FIGURE 2. A, complete reconstruction of the right ventricular outflow tract with a heterologous pericardial patch. B, Final state after complete reconstruction.

dysfunction. After complete recovery with medical therapy he was discharged in good general condition.

References

1. Vitanova K, Cleuziou J, Hörer J, Kasnar-Samprec J, Vogt M, Schreiber C, et al. Which type of conduit to choose for right ventricular outflow tract reconstruction in patients below 1 year of age? *Eur J Cardiothorac Surg.* 2014;46:961-6; discussion 966.
2. Barbero-Marcial M, Riso A, Atik E, Jatene A. A technique for correction of truncus arteriosus types I and II without extracardiac conduits. *J Thorac Cardiovasc Surg.* 1990;99:364-9.
3. Collett RW, Edwards JE. Persistent truncus arteriosus; a classification according to anatomic types. *Surg Clin N Am.* 1949;29:1245-70.

EDITORIAL COMMENTARY

Reconstruction without extracardiac conduit revisited

Osami Honjo, MD, PhD

From the Division of Cardiovascular Surgery, Labatt Family Heart Centre, Toronto, Ontario, Canada; and the Division of Cardiovascular Surgery, Department of Surgery, The Hospital for Sick Children, University of Toronto, Toronto, Ontario, Canada.

Disclosures: Author has nothing to disclose with regard to commercial support.

Received for publication Aug 18, 2015; accepted for publication Aug 18, 2015; available ahead of print Sept 19, 2015.

Address for reprints: Osami Honjo, MD, PhD, Division of Cardiovascular Surgery, Department of Surgery, University of Toronto, 555 University Ave, Toronto, Ontario M5G1X8, Canada (E-mail: osami.honjo@sickkids.ca).

J Thorac Cardiovasc Surg 2015;150:e70-1

0022-5223/\$36.00

Copyright © 2015 by The American Association for Thoracic Surgery

<http://dx.doi.org/10.1016/j.jtcvs.2015.08.054>

Patients with common arterial trunk (CAT) who have undergone neonatal biventricular repair are inevitably burdened with multiple catheter and surgical reinterventions on their right ventricle-to-pulmonary artery (PA) conduit and branch PAs.¹ The lack of growth potential in a small right ventricle-PA conduit implanted in the neonatal period mandates early exchange surgery, and

Osami Honjo, MD, PhD

Central Message

This is a report of right ventricular outflow tract reconstruction with the left atrial appendage in common arterial trunk repair.

See Article page e69.

many surgeons through the years have therefore attempted to develop a technique of right ventricular outflow tract (RVOT) reconstruction without a conduit to create a chance to delay the first reoperation.^{2,3} In 1900 Barbero-Marcial and colleagues³ reported a new technique of RVOT reconstruction without the use of a conduit. In 7 patients with CAT type I or II, the RVOT was reconstructed by means of the direct anastomosis between the PA and the RVOT with an anterior monocusp patch. In their original description, the common trunk and the branch PA origins were septated with a patch without detaching the branch PAs, and the proximal LPA instead of the “neck” of branch PAs was used as an anastomotic site. They reported excellent early survival (85%), but unfortunately the follow-up was quite short, and the long-term effects of this technique on RVOT and branch PA reinterventions have not been well analyzed.

In this issue of the *Journal*, Aguilar and colleagues⁴ have presented a modified Barbero-Marcial technique for RVOT reconstruction in a neonate with type III CAT. Aguilar and colleagues⁴ used the left atrial appendage as a part of the posterior wall of RVOT, allowing a connection with native tissues without the use of an extracardiac conduit. Unlike in the original Barbero-Marcial procedure's description, the branch PAs were detached from the truncal root and were anastomosed to the left atrial appendage. It is unclear whether Aguilar and colleagues⁴ placed a monocusp in the anterior RVOT patch.

The most important potential advantage of this technique is the chance to delay the first reoperation, which is yet to be determined in this case. In fact Barbero-Marcial and colleagues³ performed RVOT reconstruction with the left atrial appendage in 1 of the 7 patients in their original series. Unfortunately, that patient died of sudden cardiac death 1 day postoperatively, and therefore there was no opportunity to find out the long-term effect of this interposition technique. Another potential advantage is that of avoiding distortion of the branch PAs by a bulky conduit, which may potentially reduce frequency of

branch PA reinterventions. Nonetheless, there are a number of reasons that the Barbero-Marcial technique is not the most common technique used worldwide. Many surgeons believe in the importance of placing a competent valve in the RVOT in neonatal biventricular repair, especially in patients at risk for pulmonary hypertensive crisis. Pulmonary vasculature in neonates with CAT immediately after repair can be quite reactive, and one therefore might think that it is safer to have a competent valve in the pulmonary position. Another potential concern with the Barbero-Marcial technique is distortion of the branch PA geometry. The branch PAs have to be pulled quite aggressively to make a direct anastomosis to the RVOT possible. In this respect, the use of the left atrial appendage can be beneficial to minimize tension and distortion on the branch PAs. Finally it is unclear how difficult or easy reoperation on the RVOT would be as a result of an interposed left atrial appendage as the posterior wall.

Aguilar and colleagues⁴ have presented an interesting RVOT reconstruction technique with some beautiful pictures. Although there are some unknowns in terms of long-term benefits and potential drawbacks of this technique, the basic concept of RVOT reconstruction with a “growing” posterior wall is appealing. It will be of great interest to see a follow-up report from the Aguilar and colleagues⁴ in the future.

References

1. Lund AM, Vogel M, Marshall AC, Emani SM, Pigula FA, Tworetzky W, et al. Early reintervention on the pulmonary arteries and right ventricular outflow tract after neonatal or early infant repair of truncus arteriosus using homograft conduits. *Am J Cardiol*. 2011;108:106-13.
2. Lecompte Y, Neveux JY, Leca F, Zannini L, Tu TV, Dubois Y, et al. Reconstruction of the pulmonary outflow tract without prosthetic conduit. *J Thorac Cardiovasc Surg*. 1982;84:727-33.
3. Barbero-Marcial M, Riso A, Atik E, Jatene A. A technique for correction of truncus arteriosus types I and II without extracardiac conduits. *J Thorac Cardiovasc Surg*. 1990;99:364-9.
4. Aguilar JM, Garcia E, Arlati FG, Comas JV. Repair of type III common arterial trunk with modified Barbero-Marcial technique. *J Thorac Cardiovasc Surg*. 2015;150:e69-70.