See Article page 1567.

Commentary: Aortic valve reconstruction with neocuspidization—A word of caution?

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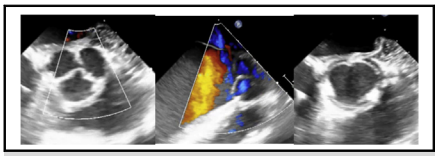

Three echocardiographic views of an aortic valve reconstructed with native pericardium.

CENTRAL MESSAGE

With good short-term results, the aortic valve neocuspidization holds promise in pediatric aortic valve disease. Until midterm results are available, however, one cannot advocate for generalization.

The history of cardiac surgery is riddled with examples of failed operations and failed patches, prostheses, and implants.[1,2] They typically start on a wave of enthusiasm, sometimes (for pediatric cardiac surgery) as an offshoot of a strong adult experience, such as what we are witnessing here with the aortic valve reconstruction (AVRec) neocuspidization (Ozaki) procedure. This is not necessarily bad, as long as patients do not get hurt, and it sometimes even leads to progress. Provided that these procedures are performed in the proper scientific context and with appropriate scrutiny, as was done in this particular setting of a large academic center, these procedures or implants can morph into better operations for our patients.

The current experience with the AVRec reported by Baird and colleagues[3] in this issue of the *Journal* is the largest pediatric series published to date. There are otherwise only 2 other published series or anecdotal experiences.[2,4] Overall, the short-term results have been good. This also mirrors my own group's experience with a smaller group of patients.[5] Of course, this experience encompasses only a short follow-up, and Baird and colleagues[3] are careful to emphasize that. These surgeons in Boston are to be congratulated for trying to expand the field, especially in an area such as pediatric aortic valve surgery, where no ideal options exist. At a median follow-up of 8 months, they found that 96% and 91% of patients had less than moderate regurgitation and stenosis, respectively. Those are excellent short-term results indeed, and I can attest from personal experience to the beautiful echocardiograms one gets after an AVRec, with tall leaflets and a large zone of apposition. So the question is not whether the procedure works; it works. Further questions are unavoidable, however, such as, how long will the repair last in growing children? What is the ideal patch material? (There is a graveyard full of obsolete patches that have not stood the test of time.) Why do we think native pericardium or any new artificial patch will fare better than in the past? Other questions arise. What will be the mode of failure? Will it be mainly neocusp stiffness and aortic stenosis (some of which was seen already in this experience), or aortic insufficiency? If native pericardium is used, what is the ideal fixation time? Do we need to fix native pericardium at all? How can we avoid the dreaded complication of coronary ostial obstruction from a reconstructed leaflet? What is the role of warfarin anticoagulation postoperatively (the presented data seem to be in favor), which carries a certain risk in itself? Will we be able to use transcatheter aortic valve replacement technologies in the setting of these high leaflets that may obstruct coronaries?

It is also important to differentiate the use of AVRec in a preteen or teenage patient from the use of AVRec in an infant or young child. There should not be a "cookie cutter" approach here. In the former population, I am personally all in favor of doing an AVRec, especially in the setting of primarily aortic regurgitation with a dilated aortic annulus, a setting in which the Ross procedure requires annular fixation and possibly has a less optimal long term track record. For an infant or young child, however, with a lot of somatic growth ahead, I would be hesitant to do an

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AVRec, especially in the absence of long-term data. A well-executed Ross procedure would be much more indicated here. Other settings in which a Ross or Ross-Konno procedure seems to be better suited would be the subsets of cases in which additional aortic annular enlargement (n = 8) or aortic sinus enlargement (n = 20) was required. The added geometric complexity will make the procedure less reproducible, and my guess is less reliable, in the long term.

In conclusion, this is an important spearhead series. Busy, high-volume centers should perform it, refine it, and report on it. Until we see midterm results at least, however, one cannot advocate for the wide generalization of the AVRec in pediatric cardiac surgery.

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See Article page 1567.

Commentary: Ozaki valve reconstruction in children: Is it still a valve replacement?

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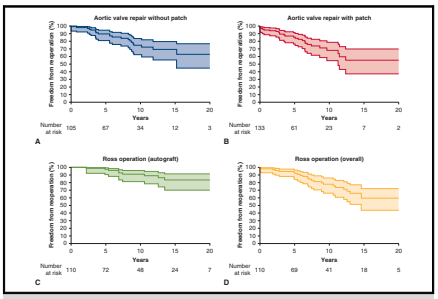

Freedom from reoperation after aortic valve repair or Ross operation in children > 1 year.

CENTRAL MESSAGE

It is unknown whether the Ozaki technique for aortic valve reconstruction in children and young adults will provide outcomes similar to those of aortic valve repair or the Ross operation.

An interesting article in the current issue of the *Journal* by Baird and colleagues[1] describes their short-term results with aortic valve reconstruction with neocuspidization (Ozaki technique) in children and young adults. They reported freedom from moderate or greater aortic valve regurgitation of 88% at 2 years, freedom from moderate or greater aortic stenosis of 88% at 2 years, and freedom from reoperation of 91% at 1.5 years, although the number of patients at each time point is unknown. There were no operative deaths and 2 late deaths after discharge. It seems important to emphasize a few points to put this fascinating article into a proper perspective. Because it is always difficult to speculate on whether others would or would not be willing to apply the Ozaki technique to children and young adults, we choose to view the results of Ozaki technique in these patients through the prism of objectivity reflecting on our current practice in Melbourne.

First, it should be noted that all but 1 of their 57 patients were aged more than 1 year. It also should be emphasized

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