Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Summary: Pulmonary fibrosis secondary to COVID-19 pneumonia can be successfully treated with VV-ECMO and subsequent lung transplantation in select patients. Special consideration should be given to this patient population as they may not meet traditional listing requirements. We report a 100% oxygen-free survival rate at six months.

(919)

Single Lung Transplantation for Pulmonary Fibrosis Secondary to COVID-19

Y.A. He,[1] R.K. Chihara,[2] E.E. Suarez,[1] H.J. Huang,[3] A. Goodarzi,[3] S.W. Yau,[3] J.G. Youssef,[3] A.O. Gaber,[2] T.E. MacGillivray,[1] and E.Y. Chan.[2] [1]Department of Cardiovascular Surgery, Houston Methodist Hospital, Houston, TX; [2]Department of Surgery, Houston Methodist Hospital, Houston, TX; and the [3]Department of Medicine, Houston Methodist Hospital, Houston, TX.

Introduction: As of April 2021, 78 lung transplants (LTx) were performed for a diagnosis of COVID-19: 50 for COVID-19 ARDS and 28 for pulmonary fibrosis. Bilateral LTx has been recommended as many patients develop significant pulmonary hypertension. Additionally, native lung explants may include cavitary areas of pneumonia, which could serve as a nidus for infection. Single LTx (SLTx) can be considered in patients who have chronic pulmonary fibrosis secondary to COVID-19 with a short window to receive a transplant, or who would otherwise be considered for a single lung. There have been no published cases of a single lung transplant for COVID-19 pulmonary fibrosis. We present a case of a patient with pulmonary fibrosis from COVID-19 who underwent SLTx.

Case Report: A 70yo male with O+ blood type was hospitalized 8/2020 to 10/2020 with COVID-19 pneumonia, treated with Remdesivir and Tocilizumab. He had hypoxia but never required intubation. His course was complicated by bilateral pneumothoraces requiring chest tubes. He developed pulmonary fibrosis requiring 6 L of oxygen at rest. CT scan of his chest showed multifocal, peripheral prominent ground glass opacities and interlobal septal thickening with traction bronchiectasis. Ventilation-perfusion scan demonstrated 22% perfusion to the left lung and 78% to the right lung. Right heart catheterization showed pulmonary artery pressures of 36/12 mmHg. His pulmonary function test was suggestive of restrictive disease (FEV 0.81 L [30%], FVC 0.96 L [27%], and FEV1/FVC 85%) that had worsened over time. He was presented at multidisciplinary review board with recommendation to list for left SLTx, which was activated August 2021. The patient was admitted in September 2021 and underwent left single lung transplant via left anterolateral thoracotomy, off cardiopulmonary bypass. Total ischemia time was 3:54. Explant pathology showed end stage pulmonary fibrosis. The patient was extubated on postoperative day 1 with an uneventful postoperative course. He was discharged to skilled nursing facility on postoperative day 26 for rehabilitation.

Summary: SLTxp is safe and feasible for COVID-19 related pulmonary fibrosis in well-selected patients who have a short window to receive a transplant.

(920)

Lung Transplant from a DCD Donor with a Previous Symptomatic COVID Infection

H.H. Ahmed, M. Husain, A. Jothidasan, C. Zeschky, B. Zych and U. Stock. Cardiothoracic Transplantation Surgery Department, Harefield Hospital, London, United Kingdom.

Introduction: Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a worldwide pandemic affecting more than 172 million confirmed cases. The likelihood of historic donor infection is increasing. Here we report a lung transplantation of a previously SARS-CoV-2 positive organ donor.

Case Report: A 49-year-old female who underwent left single lung transplantation for interstitial lung disease. The lung was obtained from a donation after cardiac death (DCD) using abdominal rerperfusion of a 23 years old female donor died of intracranial bleeding with history of covid infection 8 month prior to lung donation. According to the donor records, the symptoms were mild, and required no hospital admission. She had ongoing loss of taste and smell till time of donation. There were no respiratory symptoms. At time of retrieval, chest x ray was normal and blood gases were normal, however, bronchoscopy revealed severe inflammation of the right-side mucosa so the decision was to proceed with the left lung only as it had normal blood gases, good recruitment and no consolidation as well as non inflamed bronchial mucosa. patient had single off pump left lung transplant through left anterior thoracotomy approach. After the surgery, patient was extubated on day 1 in ICU, discharged from ICU on day 3 and discharged from the hospital after 27 days. There was no evidence for primary graft dysfunction or acute rejection. After 6 month of the surgery, FVC is 2.26 L (78.2% predicted) and FEV1 is 1.9L (70.2% predicted).

