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**Title:** Correlation between patients' background and the therapeutic effect of BLVR using EMV (endobronchial Miyazawa valve)

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**Body:** Purpose: The purpose of this study is to determine the clinical indications and assess the mechanisms of clinical improvement of BLVR using EMV retrospectively. Methods: A study of 29 patients was conducted. Several independent variables were used to evaluate patients' background: heterogeneity (heterogeneous vs. homogeneous), target area (placement into the lobar bronchus vs. the segmental bronchus), and fissure integrity (complete vs. incomplete). The dependent variables used consisted of four therapeutic effects: change in lung volume, %FEV1, 6MWT, and updated BODE index. The multiple regression analysis was performed to calculate the standardized partial regression coefficients (SPRC). Results: The multiple regression analysis for change in lung volume yielded SPRCs of 0.400 ( $p=0.026$ ) for heterogeneity (heterogeneous > homogeneous) and 0.324 ( $p=0.067$ ) for fissure integrity (complete > incomplete). There was no significant correlation in SPRCs for %FEV1 and 6MWT. SPRC between the heterogeneity (heterogeneous > homogeneous) and the updated BODE index was 0.380 ( $p=0.036$ ). In the heterogeneous emphysema group, the updated BODE index improved 4.5 points in the lobar group and 2.78 points in the segmental group ( $p=0.04$ ). Conclusions: This study suggests that it is desirable to select a patient with heterogeneous emphysema and to place EMV(s) into the lobar bronchus. Furthermore, it has been shown that there is no correlation between lung volume reduction, the therapeutic effect and some patients of the segmental placing group become well. This is most likely due to the redirect of airflow reflected by the therapeutic effect rather than lung volume reduction.