the long term. Even transplantation is not a durable solution, and so exploring alternative solutions for these patients is a necessary and desirable endeavor.

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Commentary: Time for a new maxim

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In this study,¹ we are reminded that initial decision making regarding 1- versus 2-ventricle pathways for complex anatomical substrates is a subjective process and is subject to institutional, experiential, and societal influences. The consequences of this decision may not be evident for decades.

Twenty years ago, we heard the maxim that *a good Fontan is better than a bad 2-ventricle circulation*. This was often said in contemplation of an operation that required creation of a complex pathway from left ventricle to aorta. The emerging narrative about long-term Rastelli procedure outcomes seemed to support this notion.² We and others reported better-than-expected outcomes of the Fontan circulation^{3,4} and in the drive to reduce operative mortality, a subset of 2-ventricle candidates presumably underwent Fontan procedures. With the suite of investigations currently employed to assess ventricle size, systolic and diastolic function, better imaging, and perioperative care as well as accumulated data and wisdom, such patients may now be more appropriately and objectively streamed. Nevertheless, there remains a sizeable, subjectively defined gray area. In this experience, it was notable that 8 asymptomatic patients who underwent elective

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Bronchial cast from a patient with Fontan circulation.

CENTRAL MESSAGE

When 1-step conversion from Fontan to biventricular physiology is done early and electively, good outcomes can be achieved. In those who require staged procedures, the benefit is less clear.

and primary conversion to 2 ventricles all survived and may, in retrospect, have been good 2-ventricle candidates.

More recently, Fontan pessimism has waxed, with the maxim changing to: *There is no such thing as a good Fontan*. No doubt this view is gaining ground because of the burgeoning population of adults with a deteriorating Fontan circulation, including impaired exercise capacity, arrhythmia, heart failure, and multisystem dysfunction (eg, liver, kidney, pulmonary, lymphatic, and others).⁵ A Fontan circulation with 2 ventricles does not fare better than single-ventricle Fontans,⁶ highlighting the deficiencies of the Fontan circulation itself. Such is the belief in this maxim that the conclusion of this article¹ is that elective takedown to 2 ventricles should be considered in “well-functioning” Fontan patients. The caveat? Whether or not one intervenes, functioning well in the present is an excellent predictor of functioning well in the future. Absence of a contemporaneous comparison group of well Fontan patients who did not undergo biventricular repair and Fontan transplant recipients remains a

methodological deficiency in this field. Perhaps the closest we come is in the comparison of Fontan patients with 2 ventricles versus those who have undergone major surgery to achieve 2 ventricles.⁷ Length of follow-up is too short to make a fair comparison, but it would be surprising if there was a major divergence in survival over time.

In the wake of this major contribution, we are left with a more nuanced maxim focused on a subset of people with a Fontan circulation: *A not-so-bad 2-ventricle circulation is better than a bad Fontan.* For the patients in this series who underwent staged recruitment of their systemic ventricle, there was substantial mortality and ongoing morbidity in replacement of mitral valves, Ross-Konno procedures, and pacemakers. Thirty-six percent were left with important elevations of pulmonary arterial pressure and 2 were functionally 1.5-ventricle circulations. Although it is reasoned that this will be well tolerated in the future, survival benefit compared with chronic Fontan failure or transplantation is yet to be established.

We have learned much from this experience, not the least of which is a list of key acceptable parameters for left ventricular end diastolic pressure and volume associated with successful biventricular conversion. As we move forward,

we should work toward acquiring and validating data points with relevant comparators and perhaps less on the maxim of the day.

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Commentary: Biventricular conversion: A decade of data delivers more debate

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Doulamis and colleagues¹ report a retrospective report of 23 patients who underwent biventricular conversion (BiVC)

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CENTRAL MESSAGE

Despite a decade of data regarding biventricular conversion, the debate about the wisdom of this strategy compared with single ventricle palliation or transplantation continues.