

Postcardiotomy VA ECMO in adult patients: Italian single center experience in 2021

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Dear Editor,

As of today postcardiotomy venoarterial extracorporeal membrane oxygenation (PC VA ECMO) in adult patients has been used only rarely, while recent data have shown a remarkable increase in its use in surgical subjects, as a valuable tool to rescue patients in refractory cardiocirculatory failure that otherwise would almost certainly lead to death.¹

Generally speaking, the available information regarding the use of PC VA ECMO after cardiac surgery is limited and with disappointing outcomes.

The aim of this letter is to describe our experience, as a center specialized in cardiothoracic and vascular surgery, in PC VA ECMO after cardiac surgery.

In 2021 our center run 17 PC VA ECMOs on a total amount of 675 cardiac surgery procedures (2.6%); the cannulation was always peripheral using femoro-femoral cannulas.

Regarding left ventricle unloading two patients received the Impella support and three patients received surgical vent in apical left ventricle.

Median age of the patients was 62 years (25–75 percentiles, 56–72 years), VA ECMO duration was in median 6 days (4–8 days), median Euroscore, the score that calculates the risk of perioperative death, was 5% (1.5–13.5). Median length of stay in intensive care unit (ICU) was 10 days (4–16 days), eight patients (47%) underwent surgical revision for bleeding.

The mortality in the ICU was 64%, recent literature reported a wide range of mortality between 40% and 80%.¹

We analyzed the data by dividing the patients in two groups: discharged and dead. We did not find any statistical difference in ECMO duration ($p=0.33$), Euroscore, ($p=0.22$), surgical revision and length of stay (LOS, $p=0.17$); LOS in ICU was significantly longer in alive patients ($p=0.015$).

We analyzed the data in order to find specific indicators that could guide us in understanding when an early use of extracorporeal life support may be useful. In particular, we lingered on post operative acute kidney injury (AKI) occurrence and the amount of RBC transfusions needed.

We found no difference between survivors and non-survivors regarding AKI incidence; CVVH was performed equally among survivors and non-survivors (33%).

As stated by Brewer et al.² a negative net fluid balance while on ECMO was more likely to be achieved in the patients who survived (67% in survivors vs 8% in non-survivors).

Concerning the blood products transfusions, we had a median of 10.8 packed red blood cells administration per discharged patient and 17 RBC units per dead patient ($p<0.05$). This finding may suggest that a consistent need for blood transfusions while on ECMO support, could be a red flag for a negative turn of events.³

As a result, currently we do not have at our disposal structured protocols to help us decide whether and when to start ECMO support, since this choice cannot be based on specific cut-offs, such as hemodynamic parameters or vasoactive drugs dosages. In fact, we prefer to tailor our therapeutic strategy on the individual patient as a result of a joint decision-making process carried within the team: senior surgeon and anesthesiologist/intensivist.

Our attitude toward extracorporeal life support tends to be proactive: we head for it as soon as the patient does not respond in a satisfying manner to increasing levels of vasopressors or volume loading, together with clear indicators of a negative result, such as a LVEF < 20, severe right ventricle failure, early signs of MOF, refractory ventricular arrhythmias, raise of blood lactates.⁴ Our priority is not to waste precious hours that can be determining for the patient's outcome.

Overall we favor a rapid but thoughtful assessment over strict protocols.

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