



## The paradox of the surgically implanted transcatheter valve

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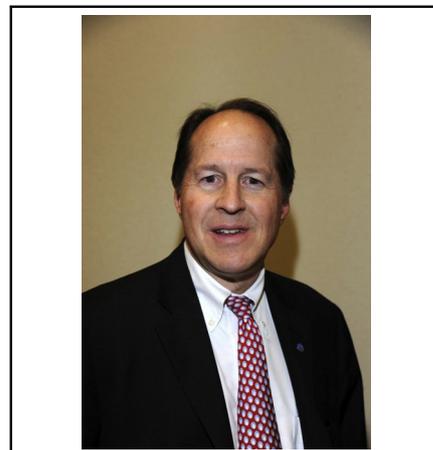
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In this issue of the *Journal*, Emani and colleagues<sup>1</sup> from Boston Children's Hospital have provided an update on the outcomes of a novel surgical strategy for valve replacement in infants and children. Emani and colleagues<sup>1</sup> introduced the use of a surgically placed modified stented jugular vein graft valve in 2010. They have now used this strategy in 42 patients. This strategy offers a novel solution to a serious problem. In many instances there are no good alternatives for valve replacement in infants and young children. Their concept fills a niche that has been waiting for a solution. The survival of 77% at 2 years in this very complex group of patients is quite remarkable.

There are actually several advantages of this strategy. First, the valve can be used in situations in which there is no available prosthetic valve that is small enough to fit in the annulus. Currently, the smallest mechanical valve available is a 15-mm valve. The stented jugular vein graft in contrast works even at a diameter of 10 mm. The initial median size expansion of the valve was 14 mm in their series. A second advantage is that the valve, once in place, does not require anticoagulation with warfarin. The third advantage, which appears to be favorable on the basis of the short-term follow-up, is that the valves can be serially dilated (transcatheter approach) as the child grows. This of course is a distinct advantage relative to the currently implanted mechanical valves which require open surgical replacement as the child outgrows the valve.

In addition to describing for us the short-term outcome of this novel strategy, Emani and colleagues<sup>1</sup> have shared their techniques of valve modification to solve in part several of the problems encountered earlier in the series. These modifications include stent shortening, addition of a pericardial sewing cuff, and fixation of the distal stent to the inferior left ventricular wall during mitral valve implantation.

Emani and colleagues<sup>1</sup> have highlighted—and I would emphasize—that this is not standard therapy at the current time, but rather an approach that should be used when standard surgical strategies have not been successful. Although



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### Central Message

Although developed as a transcatheter valve, the stented jugular vein graft valve can be implanted with standard surgical techniques, with distinct potential advantages for infants and small children.

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it would be interesting to perform a prospective comparison of the expandable valve with mechanical valves or other tissue valves, this may not be possible because of the heterogeneity of this patient population.

One note of caution that I would raise relates to the late complications noted in previous trials with tissue valves on the left side of the heart in children. The recent experience with the Mitroflow bovine pericardial bioprosthesis (LivaNova PLC, London, UK)<sup>2</sup> and the Perimount Magna (Edwards Lifesciences Corp, Irvine, Calif)<sup>3</sup> on the left side of the heart should give one pause. Both of these valves were found to have unusually accelerated progression to severe stenosis in young children. The follow-up of Emani and colleagues<sup>1</sup> at 2 years is good; however, there is always the possibility that premature calcification and stenosis of these valves, particularly those placed on the left side of the heart, could lead to the need for early explantation.

On the basis of these short- to intermediate-term results, it appears that the concept of a surgically implanted stented jugular vein graft valve is proving to be safe and efficacious. The opportunity for valve expansion with transcatheter techniques and avoidance of warfarin are important side advantages of this strategy. In these infants and children, for

whom there are limited options, this appears to be an important addition to our surgical strategies.

### References

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