Letters to the Editor

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- Include no more than 500 words of text, three authors, and five references
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Letters commenting on an article published in the JTCVS will be considered if they are received within 6 weeks of the time the article was published. Authors of the article being commented on will be given an opportunity to offer a timely response (2 weeks) to the letter. Authors of letters will be notified that the letter has been received. Unpublished letters cannot be returned.

Repair of coarctation of the aorta To the Editor:

I read with interest the article by Yamada and colleagues¹ in which they describe a case of repair of coarctation of the aorta in a 57-year-old patient. Surgical correction entailed cardiopulmonary bypass using a "modified" technique of central cannulation and graft interposition using a Dacron conduit.¹ Venous access was established through the right femoral vein, and arterial access was established by cannulating both the right femoral artery and ascending aorta. The proximal anastomosis between the graft and distal aortic arch was constructed using an "open technique" with complete circulatory arrest at 21.5°C. The duration of circulatory arrest was not mentioned, although it was presumably short because it corresponded to the time required to construct the proximal anastomosis. The distal anastomosis was performed while the head and body were being reperfused. This approach was favored to avoid the risks of crossclamping the fragile aorta, which would have been otherwise necessary with a conventional approach. The authors advocate the use of this technique, including circulatory arrest, as the standard approach for surgical correction of coarctation in adults.

Surgeons rarely encounter coarctation of the aorta in adults because fewer patients escape detection early in life, and those who do are often treated in adulthood with angioplasty and stenting.² However, surgical repair can be difficult. Although spinal cord ischemia is not a common occurrence because of the presence of a well-developed collateral network, aortic crossclamping of the pressurized and fragile proximal aorta can pose a risk. Because the use of cardiopulmonary bypass may increase the safety of the operation, various strategies of cardiopulmonary bypass and techniques of cannulation have been used. Among these, the strategy described by Yamada and coworkers¹ has the value of being applicable to extreme cases in which the aortic wall is particularly fragile and vulnerable to injury from crossclamping or during

reoperations when clamping the aorta may not be feasible. Circulatory arrest has been used successfully by other groups for complex reoperations on the aorta after coarctation repair^{3,4} and in reoperations for re-coarctation.⁵ However, in some patients requiring primary repair, aortic clamping may be performed safely and effectively using alternative techniques and avoiding circulatory arrest. With the same strategy of cannulation and cardiopulmonary bypass support described by the authors, using mild systemic cooling, the aorta can be clamped at the distal arch during a very transient decrease in perfusion flow. Once the clamp is applied, full flow can be restored and maintained throughout the entire repair, thus providing continuous systemic, myocardial, and cerebral perfusion. Because circulatory arrest is not free from complications, advocating its routine use in every adult patient presenting with aortic coarctation, as proposed by the authors on the basis of a single observation, does not seem to be justified. Rather, this strategy should serve as a valuable adjunct in selected patients undergoing complex repairs or reoperations.

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Reply to the Editor:

We appreciate Ricci's interest in our article,¹ which describes the application of a "modified" central cannulation technique² and open proximal anastomosis technique for surgical repair of aortic coarctation in an adult. We understand Ricci's concern that circulatory arrest to perform open proximal anastomosis is not free from complications. Our strategy of cannulation and cardiopulmonary bypass support for aortic coarctation in an adult is based on our previous experience that aortic injury was caused by crossclamping, in which the portion of coarctation was just distal to the left subclavian branch. As Ricci mentioned in his letter, our proposal of this strategy is based on a single observation; however, it seems safer to use an open proximal anastomosis technique to avoid possible aortic injury not only with crossclamping but also with reliable deep stitches in sufficient sight.

We recently used the same strategy in an operation for distal arch and descending aortic aneurysm. We experienced no technical or clinical problems; therefore, we agree with Ricci that this strategy can serve as a valuable adjunct in patients undergoing complex repairs and reoperations of the distal arch and descending aorta.³⁻⁵

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Mitral valve replacement by a Gore-Tex reinforced pulmonary autograft in a child

To the Editor:

We read the interesting case report entitled "Mitral valve replacement by a Gore-Tex reinforced pulmonary autograft in a child" in the October issue of the *Journal*.¹ The Ross II procedure is not widely used in cardiac surgical practice because of the technical difficulties. There are also many arguments concerning this procedure.² There might be complications such as constriction and deformation on the mitral position of the pulmonary autograft. Therefore, lengthwise and crosswise reinforcements of the pulmonary autografts might be needed. The procedure is possible with the use of Dacron or polytetrafluoroethylene (Gore-Tex; W. L. Gore & Associates, Inc, Flagstaff, Ariz) grafts.

For pediatric patients with a small mitral annulus, the Ross II procedure is indicated. We performed the Ross II procedure in a child with congenital mitral insufficiency and endocarditis. The mitral leaflets were totally deformed, so we resected them. The mitral annulus was 14 mm in diameter. We decided to replace the mitral valve with a pulmonary autograft because of the endocarditis and the absence of an adequately sized mechanical mitral valve prosthesis. After the pulmonary autograft was harvested, it was introduced into the 14-mm diameter soft Dacron tube graft by the same method that the authors used. Because the left atrium was very large, a Dacron graft carrying the pulmonary autograft was sutured to the mitral annulus by

using the "top hat" technique.³ However, perioperative transesophageal echocardiography performed after cardiopulmonary bypass revealed a 25 mm Hg transmitral gradient. We decided to reinstitute cardiopulmonary bypass and reevaluate the composite pulmonary autograft. After cardioplegic arrest, the left atrium was reopened, and the Dacron graft was found to be constricted and deformed. Therefore the Dacron graft was replaced with a 14-mm diameter polytetrafluoroethylene (Gore-Tex) tube graft. This time there was no significant transmitral gradient.

We believe that stiff Dacron grafts used for the reinforcement of pulmonary autografts may yield better results than soft ones. We recommend the use of polytetrafluoroethylene (Gore-Tex) tube grafts in the Ross II procedure instead of the Dacron grafts that Yamagushi and colleagues¹ used.

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Reply to the Editor:

My colleagues and I appreciate the thoughtful comments of Dr Tireli. In children, the top hat method¹ is limited to selected patients with a large left atrium. The implanted graft, which over-protrudes into the left atrium, carries a risk of pulmonary venous obstruction and may impair the reservoir effect of the left atrium. The top hat method is relatively easy during the