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SEQUENTIAL BILATERAL BRONCHOSCOPIC LUNG VOLUME REDUCTION WITH ONE-WAY VALVES FOR HETEROGENEOUS EMPHYSEMA
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Objectives: The Clinical benefits of Bronchoscopic Lung Volume Reduction (BL VR) with Endobronchial valves (EBVs) have been reported for heterogeneous emphysema after unilateral treatment. However, no study has explored the effects of bilateral sequential BL VR so far. We reviewed the functional results after bilateral sequential BL VR and compared this group of patients with those undergoing unilateral BL VR in the same period.

Methods: This is a retrospective multicentre study including consecutive patients with heterogeneous emphysema undergoing BL VR with EBV during the last 4 years. Patients were divided into 2 Groups according to the procedure they received (unilateral vs bilateral). For those receiving bilateral BL VR, the timing on the contra-lateral side was determined by the decline of spirometric data to the pre-procedure levels. All patients were followed up for 3 years. The functional changes within the bilateral group (intra-group comparison) and those between the bilateral and the unilateral groups (inter-group comparison) were compared.

Results: Forty-nine patients were enrolled. Of these, 14 had a sequential bilateral procedure with a median interval of 18 months between the first and the second BL VR. After the first BL VR, a significant improvement of FEV1% (+6.5%; P < 0.001), FVC% (+8.6%; P = 0.001), and reduction of RV% (-28%; P = 0.01) were seen. Similar results were obtained with the sequential BL VR procedure in comparison with pre-second operation values on FEV1% (+4.7%; P = 0.003); FVC% (+4.3%; P = 0.04); and RV% (-33%; P = 0.003). The benefits of the first treatment were similar to those of second treatment (intra-group comparison). Yet, the improvement of respiratory functions were similar between bilateral vs unilateral groups (inter-group comparison) confirming that the second treatment is crucial to prolong the functional impact of the procedure for a longer period of time.

Conclusions: Sequential bilateral BL VR with EBVs may produce cumulative benefits, improving and prolonging the positive effects obtained after the first procedure.

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