

# ARTICLE IN REVIEW:

## Ross/Ross-Konno procedure in infancy is safe and durable

**PUBLICATION:** The Journal of Thoracic and Cardiovascular Surgery, September 2021.

**TITLE:** The Ross/Ross-Konno Procedure in Infancy is a Safe and Durable Solution for Aortic Stenosis<sup>1</sup>

**AUTHORS:** Luxford JC, Ayer JG, Betts K, Salve GG, Orr Y, Chard RB, Roberts P, Sholler GF, Winlaw DS.

**STUDY DESIGN:** Retrospective, single institution

**SUMMARY:** Neonates and young infants who undergo the Ross procedure are often very ill and may have previously undergone other procedures in attempt to repair the dysfunctional aortic valve. Cardiac performance in the early postoperative period is a concern and right ventricle to pulmonary artery (RV-PA) conduits may need to be replaced over time. Between January 1995 and December 2018, 35 infants <1 year of age underwent a Ross/Ross-Konno procedure using cryopreserved pulmonary allograft, with 30 (86%) requiring a Konno incision. The median follow-up was 4 years. All patients survived until hospital discharge and one patient died 18 months postoperatively from cardiac arrest secondary to pulmonary hypertensive crisis. The Kaplan-Meier survival estimate was 100% at 1-year and 97% at 5- and 10-years postoperative. Twelve (34.3%) patients required at least one reoperation. Ten of the twelve were for RV-PA conduit replacement at a median age of 11 years. The calculated freedom from RV-PA conduit replacement was 94% at 1-year, 85% at 5-years, and 57% at 10-years. Aortic annulus, aortic sinus, and sino-tubular junction z-scores at 6 weeks postoperative were not significantly different at the latest follow-up indicating stable aortic dimensions. At the latest point in follow-up, 94.1% of patients were asymptomatic. The authors conclude that the low long-term mortality coupled with predictable rates of RV-PA conduit replacement make the Ross/Ross-Konno procedure a safe and durable solution for severe aortic stenosis in infants.

### Low mortality:

All infants survived until hospital discharge. One patient died 18 months postoperatively from cardiac arrest. The 10-year survival estimate is 97%.

### Low risk of medium-term replacement:

Freedom from RV-PA conduit replacement was 85% at 5 years and 57% at 10 years. By comparison, freedom from RV-PA conduit replacement was reported in the range of 47-64%<sup>2-4</sup> by others, placing these results in alignment with previous reports.

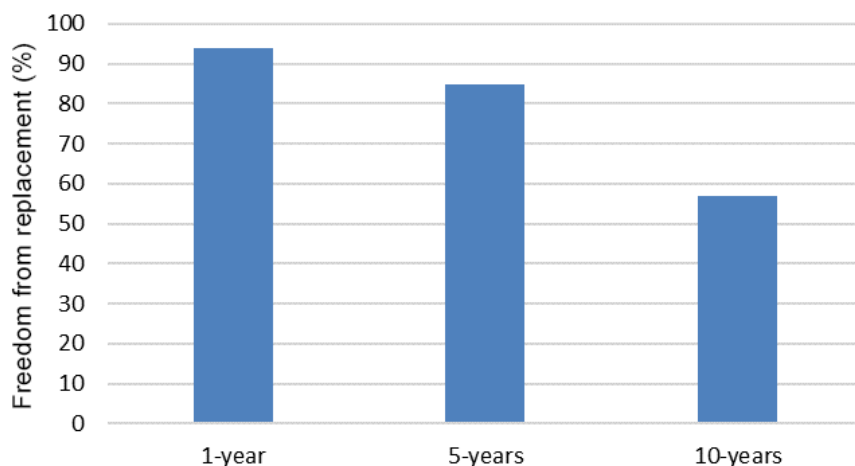
### Stable aortic dimensions:

Aortic annulus, aortic sinus, and sino-tubular junction z-scores at 6 weeks postoperative were not significantly different at the latest follow-up.

### References:

1. Luxford JC, Ayer JG, Betts K, Salve GG, Orr Y, Chard RB, Roberts P, Sholler GF, Winlaw DS. The Ross/Ross-Konno procedure in infancy is a safe and durable solution for aortic stenosis. *J Thorac Cardiovasc Surg.* 2022 Feb;163(2):365-375. doi:10.1016/j.jtcvs.2021.06.066
2. Nelson JS, