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Title: Assessment of fissure integrity for decision-making in valve treatment of emphysema: Preliminary results

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Body: Objective. To investigate if fissure integrity can determine collateral ventilation and guide endobronchial valve (EBV) treatment of emphysema. Method. The study is underway. We employ the Apollo software (VIDA Diagnostics) for treatment planning, and developed a visual fissure integrity score using a sagittal view through pre-treatment CT scans, to determine which % of the fissure was visible: <70% (incomplete); 70-90% (partial); >90% (complete). Before treatment, collateral ventilation is measured with Chartis (Pulmonx Inc., a balloon catheter inserted into the airway + console showing airflow, pressure, and resistance). Preliminary results:

Two cases showing correlation between fissure integrity and collateral ventilation

	1	2
Sex	M	M
Age	65	77
Basal FVC	1.69 (37.5%)	1.85 (71%)
Basal FEV1	0.64 (18,5%)	0.79 (39%)
Treatment date	11 Jan 12	2 Feb 12
Heterogeneity gradient*	9.6 (homogeneous)	23.5 (heterogeneous)
Integrity score (right oblique fissure)	100%	36%
Collateral ventilation	No	Yes
Strategy	RLL exclusion	RUL exclusion + adjacent segment

*Difference between lobes in % area with parenchymal density < -950HU.

Case 1 was successfully treated based on fissure completeness.

Case 2 received an additional valve in a neighboring segment after detection of collateral ventilation.
Conclusion. Fissure integrity could be a reliable indicator of collateral ventilation and support EBV treatment of homogeneous emphysema.