Summary: This case showed that it is possible to proceed with lung transplant from a donors who had previous mild covid infection. As DCD donation might limit preoperative invasive investigations such as bronchoscopies careful examination and proper radiological and functional assessment for the donor lung after donation including EVLP needs to be considered.

(921)

Successful Percutaneous Mechanical Suction Thrombectomy of Extracorporeal Filtration System Following Bilateral Lung Transplantation Secondary to COVID-Pneumonia

R.J. Vela, C. Heid, L.C. Huffman, A. Hackmann and M. Peltz. Cardiovascular & Thoracic Surgery, UT Southwestern Medical Center, Dallas, TX.

Introduction: COVID infections show increased risk of thromboembolic events. We report a case of a 43 year old male with acute Covid-19 pneumonia necessitating veno-venous ECMO and RVAD support as bridge to pulmonary transplantation. At transplant, he had thrombus along his extracorporeal pulmonary artery cannula necessitating percutaneous mechanical thrombectomy.

Case Report: The patient presented as a transfer to our institution with COVID-19 related ARDS in refractory respiratory failure with multiple bronchopleural fistulas. Shortly after admission, veno-venous ECMO was initiated and over time was fully ECMO dependent due to extensive tissue destruction with essentially no functional lung tissue. He was converted to right internal jugular-left subclavian vein ECMO-RVAD configuration while assessing for transplantation. After 135 days of support, a suitable donor was identified and was taken for bilateral lung transplantation with ECMO/RVAD support. This was complicated by a frozen chest, massive transfusion, and primary graft dysfunction necessitating postoperative maintenance of circulatory support. Intraoperatively, a large thrombus burden was found along the pulmonary artery outflow cannula. His chest was left open at that time while his graft recovered. Three days later, a percutaneous suction thrombectomy device was inserted through his right femoral vein and under TEE guidance, he underwent suction thrombectomy of the pulmonary artery cannula clot burden (Figure 1). He was decannulated and underwent chest closure thereafter. He was anticoagulated post-operatively and has not had any further thromboembolic events.

Summary: Acute COVID-19 infection leads to a known increased risk of thromboembolic phenomena. We present an interesting approach to removal of ECMO-cannula associated thrombus in severe SARS-CoV-2 infection necessitating bilateral lung transplantation.

(922)

Mechanical Circulatory Support in Lung Transplant Recipients: Early and Long-Term Survival

M. Sachse, S. Naito, C. Oelschner, A. Yousuf, A. Bernhardt, H. Reichenspurner and B. Sill. University Heart Center Hamburg, Cardiovascular Surgery, Hamburg, Germany.

Purpose: Lung transplantation can be performed off-pump with sequential one-lung ventilation or with mechanical circulatory support (MCS) either by using a cardiopulmonary bypass or veno-venous / veno-arterial extracorporeal membrane oxygenation. Furthermore, MCS might be necessary throughout postoperative course for improving pulmonary function. Here we aimed to investigate early and long-term survival of lung recipients, who are temporarily in need for mechanical circulatory support during lung transplantation and / or after and additionally who did not receive any mechanical circulatory support.
Methods: We performed a retrospective review of patients who underwent lung transplantation at our center between January 2009 and July 2021. We compared 100 days survival as well as five-year survival of lung transplant recipients, who received mechanical circulatory support intra- and postoperatively (group 1, n=14) vs. no mechanical circulatory support (group 2, n=14) or just intraoperatively (group 3, n=69). Survival depicted as Kaplan-Meier-Curves.
Results: Recipients treated with mechanical circulatory support intra- and postoperatively after lung transplantation (n=14), presented with pulmonary artery hypertension (n=5), pulmonary veno-occlusive disease (n=1), idiopathic fibrosis (n=2), Sarcoidosis (n=1) and chronic obstructive pulmonary disease (n=5). 100 days after initial lung transplantation 4 out of 14 patients were alive. Early survival between group 1 and 2 was 38.5% vs. 85.7% (p=0.0073) and as compared to group 3 38.5% vs 90.9% (p<0.0001). Five-year survival was 33.3% in patient group 1 compared to 67.3% in group 3 (p<0.0001) as well as 33.3% vs 64.3% when compared to patient group 2 (p=0.0262). Survival between group 2 and 3 did not differ significantly.
Conclusion: Here we report clearly that patients after lung transplantation who needed intra- and postoperatively mechanical circulatory support have a significantly reduced early as well as long-term survival compared to recipients without any need of mechanical circulatory support or only intraoperatively. Early and long-term survival of lung recipients treated with circulatory support only intraoperatively did not differ when compared to patients without any use of support.

