

See Article page 565.



Commentary: High achievement occurs under the framework of high expectations

Jason W. Greenberg, MD, and
David L. S. Morales, MD



Jason W. Greenberg, MD (left), and David L. S. Morales, MD (right)

Cardoso and colleagues¹ offer in their report, “Improving Outcomes for Transplantation in Failing Fontan—What Is the Next Target?” a rather sobering look into the world of adult heart transplant for the failing Fontan. Among the 31 patients included in this series, 9 (29%) experienced in-hospital mortality, which the authors attribute primarily to major intraoperative hemorrhage (occurring in 23%, with an odds ratio of 30). Etiologies of major intraoperative hemorrhage in this cohort included technical error in 43% (3/7) patients (damage to surrounding structures and anastomotic leak) and coagulopathy in the remainder. As the authors highlight, previous reports have cited high mortality rates among this patient cohort—26% in-hospital mortality in a large population database study by Hernandez and colleagues² in 2020 and 16% in a single-institutional study by Pundi and colleagues³ in 2016—although other centers have achieved better in-hospital mortality rates (zero percent in a single-institution report by Reardon and colleagues⁴ in 2018).

The present report also underlines the myriad of complications that can—but need not necessarily—accompany heart transplant in this patient population. Cardoso and

CENTRAL MESSAGE

Outcomes after transplant in patients with Fontan failure remain suboptimal, but superior outcomes can be achieved through continual innovation and a strive to improve standards of care.

colleagues¹ report a stroke rate of 23%, post-transplant renal injury requiring renal-replacement therapy in 77%, extracorporeal membrane oxygenation (ECMO) requirement in 29%, bowel ischemia necessitating bowel resection in 1 patient, and limb amputation in 3 (10%). For comparison, the rates of these complications reported by Hernandez and colleagues² were as follows: stroke—5%, renal injury requiring dialysis—0%, ECMO requirement—16%. Reardon and colleagues⁴ reported stroke—0%, renal failure requiring dialysis—20%, ECMO requirement—5%.

We applaud Cardoso and colleagues’¹ very candid report highlighting their struggles and opportunities for improvement. It is important to always keep in mind that simply receiving a transplant is not the goal; rather, being alive and healthy for many years following transplantation is. Therefore, ensuring that Fontan patients are evaluated for transplant before becoming poor candidates is essential. Clearly, this is easier said than done.

When Fontan patients present in a poor state, our institution and others have successfully used systemic ventricular assist devices as a bridge to better candidacy or chronic therapy. Unfortunately, no patients in this series were on preoperative ventricular assist device support. The high rates of operative re-exploration for bleeding and ECMO

From the Department of Cardiovascular Surgery, Cincinnati Children’s Hospital Medical Center, Cincinnati, Ohio.

Disclosures: Dr Morales is a consultant for Abbott Medical, Inc; a consultant for Azyio, Inc; a consultant and member of the advisory board for Berlin Heart, Inc; a consultant and member of the advisory board for Cormatrix, Inc; a consultant for Syncardia, Inc; and a consultant and member of the advisory board for Xeltis, Inc. Dr. Greenberg reported no conflicts of interest.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling or reviewing manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.

Received for publication Aug 13, 2021; revisions received Aug 13, 2021; accepted for publication Aug 16, 2021; available ahead of print Sept 1, 2021.

Address for reprints: Jason W. Greenberg, MD, Heart Institute, Department of Cardiovascular Surgery, Cincinnati Children’s Hospital Medical Center, 3333 Burnet Ave, Cincinnati, OH 45229 (E-mail: jasongreenbergmd@gmail.com).

JTCVS Open 2021;8:576-7

2666-2736

Copyright © 2021 The Author(s). Published by Elsevier Inc. on behalf of The American Association for Thoracic Surgery. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

<https://doi.org/10.1016/j.xjon.2021.08.023>

in this report also highlight the importance of preoperative risk stratification, impeccable operative technique, and intraoperative management. These rates of ECMO and bleeding can and should be avoided. There is a growing wave of Fontan patients with failing circulations approaching our centers, and we should be able to provide strategies that provide these patients expectations consistent with our other patients who undergo heart transplant. Although this is quite a difficult task, we must continually drive to do better, keeping in mind that high achievement occurs under the framework of high expectations.

References

1. Cardoso B, Kelecsenyi A, Smith J, Jansen K, De Rita F, Nassar MS, et al. Improving outcomes for transplantation in failing Fontan—what is the next target? *J Thorac Cardiovasc Surg Open*. 2021;8:565-73.
2. Hernandez GA, Lemor A, Clark D, Blumer V, Burstein D, Byrne R, et al. Heart transplantation and in-hospital outcomes in adult congenital heart disease patients with Fontan: a decade nationwide analysis from 2004 to 2014. *J Card Surg*. 2020; 35:603-8.
3. Pundi KN, Pundi K, Driscoll DJ, Dearani JA, Li Z, Dahl SH, et al. Heart transplantation after Fontan: results from a surgical Fontan cohort. *Pediatr Transplant*. 2016;20:1087-92.
4. Reardon LC, DePasquale EC, Tarabay J, Cruz D, Laks H, Biniwale RM, et al. Heart and heart–liver transplantation in adults with failing Fontan physiology. *Clin Transplant*. 2018;32:e13329.