

Extracorporeal membrane oxygenation postcardiotomy: “With great power comes great responsibility”

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Once deemed a therapy of last resort, extracorporeal membrane oxygenation support (ECMO) has seen an incredible resurgence over the past decade. The use of venoarterial (VA) ECMO in many patients has, quite literally, been a lifesaver by providing a means of maintaining organ homeostasis while the patient’s myocardium is allowed to recover or as a bridge to durable mechanical therapy. With this tool in the cardiac surgeon’s armamentarium for use in patients with postcardiotomy shock (PCS), we are able to provide ultimate cardiopulmonary support; however, as Dr Whitman¹ points out in his excellent overview, the ability to invoke such heroic efforts does not make it mandatory. Furthermore, too little is known about how and when to use VA-ECMO. There is a genuine concern that this very expensive therapy is being liberally applied with presumed benefit at best, but at worst inflicting harmful prolongation of death and its associated significant psychologic effects on families and healthcare teams.

Dr Whitman¹ reminds us that much of the challenge relates to the marked limitations of this field, which run deep to the very foundation of proper clinical scientific inquiry. Many ECMO programs have carried on with clinical application to save lives when no systematic approach to the implementation and evaluation of this therapy has taken place to inform us as to whether this is in fact taking place. The current literature is riddled with case reports and series that have no shared definitions or inclusion criteria, often blend pathologic processes, and lack proper specifics about technique and decision making.

We must undertake an initiative to ask ourselves “*are we creating survivors...or victims*” with the use of ECMO for PCS.² Examination of survivorship data from patients recovering from noncardiac critical illness reveals a 40% mortality in the first year after “successful” hospital discharge³ with a 3-fold increased risk of disposition to a rehabilitation institution.⁴ Many of these patients will never



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Central Message

With the rapid progression of the use of VA-ECMO for PCS, there is a dire need for academic and clinical surgical programs to make a conscious effort to advance the field.

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return home because of the disability of postintensive care syndrome associated with prolonged intensive care unit care.⁴ With respect to patients who have received VA-ECMO, previous observational studies have provided data on traditional short-term survival outcomes,⁵⁻⁷ but at present there is still a paucity of information on these important long-term health-related quality of life outcomes. It is clear that our future outcome trials also must focus on health-related quality of life, perhaps as the primary end point, rather than mortality.

There is a need for thoughtfulness before continued widespread implementation of VA-ECMO for PCS and other salvage situations. Dr Whitman’s¹ important editorial is timely, providing straightforward local and broader recommendations that the cardiothoracic community can build on to advance the field. At the local level, a conscious effort to use interdisciplinary expertise, organized decision making, and appropriate family education could streamline the use of ECMO to avoid unwanted scenarios of extended futile treatment. More broadly, although randomized trials may be difficult, organized, prospective, and patient-centered specific data collection at a multicenter level would permit analysis to show where the benefit is greatest, especially if long-term outcomes are considered. We would further advocate that in addition to the development of universal definitions on outcomes and cost analyses, there is a need to understand and define what successful survival means to patients and their caregivers. This a necessary step in formulating guidelines for appropriate use and to assist with shared decision making with the patient-caregiver unit to ensure that we are providing the right therapy

at the right time. We must create a mandate for innovative trials examining VA-ECMO focused not only on improving survival but also on a quality of life worth saving!

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