Commentary: Early extracorporeal membrane oxygenation strategy for postcardiotomy shock

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We applaud Mariani and colleagues1 on their paper as well as their successful embarkment of the registry, combining the challenging data of 2000 patients with postcardiotomy shock from 34 centers. In this Journal, they published one of the largest observational studies to investigate the clinical outcomes of intra- or postoperative venoarterial (VA) extracorporeal membrane oxygenation (ECMO). Intraoperative ECMO showed better clinical outcomes. Unsurprisingly, the indication for initiation of ECMO differed between these groups. Failure to wean off of cardiopulmonary bypass was the indication for ECMO in 60% of the intraoperative VA ECMO group, whereas cardiogenic shock or cardiac arrest were the main indications for VA ECMO in the postoperative ECMO group. Initiation of intraoperative ECMO occurred more often in “expected” situations and, by definition, in the prepared setting of the operating room; in contrast, postoperative ECMO was more frequently initiated in “unexpected” situations and in settings with less standardization and preparation. With these findings providing incremental affirmative data to the previous retrospective studies, should we move forward toward more aggressive usage of ECMO in the operating room for postcardiotomy shock?2,3 Not so fast.

First, the study does not attempt to prove an association between the early ECMO use and better outcome. As the authors intended, the study presents a descriptive dataset, and the comparative analyses did not adjust for the confounders. This may be plausible, given that some of the aforementioned differences cannot be balanced, and that some of the critical data related to profoundness of the shock, such as amount of the pharmacologic support, are not available.

Second, a recent randomized study suggests that early implementation of ECMO may increase the risk of ECMO-related complications.4 The ECMO-CS (Extracorporeal Membrane Oxygenation in the Therapy of Cardiogenic Shock) trial, enrolling 117 patients with severe or rapidly deteriorating cardiogenic shock, failed to show clinical utility of the immediate implementation of ECMO compared with an early conservative strategy. Of note, ECMO was used in only 39% of the early conservative strategy group, suggesting that some of the patients randomized into the immediate ECMO group may not have required ECMO. This study, however, did not include patients with postcardiotomy shock. When to implement ECMO for postcardiotomy shock remains uncertain; however, when ECMO is implemented, high mortality remains certain.

CENTRAL MESSAGE
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References