A one-way street no more?

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Disclosures: Author has nothing to disclose with regard to commercial support.

Received for publication Aug 28, 2018; accepted for publication Aug 28, 2018; available ahead of print Oct 12, 2018.

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J Thorac Cardiovasc Surg 2019;157:327-8

0022-5223/\$36.00

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<https://doi.org/10.1016/j.jtcvs.2018.08.068>

In many congenital heart centers, maybe even the majority, a neonate presenting with critical aortic stenosis will end up, without much discussion, undergoing a balloon dilation, without the benefit of a multidisciplinary discussion with the surgeons. The study in this issue of the *Journal* by Vergnat and colleagues¹ from Sankt Augustin, Germany, a center with specific expertise in this topic, demonstrates with a data set that includes 103 neonates that open valvuloplasty resulted in less need for reoperation than did balloon valvuloplasty, especially in cases in which a tricuspid arrangement could be achieved. Survivals were similar. Vergnat and colleagues¹ also describe what they call a “balanced” decision-making approach, assigning patients with left ventricular dysfunction to balloon valvuloplasty and using a so-called “gentle” balloon valvuloplasty as an intermittent step to stabilize the patient before open valvuloplasty. Their conclusion was that “the common acceptance that BV [balloon valvuloplasty] is less invasive was not verified.” It is important to note that the median follow-up in this series was 13 years, the longest follow-up of any reported series.

The variables to be taken into account when faced with a neonate with critical aortic stenosis are many, and a considerable amount of judgment is required to do the right thing. It is important to look at left ventricular size and function, mitral valve size and function, aortic annulus, aortic valve morphology, arch morphology, blood flow directionality, and prostaglandin dependency, as well as overall clinical status. On the one end of the spectrum, it may be wisest to avoid balloon dilation and go down a single-ventricle route. The middle road may include a balloon dilation that will delay but likely not eliminate the need for surgery; at the other end of the spectrum, an open valvuloplasty might solve the problem for decades, especially if a tricuspid

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Central Message

The study by Vergnat and colleagues demonstrates that neonatal critical aortic stenosis management has reached equipoise between surgery and catheterization.

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arrangement can be obtained. If one wants to use the most appropriate procedure for a given patient, studying aortic valve morphology and annular size is thus paramount. One of the problems is that the predictive ability of standard echocardiography is limited in this setting,² a fact confirmed by Vergnat and colleagues,¹ who found little correlation between echocardiographic and intraoperative findings.

As an aside, the most commonly used term, *balloon aortic valvuloplasty*, also used in the article of Vergnat and colleagues,¹ should not be used. A *plasty*, from the Greek word *plastos*, is the act of molding a defect to restore form and function.³ As has been amply documented intraoperatively, a balloon dilation only tears the stenotic valve, typically in the region between the right and left commissures. *Aortic valve balloon dilation* is therefore a much more appropriate term. Similarly, a surgical aortic valvotomy (simple opening of a commissure) is not the same as a surgical aortic valvuloplasty, in which more is done to the valve than just opening it with a scalpel. The issue of precise nomenclature is not just pedantic redundancy. A balloon can only tear, whereas a valvuloplasty done under direct vision allows several additional maneuvers to be done, such as leaflet thinning and halving, patch extension, and so on. Surgical treatment of the valve thus can be individually tailored

according to the anatomy, as Vergnat and colleagues¹ emphasize as well. This is a huge, and often overlooked, advantage of open surgery. In summary, this important study implies that at a bare minimum, the case of every neonate with critical aortic stenosis should be discussed in a multidisciplinary fashion, with surgeons weighing in, taking into account all morphologic and clinical variables. This is not a one-way street anymore.

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