An Unusual and Unknown Complication of Endobronchial Valves

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Three endobronchial valves (Zephyr, Pulmonx, Redwood City, CA) for lung volume reduction were implanted in the right upper lobe of a 74-year-old male patient known for stage IV chronic obstructive pulmonary disease with hyperinflation and heterogeneous right upper lobe predominant emphysema. Thoracic computed tomography revealed a complete (>90%) oblique and incomplete (approximately 50%) horizontal fissure. However, collateral ventilation was weak to absent when measured by the Chartis system (Pulmonx). At 3 months, clinical and functional response was disappointing, without any improvement in symptoms or lung functions. Computed tomography scan evaluation confirmed the lack of volume loss, but showed a condensed material within the valves of the right upper lobe (A, red arrow). At 4 months, endobronchial examination confirmed the correct positioning of the valves, but no granulation was highlighted. Without any improvement during follow-up, the decision was taken to remove the valves after 8 months. That proved to be difficult in the posterior and apical segment of the right upper lobe, where dense fibrous tissue was casted with occlusion of the corresponding bronchus (B). This tissue was too hard to be removed by forceps and was left in place. Four months later, scar tissue in the affected bronchi was still visible endoscopically (C).

This reaction is atypical for the localization (intravalve), extension (huge), and tissue character (fibrous), and cannot be compared to the commonly observed granulations; a relationship between such a reaction and the lack of efficacy may be suspected. Pulmonologists and thoracic surgeons inserting endobronchial valves should be made aware of this possible side effect.

Fig 1.

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