

EDITORIAL COMMENT

Is the Debate Finally Over?*



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Nearly 10 years ago I was asked to write an editorial comment regarding the Melbourne experience comparing surgical aortic valvotomy and transcatheter balloon dilatation for congenital aortic valve stenosis.¹ The authors of that manuscript had concluded that surgical valvotomy achieved a better result than balloon dilatation.² I opined that although it was possible that in *selected cases* this might be true, there are clearly many patients who would be better served by an initial balloon dilatation.

Interventional cardiologists have the advantage in this “competition” in that there have been steady incremental improvements in the catheterization lab: smaller French catheters, higher pressure balloons, lower profile balloons, and improved imaging modalities. The strategy has also changed to serial dilations over time, using initially smaller balloons. These refinements have all contributed to improved outcomes.

The transcatheter results presented by the Toronto group in this issue of *JACC: Advances* confirm the improved and now truly excellent outcomes from these advances.³ Over a 15-year period, 139 infants underwent transcatheter balloon dilatation of aortic valve stenosis. Half of these patients were neonates. The mean peak-to-peak gradient dropped from 52 to 18 mmHg. There were no deaths directly related to the transcatheter intervention. Only 26

patients had a repeat balloon aortic valvotomy. On long-term follow-up, only 25 of the 139 patients have required a surgical intervention. This means that fully 80% of their patients have not required surgical intervention. The freedom from aortic valve replacement at 10 years is 86%. In the patients who did require surgery, the procedure was not a repeat sternotomy!

We must remember that both surgical aortic valvotomy and transcatheter balloon dilatation are only palliative in nature. We know that some of these patients will require another intervention. There is an advantage to avoiding a sternotomy and cardiopulmonary bypass in a patient who is going to eventually require multiple operations culminating in aortic valve replacement or a Ross procedure. Reintervention after a balloon dilatation is much different than reintervention after a sternotomy! In addition, the physiologic stress of a cardiopulmonary bypass run in a neonate versus a balloon dilatation is an important factor not to be downplayed.

I am confident that there will continue to be technical advances within the world of interventional cardiology. The improvement in equipment for the actual imaging during the intervention has dramatically improved over the past 10 years and will continue to improve. I am also confident that cooperation of clinicians with industry will keep improving the catheters that are used.

Given the outstanding results from the Toronto group, I believe that the procedure of choice for the majority of neonates and infants with critical congenital aortic valve stenosis is now balloon aortic valvotomy. In my personal surgical experience, the last time that I performed an aortic valvotomy on a neonate was well over 15 years ago. In fact, we may now be able to stop debating about which approach (surgical versus transcatheter) is better for neonatal and infant aortic valve stenosis.⁴

Since writing that editorial in 2013, it is clear to me that interventional cardiologists have demonstrated

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that balloon aortic valvotomy is the clear winner in the competition between surgical and transcatheter techniques. The various surgical versus transcatheter reviews were like a pendulum going back and forth. The pendulum between surgical and balloon valvotomy has swung and now appears to be tilting toward better outcomes with balloons. In fact, the pendulum may now be fixed in the balloon dilatation camp! The 40 years of experience and the steady incremental improvements in technology and strategy have made this possible. These advances clearly have made lives better for thousands of children with aortic valve stenosis. For this surgeon, transcatheter

balloon aortic valvotomy is the procedure of choice for infants with aortic valve stenosis.

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