

Surgery News

LUNG INSTITUTE

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Over 100 Ex Vivo Lung Perfusion Cases Performed

Baylor St. Luke's Medical Center's Ex Vivo Lung Perfusion Program has performed 105 ex vivo lung perfusion (EVLP) cases since its inception in 2018 using the TransMedics Organ Care System Lung (OCS Lung) technology. Gabriel Loor, M.D., surgical director of the Lung Transplant Program at Baylor St. Luke's and director of lung transplantation at Baylor College of Medicine, led the first breathing lung transplantation using the OCS Lung machine in 2014 in the Midwest and the first in Texas in 2018. In fact, Dr. Loor is a pioneer in this space, having played a key role in FDA approval of the OCS Lung device.



The OCS Lung machine is designed to keep donor lungs functioning and “breathing” in human-like conditions from the time of the donor procurement all the way to the transplant surgery. The device maintains the organ in its own physiologic state with blood, oxygen, nutrients and a sophisticated monitoring system that continually assesses the organ as it travels from donor to the recipient.

Typically, lungs transported in a standard ice cooler are implanted within six hours. But at Baylor St. Luke's, cases were performed with preservation times ranging from six hours to 18 hours. Another benefit offered by using the OCS Lung machine is surgeons can accept donor offers from anywhere in the continental United States and better manage logistics so that complex recipient operations can occur in the day rather than in the middle of the night.

In addition to OCS Lung machine, the transplant team is exploring other technologies for organ preservation such as the Lungguard (Paragonix), which cools the organ without the potentially harmful effects of ice.

New Virtual Pulmonary Rehabilitation Program

The importance of pulmonary rehabilitation for patients with advanced lung disease is well-known. However, there is a significant discrepancy in patient access to in-person pulmonary rehabilitation programs. To bridge this need, the Lung Institute is now offering an innovative virtual pulmonary rehabilitation program for patients..

The innovative program led by Gloria Li, M.D., allows patients to remain connected to staff through a user-friendly app and dashboard. It uses technology for remote tracking of vital signs, intelligent feedback and care plan management and allows the transplant team to monitor the patient's progress real-time and make adjustments to exercise routines. The program also utilizes proven behavioral change methods to motivate patients to build endurance and capacity.

For further details, please contact: katy.ross@commonspirit.org or gli@bcm.edu.

CARING HANDS



Patient Receives New Lung and Quality Care

Lolita Slagle, a patient at The Lung Institute and lung transplant recipient, is so grateful for not only her new lung, but the care she received through her experience as well.

“Dr. Rosas and Dr. Llor and that whole transplant team were just wonderful,” Slagle says. “I really feel well cared for by that group.”

“Dr. Rosas and Dr. Llor and that whole transplant team were just wonderful”

Slagle has pulmonary fibrosis, a disease that damages the lung tissue and makes it difficult for the lungs to work properly. Symptoms of this disease may include shortness of breath, fatigue, dry cough or aching muscles.

“I went into the doctor for an annual physical and they found my oxygen level was very low,” remembers Slagle. “I had felt fine and had no symptoms but was sent to the ER.”

Doctors told Slagle she had pulmonary fibrosis, and that the disease must have come on gradually, so she didn't notice any symptoms. Slagle first saw Ivan Rosas, M.D., pulmonologist at The Lung Institute, and now sees other doctors on the team. Unfortunately, the disease progressed to the point where she needed a lung transplant. In December 2021, Slagle underwent a single lung transplant, performed by Gabriel Llor, M.D., and is doing really well.

Staff Highlights



Meet Dr. Ivan Rosas

Ivan O. Rosas, M.D., professor and section chief of Pulmonary, Critical Care and Sleep Medicine, is a pulmonary and critical care specialist who cares for patients in the Advanced Lung Disease Program at Baylor Clinic. He and his team provide cutting edge clinical care including the latest therapies, access to clinical trials and when necessary and referrals to specialized services like lung transplantation or pulmonary hypertension. He is a dedicated researcher focusing on pulmonary fibrosis, COPD and lung transplantation to improve prevention, diagnosis and treatment of these and other chronic lung diseases.

Dr. Rosas grew up in Colombia, where he went to medical school and decided to move to the United States to pursue a research career. He joined the National Heart, Lung and Blood Institute as a clinical associate in 1997 where he became interested in studying the natural history of common chronic lung diseases and their genetic causes. His research has focused on determining risk factors for pulmonary fibrosis and identifying molecular markers to understand risk levels and diagnose this disease. Dr. Rosas was previously an associate professor of medicine at Harvard Medical School and the director of the Interstitial Lung Disease Program at Brigham and Women's Hospital.

When he is not at work, Dr. Rosas enjoys traveling, exploring new restaurants, the occasional round of golf and spending time with his fiancé, Louise.

Happenings



American Lung Association Honors Dr. Loor for Lung Transplant Contributions

The American Lung Association in Texas honored Gabriel Loor, M.D., at the American Lung Association Fight for Air Climb on May 20.

“Dr. Loor has devoted his professional career to improving the lives of patients with lung disease. He is widely respected for his expertise and compassionate care, but his commitment to lung health goes beyond his clinical practice,” said Charlotte Maffia, executive director of the Lung Association in Texas.

