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Central VA-ECMO Support without Full Anticoagulation is Feasible During Lung Transplant

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Purpose: Veno-arterial extracorporeal membrane oxygenation (VA-ECMO) support is increasingly used instead of cardiopulmonary bypass (CPB) during lung transplant for mechanical circulatory support. In this study, we analyzed the feasibility of central VA-ECMO without full anticoagulation during lung transplantation. We also analyzed the incidence of morbidity including ischemic and thrombotic complications, stroke, and postoperative outcomes.

Methods: This is a retrospective review of an institutional lung transplant database. We included consecutive patients from March 2018 through January 2021. Patients were stratified into two cohorts: those undergoing central VA-ECMO during lung transplant and those undergoing traditional cardiopulmonary bypass. Patients undergoing VA-ECMO did not receive systemic anticoagulation at the time of surgery. 109 total patients were included in the study.

Results: 57 patients underwent central VA-ECMO during lung transplant while 52 underwent traditional cardiopulmonary bypass. The VA-ECMO patients had longer operative time and ischemic time than non VA-ECMO patients (7.9 ± 1.4 vs 6.4 ± 2.0, p<0.001, 5.3 ± 1.1 vs 4.2 ± 2.0, p<0.001). However, there was no significant difference in all of blood transfusion between two groups. Post-lung transplant complications between the VA-ECMO and non-VA-ECMO patients were similar, with the exception of AKI which was higher in VA-ECMO patients (52.2% vs 25.0%, p=0.01). Intensive care unit stay and overall hospital stay was not significantly different between the two groups.

Conclusion: These findings suggest that central VA-ECMO without anticoagulation is a safe alternative to traditional cardiopulmonary bypass during lung transplantation. While use of VA-ECMO increased operative time, it did not result in increased rate of blood transfusions or lengthen overall hospital stay. We believe this approach could improve outcomes associated with mechanical life support for lung transplant.

Feasibility of Single Lung Transplant for Post-COVID Fibrosis: A Case Report

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Introduction: Previously we reported bilateral lung transplantation is the last treatment option for irreversible COVID ARDS and post-COVID fibrosis. Now we report our first single lung transplant (SLTx) for post-COVID fibrosis.

Case Report: A 59-year-old, never-smoker, female, with history of obstructive sleep apnea, hypertension and hyperlipidemia, presented to an outside hospital with COVID-19, shortness of breath, and bilateral pulmonary infiltrates on chest X-ray (CXR) (Figure 1a). She was admitted to the intensive care unit, never requiring intubation, for an overall 40-day hospitalization. At discharge, she had shortness of breath with minimal activity and required continuous oxygen (O2) therapy. One year later she presented to our institution for an outpatient lung transplant evaluation for her post-COVID fibrosis. Her cardiac workup was unremarkable, with the absence of pulmonary hypertension on echocardiogram and right heart catheterization. Computed Tomography of her chest showed only significant fibrosis in the upper lobes with traction bronchiectasis and volume loss (Figure 1c). Her lung ventilation perfusion scan showed grossly normal perfusion to both lungs. Thus, she was listed for left, right, and bilateral lungs with a Lung Allocation Score of 42. After 39 days of listing, she underwent SLTx. Final pathology of her explanted lung (Figure 1d) showed both uninvolved lung parenchyma and interstitial fibrosis and capillary congestion (Figure 1e). Post-operatively, her course was unremarkable and she was discharged home on POD 19.