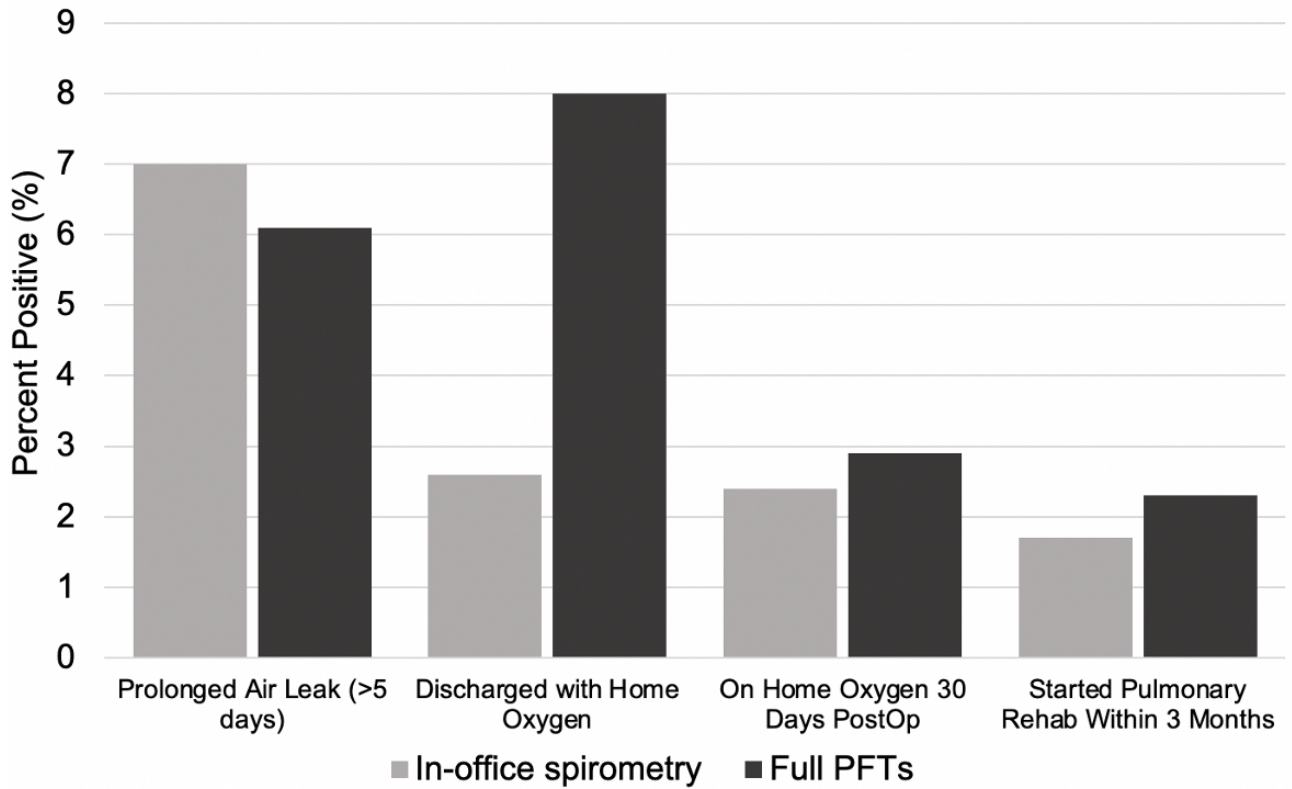


Figure 1. Pulmonary adverse outcome rates (%) for in-office spirometry vs full PFT groups for patients undergoing segmentectomy. No statistical significance was noted in any category.