Dr. Loor pioneered the use of portable ex vivo lung perfusion (EVLP) for donation after cardiac death (DCD) lung transplantation, becoming the first surgeon in the United States to do so. These advancements have greatly improved the field of transplants and have led to better outcomes for patients. Dr. Loor's dedication to providing excellent care to patients has earned him many prestigious awards, including the Dr. Charles H. Bryan Annual Clinical Excellence Award in Thoracic and Cardiovascular Surgery at the Cleveland Clinic.

Dr. Loor has also been a staunch supporter of the Fight for Air Climb since 2018 and led a team this year to surpass the \$5,000 fundraising goal.

The Fight for Air Climb is an annual event to support people with lung disease through fundraising and research.

CLINICAL TRIALS

LAMBDA-002 (Lung Registry Study)

The LAMBDA 002 registry study is an observational, longitudinal, multi-center study observing patients undergoing lung transplant. The primary objective of the study is to assess the clinical utility of combining Prospera testing with routine transplant management in detecting acute rejection or infection events in patients receiving Prospera testing as part of their post-transplant clinical care. This non-invasive blood test can help with early detection of acute lung allograft dysfunction and is being studied to see if it can replace invasive tests like a bronchoscopy.

For further information, please contact Puneet Garcha, M.D. at puneet.garcha@bcm.edu or 832-355-9125.

PUBLICATIONS

“Safety and utility of indwelling pleural catheters in lung transplant recipients” in *Clinical Transplantation*

Puneet Garcha, M.D., and Gloria Li, M.D., conducted a retrospective multicenter analysis on consecutive cases of indwelling pleural catheters (IPCs) in lung transplant recipients. The study aimed to assess the incidence of both infectious and non-infectious complications, as well as the rate of auto-pleurodesis.

The results indicated that the use of IPCs in lung transplant patients led to an infectious complication rate similar to that observed in other previously studied populations. Furthermore, they observed a high rate of auto-pleurodesis, suggesting that IPCs could be a viable option for managing recurrent pleural effusions in lung transplant recipients.

“Effect of intraoperative support mode on circulating inflammatory biomarkers after lung transplantation surgery” in *Artificial Organs*

In this study, Gabriel Loor, M.D., and his team investigated the immune response during lung transplantation and its impact on the success of the procedure. They analyzed cytokine expression profiles and outcomes in patients who underwent lung transplantation using different techniques: off-pump, with cardiopulmonary bypass (CPB), or with extracorporeal membrane oxygenation (ECMO). The results showed that using CPB or ECMO was associated with greater release of cytokines and more damage to the transplanted lungs compared to the off-pump approach. These findings contribute to our understanding of immune-related complications in lung transplantation and may guide future approaches to improve outcomes.

“Primary Graft Dysfunction in Lung Transplantation: A Review of Mechanisms and Future Applications” in *Transplantation*

Lung allograft recipients have lower survival rates compared to recipients of other solid organ transplants. The primary reason for this is primary graft dysfunction (PGD), which is a type of acute lung injury that affects around one-third of lung recipients within 72 hours after the transplant. PGD is caused by ischemia-reperfusion injury and is the main cause of early complications and deaths in lung transplant patients. Unfortunately, there are currently no specific treatments available for PGD, so supportive care is the main approach, which has limited effectiveness.

In this review, Gabriel Loor, M.D., and his team focuses on the molecular and innate immune mechanisms involved in ischemia-reperfusion injury leading to PGD. It also explores ongoing research aimed at identifying biomarkers that can better predict PGD and potential targeted interventions that could improve outcomes in lung transplantation.

“Addressing sex-based disparities in solid organ transplantation in the United States - a conference report” in *American Journal of Transplantation*

In this study, Gabriel Loor, M.D., focuses on sex-based disparities in access to solid organ transplantation. A virtual conference was held on June 25, 2021, to address these disparities. The conference focused on kidney, liver, heart, and lung transplantation. Several common themes contributing to sex-based disparities were identified, including barriers for women in referral and wait listing, challenges in using serum creatinine as a diagnostic tool, size mismatch between donors and recipients, considerations for frailty and a higher prevalence of allosensitization among women. The conference also identified actionable solutions to improve transplantation access, such as modifying the current allocation system, performing surgical interventions on donor organs, and including objective frailty metrics in the evaluation process.

“Intraoperative Red Blood Cell Transfusion and Primary Graft Dysfunction After Lung Transplantation” in *Transplantation*

In this study, Gabriel Loor, M.D., and his team explored the association between the amount of intraoperative packed red blood cell (PRBC) transfusion and the occurrence of primary graft dysfunction (PGD) and associated outcomes in patients undergoing lung transplantation. The study utilized data from the Extracorporeal Life Support in Lung Transplantation Registry, which included information from 9 high-volume transplant centers (2 from Europe, 7 from the United States). The study included adult patients who underwent bilateral orthotopic lung transplant between January 2016 and January 2020. The primary focus was on the occurrence of grade 3 PGD within the first 72 hours after lung transplantation. Findings from this multicenter, international registry study indicated that the transfusion of more than 4 units of PRBCs during surgery was associated with an increased risk of grade 3 PGD within 72 hours. Researchers suggest implementing perioperative blood conservation measures as part of efforts to enhance post-lung transplantation outcomes.

The Lung Institute

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