

Extracorporeal membrane oxygenation (ECMO) in lung transplantation

Oxigenación por membrana extracorpórea (ECMO) en trasplante pulmonar

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To the Editor,

Since the first report of intraoperative extracorporeal membrane oxygenation (ECMO) during a lung transplant in 1978, ECMO has become an essential component of transplant protocols¹. There are two main approaches: one aims to avoid extracorporeal circulation entirely, while the other adopts a protocol of initiating ECMO before beginning the transplant².

Major centers with extensive experience that favor ECMO in transplants argue four significant advantages³, as shown in figure 1. While it is preferable to perform a lung transplant without any form of extracorporeal support⁴, this approach significantly limits the cases, excluding patients at high risk of right ventricular failure and requiring rushed procedures in critical situations. The use of extracorporeal techniques broadens the range of patients who can benefit from transplantation. ECMO offers several advantages over cardiopulmonary bypass, including reduced inflammation, the ability to be used both pre- and postoperatively, and the suspension of heparin during surgery. In a global registry of 800 patients, 50% underwent transplantation without extracorporeal support, 20% with cardiopulmonary bypass, and 30% with ECMO. Although

cases without extracorporeal support had the best prognosis, those requiring extracorporeal support were more complex, and when comparing cases of similar complexity, the prognosis for ECMO-supported cases was much better than for those with cardiopulmonary bypass⁴.

The use of perioperative ECMO reduces the incidence of primary graft dysfunction, possibly because it avoids cardiopulmonary bypass, resulting in a lower systemic inflammatory response and better control of hypoxia and reperfusion levels. The treatment of choice for moderate to severe dysfunction is to place the patient on ECMO⁵, which is its main indication post-transplant; delaying this therapy beyond 48 hours significantly increases morbidity and mortality. On the other hand, perioperative ECMO complicates the classification of dysfunction severity, as the criterion of hypoxemia cannot be used.

In conclusion, both approaches have advantages. Although avoiding ECMO reduces the complexity and costs of the process, it limits the number of candidates to those at low risk of right ventricular failure and with good functional oxygen reserve. Using ECMO allows the inclusion of more complex patients and is a better option vs cardiopulmonary bypass. It is also highly beneficial

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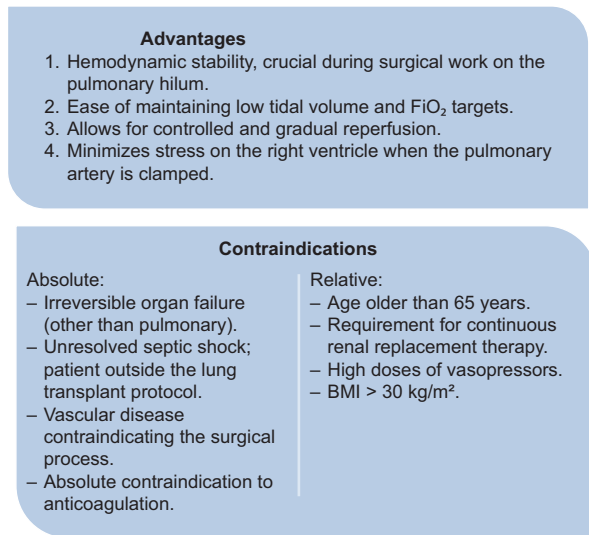


Figure 1. Advantages and Contraindications of ECMO in Lung Transplantation.

in complications such as primary graft dysfunction. Large lung transplant programs should consider ECMO as an option for pre-, intra-, and postoperative use.

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Conflicts of interest

None declared.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

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Right to privacy and informed consent. The authors declare that no patient data appear in this article.

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