**Fibrosis distribution in Bronchiolitis Obliterans Syndrome and Restrictive Allograft Syndrome lungs may contribute to Chronic Lung Allograft Dysfunction treatment**

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Chronic Lung Allograft Dysfunction (CLAD) develops when the immune system responds negatively to a transplanted organ. The lung has two main types of rejection: Bronchiolitis Obliterans Syndrome (BOS) and Restrictive Allograft Syndrome (RAS). BOS results in the narrowing of bronchiolar vessels and airflow obstructions while RAS results in peripheral lung fibrosis and restrictive physiology. Distinct pathologic patterns of injury in the chronically rejected lung can explain the obstructive and restrictive physiology in BOS and RAS respectively. Though the physiologic disease progression of CLAD is known, the pathology of both BOS and RAS is incompletely characterized.

To understand these histopathologic features, two lungs explanted for CLAD were histologically prepared and stained with H&E and Movat to analyze the amount of fibrosis in each portion of the lung. Sections were scanned using Aperio ScanScope**©** AT Turbo, and Imaging Software (Spectrum™)was used to calculate the amount of fibrosis in each sectioned tissue.

Results showed that Patient 1 had 16.08% fibrosis while Patient 2 had 13.70% fibrosis. Specifically, Patient 1’s upper lobe had 11.64% fibrosis, the middle lobe had 18.01 %, and the lower lobe had 18.13%. Patient 2’s upper lobe had 12.93% fibrosis, the middle lobe had 14.01%, and the lower lobe had 14.11%. At a 90% confidence level, the upper lobe for each patient had a significantly lower percent of fibrosis than the lower lobes (Patient 1: p-value of 8.47e-11; Patient 2: p-value of 0.063).

Determining the amount of fibrosis in each lobe of the lung better differentiates the area where CLAD initially develops in BOS and RAS patients. This initial target of fibrosis in CLAD allows better understanding of the pathophysiology of BOS and RAS, allowing therapeutics for CLAD to be more targeted for this patient population and thereby lowering the chronic rejection rate for lung transplants.