European Respiratory Society
Annual Congress 2012

Abstract Number: 2221

Publication Number: P2945

Abstract Group: 8.1. Thoracic Surgery

Keyword 1: COPD - management **Keyword 2:** Surgery **Keyword 3:** Bronchoscopy

Title: Lung volume reduction surgery (LVRS) after endoscopic lung volume reduction (ELVR) in severe emphysema – A case series

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Body: Background LVRS as well as ELVR can improve patients symptoms, wellbeing and pulmonary function testing. ELVR can be performed in upper and lower lobe emphysema. LVRS is currently not recommended for patients with very low FEV1 or lower lobe emphysema. Objectives Case series to establish if surgical lobectomy after initially successful ELVR is effective and safe. Methods 6 patients (4 female, mean age 60.3 y, mean FEV1 640 ± 214 ml) with severe lower lobe emphysema received ELVR and showed an initial but not persistent improvement. Hence a lobectomy was performed for surgical lung volume reduction. Pulmonary function tests (PFT), 6-minute-walk-test (6MWT) and dyspnea score (mMRC) were performed 90 days after surgery and safety issues were assessed. Results In all cases lobectomy of one lower lobe (5 left, 1 right side) was performed without any problems. No prolonged air leack and no 30-days mortality were observed. 1 patient was lost for follow up. He died 86 days after the procedure due to an acute tension pneumothorax, but showed a primary clinical benefit. In the remaining 5 cases an improvement of +42.4 ± 16.3 % in FEV1 and reduction of - 35.1 ± 17.4 % in residual volume (RV) was seen. Both 6MWT (+72 ± 43 m) and mMRC (+2.6 ± 1.1 points) were also improved. Conclusion A lobectomy in patients with severe lower lobe emphysema for definitive LVRS seems to be effective and safe in selected cases. A previous successful ELVR can be used as a pretest for adequate patient selection.