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Title: Bronchoscopic lung volume reduction - a descriptive case series: The Cambridge experience

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Body: Introduction Bronchoscopic Lung Volume Reduction (BLVR) is an evolving alternative to medical therapy for severe emphysema. We have developed a service using endobronchial valves(Pulmonx) including COPD physician, radiologist, interventional bronchoscopist and thoracic surgeon. Aims and objectives We report our experience of BLVR over 4 years in a case-based fashion, and describe the diversity of benefits achieved. Methods Retrospective analysis of 6 cases from 2009–2012 selected by CT (fissure integrity) or Chartis (collateral ventilation). We show pooled data for lung function changes over 6 and 6-18 months post-procedure as well as describe individual case benefit by objective and subjective measures. Results From baseline, 6 month FEV1 improved by 30.1% (selection by CT 26.7% and Chartis 33.6%) and residual volume (RV) fell by 16.6%. This was maintained over 7-18 months for both FEV1 (+29.6%) and RV (-13.7%). Individuals demonstrated numerous measurable and perceived benefits not captured by FEV1, including improved 6 minute walk, decreased exacerbation frequency and breathlessness, improved stair climbing, decreased exertional rest and oxygen requirements. Conclusions 1.Patient selection is critical to outcome. Our model includes, careful specialist COPD phenotyping, dedicated lung Physiology and Radiology, skilled interventional Bronchoscopy and comprehensive Audit of outcomes. 2.FEV1 is a limited tool when used in isolation. 3.Time to benefit is variable, some patients taking many months to achieve substantial benefits. 4.Index of benefit can be primarily subjective and we propose a multi-dimensional procedure-specific outcome score to capture both objective and subjective improvements.