

# Commentary: A hybrid strategy for extracorporeal membrane oxygenation to ventricular assist device transition: Is doing less more?



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Disclosures: Authors have nothing to disclose with regard to commercial support.

Received for publication Nov 20, 2018; accepted for publication Nov 21, 2018; available ahead of print Dec 28, 2018.

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J Thorac Cardiovasc Surg 2019;158:e11-2

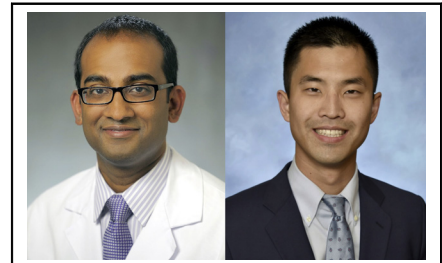
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<https://doi.org/10.1016/j.jtcvs.2018.11.071>

Venoarterial extracorporeal membrane oxygenation (VA-ECMO) is a well-established mode of mechanical circulatory support for patients with cardiopulmonary collapse. With rapid peripheral initiation, it can restore perfusion and oxygenation effectively, mitigate further end-organ injuries, and serve as a bridge to a more durable platform.<sup>1</sup> In our experience, nearly 80% of patients who were rescued with VA-ECMO before transitioning to ventricular assist device (VAD) or heart transplantation were alive at 1 year.<sup>2</sup> Despite its lifesaving potential, however, VA-ECMO is also known to cause a wide range of complications, especially with prolonged use, which can prevent stabilization necessary to transition to the next platform.<sup>2</sup> In this issue of the *Journal*, Quan and colleagues<sup>3</sup> describe one such challenge, the case of a young patient who had severe refractory pulmonary edema develop in the setting of increased afterload on the left side of the heart, with consequent pressure overload and distension.

Various strategies to reduce left ventricular distension in this setting have been reported previously, such as adding a left ventricular vent or placing an Impella device (Abiomed, Danvers, Mass) to augment native output.<sup>4,5</sup> Each of these strategies is associated with its own set of complexities and potential complications. The experience of Quan and colleagues<sup>3</sup> in carrying out a percutaneous atrial septostomy to create an efficient left-to-right shunt in this scenario, which successfully reduced the left atrial pressure by more than 50% and eliminated the pulmonary edema, epitomized the less-is-more principle that is important in treating this patient population.<sup>6,7</sup> It was the least invasive and least traumatic intervention, which was nonetheless perfectly adequate in creating an opportunity for weaning from VA-ECMO and for VAD implantation. Furthermore, in using a hybrid operating room to close the septostomy



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### Central Message

Percutaneous atrial septostomy and closure may allow a minimally invasive transition from extracorporeal membrane oxygenation to a ventricular assist device as a part of a hybrid operating strategy.

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percutaneously, Quan and colleagues<sup>3</sup> were also able to retain a minimally invasive approach during VAD implantation, although the benefits in this critically ill population remain to be further explored.

Despite its efficacy in this report, however, it is too early to consider percutaneous atrial septostomy and subsequent closure broadly among patients with inadequate decompression on VA-ECMO. It should only be judiciously applied in settings where the patient requires a stopgap measure to bridge to a more durable platform without any other significant contraindications. Otherwise, its benefit in terms of prognosis will be limited. In addition, the additive cost of an Amplatzer device (St Jude Medical, St Paul, Minn), as opposed to the inexpensive surgical closure, ought to be given adequate consideration. In an era of rising health care costs, the overall impact of concomitant procedures on the margins of VAD implants should be considered in our attempts to expand the application of destination mechanical circulatory support therapy widely.

Quan and colleagues<sup>3</sup> are to be congratulated for their innovative approach with an excellent outcome. By incorporating percutaneous expertise into traditional bridge strategies, they were able to rescue a patient in severe respiratory failure refractory to VA-ECMO support without adding any significant surgical trauma. Their report further affirms percutaneous atrial septostomy and subsequent

closure as an important component of a multifaceted strategy for stabilization of select patients on VA-ECMO and heralds a promising era of increasing intersections between the field of transcatheter interventions and mechanical circulatory support.

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