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Commentary: Pumping up the definition of Fontan candidacy and an old-school trick

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Adachi and colleagues poignantly illustrate the role of converting a Glenn to a Fontan at the time of ventricular assist device (VAD) implantation.¹ Moreover, for this specific context, they demonstrate some of the potential advantages of the “old-school” atriopulmonary Fontan. I congratulate the authors for introducing these notions. I find them very appealing and agree with all points the authors make. Any report that improves our understanding of how to better mechanically support single-ventricle patients is a good report.

For this particular approach to fulfill its potential, the patient should be a Fontan candidate—in a very nontraditional sense, as we have to disregard systolic ventricular dysfunction (reason for the VAD) and/or atrioventricular valve insufficiency, as well as elevated pulmonary artery and ventricular end-diastolic pressures. In other words, we must invoke the assumption that restoration of normal cardiac/pump output will result in a reduction of elevated pressures to typical candidacy-qualifying values.

Is this a valid assumption? It seems reasonable, but this is in some respects newly charted territory. In reality, it can be difficult to predict acceptable Fontan pressures when converting a low cardiac output Glenn with a Glenn pressure of 30 mm Hg to a VAD/Fontan with normal or supranormal cardiac output. Throw in the collateral burden, and it can be less than an exact science. In the authors’ 2016 report of a nonfenestrated Fontan, the pressures were “mid-teens.”²

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CENTRAL MESSAGE

At ventricular assist device implantation, conversion of the Glenn to an atriopulmonary Fontan may provide more effective mechanical support in properly selected patients.

In the current report, the Fontan pressure was 12 mm Hg, albeit with a large fenestration.

I qualify it as personal opinion, but given the unpredictability, and until we gain more experience with this approach, it might be prudent to include a snared fenestration in all patients that could be adjusted or simply closed at the conclusion of the case, depending on Fontan pressures. Saturations in the mid-80s to low-90s are a small price to pay for the potential upside.

Should this concept be considered in an older infant? There are no data, but probably not. I expect more guidance to evolve as the authors (and others) gain more experience with this approach. For now, and irrespective of the pump used, it would be prudent to consider this only at or beyond an age when an otherwise typical Glenn would be considered for Fontan. Moreover, the downsides of “dichotomous systemic venous return” are likely more substantial in an older ambulatory patient.

I congratulate and thank the authors for their insight and for providing an important step in the right direction and anticipate further reports from them on this topic.

References

- Adachi I, Tunuguntla H, Elias B, Masand PM, Tume SC. Atriopulmonary connection for mechanically assisted Fontan completion: classic technique for modern strategy. *J Thorac Cardiovasc Surg*. 2020;3:307-9.
- Adachi I, Williams E, Jeewa A, Elias B, McKenzie ED. Mechanically assisted Fontan completion: a new approach for the failing Glenn circulation due to isolated ventricular dysfunction. *J Heart Lung Transplant*. 2016;35:1380-1.