CONSENSUS PERSPECTIVE

Author Insights on the ISHLT Perioperative Utilization of ECLS In Lung Transplantation Consensus

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The International Society for Heart and Lung Transplantation Consensus for Perioperative Utilization of Extracorporeal Life Support in Lung Transplantation consists of 111 Delphi-derived statements across 3 separate manuscripts. These statements aim to provide comprehensive phase-of-care recommendations for international multidisciplinary teams to use in their clinical practice from time of recipient waitlisting to six-months post-hospital discharge. In this article, the multidisciplinary author group provides an abbreviated high-level summary of the consensus for the journal reader.

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1. INTRODUCTION

The practice of lung transplantation has evolved significantly over the past few decades due to ongoing academic contributions from the multidisciplinary teams (MDT) taking care of these patients. One key facet of this evolution has been the increasing utilization of extracorporeal life support (ECLS). Traditionally performed either off-ECLS or with cardiopulmonary bypass, ECLS is now utilized as a preoperative bridge to transplantation, routine intraoperative support, or postoperatively in the intensive care unit. These practice considerations prompted the Standard and Guidelines Committee of the International Society for Heart and Lung Transplantation to develop a consensus statement covering the entire perioperative spectrum of ECLS utilization. The resulting 3 manuscripts, developed by 28 authors from 10 MDT specialties in 9 countries, provide 111 Delphi-derived statements with class of recommendation and levels of evidence to offer guidance in the clinical management and future research development of ECLS in lung transplantation.[1-3]

2. TOP TAKEAWAYS

2.1. Preoperative Takeaways

1. A specialized MDT should provide 24/7 ECLS expertise, with safe staffing ratios and immediate perfusion support.
2. Optimal candidates are those with single-organ failure and rehabilitation potential, while frailty, advanced age, and difficult infections increase risk.
3. Cannulation strategy must balance cardiopulmonary support with mobility, veno-venous for isolated lung failure, veno-arterial for combined cardiopulmonary support, and peripheral access to aid rehabilitation.
4. Awake extracorporeal membrane oxygenation (ECMO) is preferred to reduce sedation, facilitate mobilization, and improve post-transplant outcomes.
5. Anticoagulation requires an individualized approach, including low-dose or anticoagulation-free strategies and use of direct thrombin inhibitors when indicated.
6. Infection prevention relies on periprocedural prophylaxis, dose adjustment for circuit effects, and therapeutic drug monitoring oversight by pharmacists.
7. Continuous monitoring of cardiovascular, pulmonary, and immunological complications is essential, including limb ischemia, Harlequin/Riddler syndromes, and lung-protective strategies.
8. Early palliative involvement and clear futility criteria provide guidance for ethically sound ECLS continuation or withdrawal.

2.2. Intraoperative Takeaways

1. Ongoing MDT discussion forms the foundation for the successful use of intraoperative ECLS.
2. Institutional protocols should incorporate plans for both planned and emergent deployment of intraoperative ECLS.
3. The selection and management of intraoperative ECLS should be tailored to patient's etiology of end-stage lung disease.
4. Veno-arterial ECMO is the preferred form of intraoperative ECLS for lung transplantation.
5. Intraoperative ECMO monitoring and anesthetic management protocols should include organ-system–based approaches, including hemodynamics, pulmonary, hematological, and neurological considerations, tailored to end-stage lung disease.
6. Veno-arterial ECMO flow should be managed in conjunction with native cardiac output through the intraoperative period to avoid warm ischemia, maintain pulsatility, and provide controlled reperfusion.
7. Intraoperative transesophageal echocardiography should be considered a standard monitor in all lung transplantations.
8. Institutional protocols should be designed by the MDT, including objective and subjective criteria for intraoperative ECLS weaning.

2.3. Postoperative Takeaways

1. Institutional protocols should incorporate objective and subjective criteria for both planned and emergent deployment of postoperative ECLS.
2. An organ-system–based protocol, guided by clinical experience and the latest available data, should be utilized for coagulation, cardiovascular, pulmonary, and neuropsychological management in the postoperative ECLS patient.
3. Bedside echocardiography is a key tool to guide hemodynamic management and ECLS weaning trials.
4. Postoperative ECLS care protocols should incorporate MDT input to manage ongoing medical, nursing, rehabilitation, and psychosocial needs of the patients.

3. CONCLUSION

The takeaways listed in this brief Author Perspective article provide an abbreviated high-level overview of the 111 statements within the consensus documents. These documents are meant to serve as a framework for global MDT teams, providing phase-of-care guidance as to the current best practice, but also include forward-looking statements for future research considerations. The quality of data guiding the practice of lung transplantation are heterogeneous or based solely on expert opinion, and as such, these consensus statements are necessary to provide expert MDT recommendations. However, these statements also serve as an academic opportunity to generate hypotheses to scientifically evaluate and continue the evolution of lung transplantation toward better care for our patients.

DISCLOSURE STATEMENT

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APPENDIX A. SUPPORTING INFORMATION

Scanning this QR code will take you to the article: Reed AK, et al. ISHLT Consensus Statement on the Perioperative Use of ECLS in Lung Transplantation: Part I: Preoperative Considerations. J Heart Lung Transplant 2025. https://www.jhltonline.org/article/S1053-2498(25)02201-6/fulltext.

Scanning this QR code will take you to the article: Martin AK, et al. ISHLT Consensus Statement on the Perioperative Use of ECLS in Lung Transplantation: Part II: Intraoperative Considerations. J Heart Lung Transplant 2024. https://www.jhltonline.org/article/S1053-2498(24)01830-8/fulltext.

Scanning this QR code will take you to the article: Martin AK, et al. ISHLT Consensus Statement on the Perioperative Use of ECLS in Lung Transplantation: Part III: Postoperative Considerations. J Heart Lung Transplant 2025. https://www.jhltonline.org/article/S1053-2498(25)01838-8/fulltext.

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