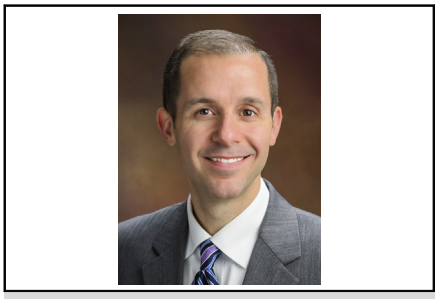
References

1. Naimo PS, Bell D, Fricke TA, d'Udekem Y, Brizard CP, Alphonso N, et al. Truncus arteriosus repair: a 40-year multicentre perspective. *J Thorac Cardiovasc Surg*. 2021;161:230-40.
2. Jacobs JP, O'Brien SM, Pasquali SK, Jacobs ML, Lacour-Gayet FG, Tchervenkov CI, et al. Variation in outcomes for benchmark operations: an analysis of the Society of Thoracic Surgeons congenital heart surgery database. *Ann Thorac Surg*. 2011;92:2184-92.
3. Konstantinov IE, Karamlou T, Blackstone EH, Mosca RS, Lofland GK, Caldarone CA, et al. Truncus arteriosus associated with interrupted aortic arch in 50 neonates: a Congenital Heart Surgeons Society study. *Ann Thorac Surg*. 2006;81:214-22.
4. Russell HM, Pasquali SK, Jacobs JP, Jacobs ML, O'Brien SM, Mavroudis C, et al. Outcomes of repair of common arterial trunk with truncal valve surgery: a review of the society of thoracic surgeons congenital heart surgery database. *Ann Thorac Surg*. 2012;93:164-9.
5. Braunstein ML. Healthcare in the age of interoperability: the promise of fast healthcare interoperability resources. *IEEE Pulse*. 2018;9:24-7.
6. Braunstein ML. Health Care in the age of interoperability part 5: the personal health record. *IEEE Pulse*. 2019;10:19-23.

See Article page 230.

Commentary: Truncus among us

Christopher E. Mascio, MD



Christopher E. Mascio, MD

CENTRAL MESSAGE

TA has been repaired successfully in the neonate for 30 years. Advances in imaging, operative techniques, and perioperative care have contributed to improving morbidity and mortality.

The first complete repair of truncus arteriosus (TA) was performed in 1962 by Sloan, but not published until 1974 by Behrendt and colleagues[1] as part of a larger cohort of patients. Ebert and colleagues[2,3] published a series of complete repair of TA in both 1976 and 1984 on infants aged 6 months or less and reported an operative mortality of 11% to 20%. Because the patients were a few months of age or older, not surprisingly, the most common cause of mortality was pulmonary hypertension. Because of weight loss and congestive heart failure in addition to pulmonary hypertension, Bove and colleagues[4] advocated and reported success repairing TA in the neonate in 1989.

Naimo and colleagues[5] present a 40-year perspective on TA repair in Australia at multiple centers. There are interesting findings that contradict conventional wisdom about preoperative TA physiology and timing of operation among other things. The authors report a neonatal mortality of 23.7% compared with 7.4% in older patients. More specifically, they state that neonates in week 1 of life (because of concomitant anomalies like truncal insufficiency, arch obstruction, and coronary anomalies) and week 4 of life (because of congestive heart failure/pulmonary over circulation) had the worst neonatal outcomes. Only 53% of those undergoing TA repair in the most recent era (1999-2018) had the operation during the neonatal period. Their mortality and timing of operation are contrasted with the North American approach to TA. Today, it is standard of care to repair TA in the first week of life. The Society of Thoracic Surgeons Congenital Heart Surgery Database reports a mortality for TA of 9.5% (interquartile range, 0.0%-15.4%).[6]

From the Division of Pediatric Cardiothoracic Surgery, Children's Hospital of Philadelphia, Perelman School of Medicine, University of Pennsylvania, Philadelphia, Pa.

Disclosures: Dr Mascio is a clinical consultant for HeartWare/Medtronic.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling or reviewing manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.

Received for publication May 12, 2020; revisions received May 12, 2020; accepted for publication May 12, 2020; available ahead of print May 30, 2020.

Address for reprints: Christopher E. Mascio, MD, Pediatric Cardiothoracic Surgery, Children's Hospital of Philadelphia, Perelman School of Medicine, University of Pennsylvania, 3401 Civic Center Boulevard - M875, Philadelphia, PA 19104 (E-mail: mascioc1@email.chop.edu).

J Thorac Cardiovasc Surg 2021;161:242-3
0022-5223/$36.00

https://doi.org/10.1016/j.jtcvs.2020.05.050

Many institutions have mortality less than 5%.[7] It seems that mortality from pulmonary hypertension or congestive heart failure could be avoided by offering operation to all patients with TA in the first week of life. This would eliminate the less complex patients at risk for pulmonary hypertension while waiting for an operation during week 4 of life or later. Coronary anomalies can make any repair, including TA, more complex. However, better preoperative coronary imaging (including magnetic resonance imaging and computed tomography), lessons learned about coronary arteries crossing the right ventricular outflow tract, and having a high index of suspicion for intramural coronary arteries with TA have lessened the impact of coronary anomalies as a risk factor. This is partially evidenced by the coronary artery anomaly manuscripts the authors cite from 20 to 30 years ago, save one of their own, which includes many of the cohort reported herein.

The 40-year report is impressive and commendable. However, I would argue for a slightly different approach: offering repair to all TA in the first week of life (including those with arch anomalies and truncal regurgitation), proper imaging of the coronary arteries if concerned, and not intervening on moderate truncal regurgitation or less. This usually avoids the development of pulmonary hypertension and congestive heart failure without adversely affecting risk.

References

1. Behrendt DM, Kirsh MM, Stern A, Sigmann J, Perry B, Sloan H. The surgical therapy for pulmonary artery–right ventricular discontinuity. *Ann Thorac Surg*. 1974;18:122-37.
2. Ebert PA. Pulmonary artery conduits in infants younger than six months of age. *J Thorac Cardiovasc Surg*. 1976;72:351-6.
3. Ebert PA, Turley K, Stanger P, Hoffman JIE, Heymann MA, Rudolph AM. Surgical treatment of truncus arteriosus in the first 6 months of life. *Ann Surg*. 1984;200:451-6.
4. Bove EL, Beekman RH, Snider AR, Callow LB, Underhill DJ, Rocchini AP, et al. Repair of truncus arteriosus in the neonate and young infant. *Ann Thorac Surg*. 1989;47:499-505.
5. Naimo PS, Bell D, Fricke TA, d'Udekem Y, Brizard CP, Alphonso N, et al. Truncus arteriosus repair: a 40-year multicentre perspective. *J Thorac Cardiovasc Surg*. 2021;161:230-40.
6. Jacobs JP, Mayer JE Jr, Pasquali SK, Hill KD, Overman DM, St Louis JD, et al. The Society of Thoracic Surgeons congenital heart surgery database: 2019 update on outcomes and quality. *Ann Thorac Surg*. 2019;107:691-704.
7. Truncus Repair outcomes. Children's Hospital of Philadelphia, 2020. Available at: chop.edu/pages/truncus-repair-outcomes. Accessed June 1, 2020.