New tricks for old dogs

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The arterial switch procedure, originally described by Jatene and colleagues¹ in 1976 and quickly adopted by Castenada and associates² at Boston Children's Hospital, has become one of the great success stories in congenital cardiac surgery. Surgical and long-term outcomes are excellent.³ The technical aspects of the operation have not varied significantly in the last 25 years. But just when you thought there was nothing new under the sun, along comes an innovative new technique that on the surface seems so obvious, you can't understand why someone else hasn't thought of it before.

In their case report in this issue of the *Journal*, Ko and coauthors⁴ report a case of a neonate with transposition of the great arteries, intact ventricular septum, and a single coronary artery (sinus 1: left anterior descending coronary artery, circumflex artery, right coronary artery) without an intramural segment. Although it is not specifically described, we probably should assume that the coronary orifice was in the center of the sinus without an intramural in course. In this pattern, the right coronary artery travels anterior to aorta to reach the atrioventricular groove. This is the second most common type of single coronary artery associated with transposition of the great arteries (with the first being sinus 2: left anterior descending coronary artery, circumflex artery, right coronary artery, with the left main coronary artery traveling posterior to the pulmonary artery).¹ Arterial switch operation with a single coronary artery has been associated with increased risk of mortality, but in most recent series there appears to be no increase with current surgical methods. If the coronary button anastomosis is under stretch, there can be compression or kinking of the coronary artery that may be made worse by compression by the neopulmonary outflow tract, resulting in ischemia in the early perioperative period.

The challenge in the transfer of this type of single coronary artery is that the button of the coronary artery is rotated 180° to the course of the right coronary artery, which can result in stretch or distortion of the right coronary ostia. In general, simple mobilization of the proximal right coronary artery will result in enough mobility for safe transfer of

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Central Message

Transposition of the great arteries with single coronary artery has been reported as a risk factor in arterial switch procedures. Improved coronary transfer techniques may negate this potential risk.

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the coronary artery. In some situations, the ostium may be further away from the target in the neo-aorta, however, and undue tension results. Several techniques have been described to deal with this. Most have been designed to extend the coronary button to relieve tension.

The technique described in this report is innovative; however, one should consider the 3-dimensional aspect. As this technique is described, the axis of rotation of the coronary button is no different from the usual transfer rotation. This technique can extend the button, although not as much as with other techniques that involve extending the coronary artery with a tube of pericardial or prosthetic material. One can imagine that with this technique, even a slight rotation of the coronary artery could result in kinking of either right or left coronary artery. It does have the advantage of avoiding prosthetic or autologous pericardial tissue. As with any techniques of coronary artery transfer, great care must be taken to not place the coronary artery too low into the neo-aortic sinus.

To paraphrase a quote attributed to Albert Szent-Györgyi, the scientist who discovered vitamin C: Innovation is seeing what everyone else has seen and thinking and doing what no one else has done. Ko and his coauthors⁴ are to be congratulated for seeing this common problem and thinking and doing what others have not. We look forward to seeing

further reports from this group for the outcomes of the technique.

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