(923)

A Case of Prolonged Hospital Acquired COVID-19 Pneumonia in a Lung Transplant Recipient: Management and Outcome

E. Faccioli,[1] M. Schiavon,[1] F. Pezzuto,[2] A. Dell'Amore,[1] D. Biondini,[3] S. Marinello,[4] P. Persona,[5] M. Vadori,[6] M. Loy,[1] A. Cattelan,[4] E. Cozzi,[6] E. Serra,[5] A. Vianello,[7] P. Navalesi,[5] F. Calabrese,[2] and F. Rea.[1] [1]Thoracic Surgery and Lung Transplant Unit, University Hospital of Padua, Padua, Italy; [2]Pathology Unit, University Hospital of Padua, Padua, Italy; [3]Pulmonology Unit, University Hospital of Padua, Padua, Italy; [4]Infectious Disease Unit, University Hospital of Padua, Padua, Italy; [5]Anesthesiology Unit, University Hospital of Padua, Padua, Italy; [6]Transplant Immunology Unit, University Hospital of Padua, Padua, Italy; and the [7]Respiratory Pathophysiology Unit, University Hospital of Padua, Padua, Italy.

Introduction: Lung transplant recipients are at increased risk of SARS-CoV2 infection due to immunosuppression and their management has yet to be standardized. We report a case of prolonged COVID-19 infection in a lung recipient acquired after transplant during the hospital stay.
Case Report: A 52-year-old lady with interstitial disease associated to systemic sclerosis underwent bilateral lung transplantation on 04/10/21. Donors and recipient microbiological tests for SARS-CoV2 were negative on molecular swabs performed before transplantation (04/07 and 04/10). Transplantation was uneventful and the recipient was extubated the subsequent day. Twelve days later, a surveillance molecular nose-pharyngeal swab was positive for SARS-CoV2. The positivity for subgenomic analysis revealed productive infection. At first monitoring biopsy, multiple foci of diffuse alveolar damage, significant cytopathic features of pneumocytes, microthrombi of capillaries, and extensive edema were highly suggestive of COVID-19 pneumonia. High viral load was also detected in lung biopsy by RT-PCR. She presented mild respiratory symptoms (cough with low oxygen supplementation) and the CT scan revealed an area of consolidation at the right lower lobe. Monoclonal antibody therapy (Bamlanivimab and Etesevimab) associated with remdesevir was started, IV immunoglobulins were administered while mycophenolate mofetil was discontinued. The patient was closely monitored until the nose-pharyngeal swab turned negative two months after the first positivity associated with a significant clinical improvement. At the last follow-up, five months after transplantation, she had good pulmonary function, no immunological disorders and no signs related to long COVID-19.
Summary: This is a case of prolonged hospital acquired COVID-19 related pneumonia in a lung recipient. Immunocompromized patients present a longer viral clearance. In this fragile population a strict clinical, radiological and histopathological monitoring associated with encouragement of vaccination are mandatory.

(924)

Direct Lung Procurement with Ongoing Abdominal Normothermic Regional Perfusion

A. Jothidasan,[1] M. Husain,[1] D. Garcia,[1] M. Berman,[2] I. Currie,[3] and U. Stock.[1] [1]Harefield Hospital, London, United Kingdom; [2]Papworth Hospital, Cambridge, United Kingdom; and the [3]Edinburgh, Edinburgh, United Kingdom.

Introduction: Donation after circulatory death (DCD) has recently advanced with abdominal normothermic regional perfusion (A-NRP). The A-NRP technique has been implemented to minimize warm ischemic damage to the abdominal organs significantly improving recipient outcomes. There is now a necessity for a standardized and reproducible technique for direct procurement of cardiothoracic organs while A-NRP is ongoing.
Case Report: There were seven successful lung retrievals in the presence of A-NRP that we have performed and reporting. The mean age of the donors was 40 with 4 males. A-NRP was established either via femoral vessels or via the abdominal vessels after laparotomy while the chest was opened simultaneously. The cardiothoracic organs were isolated by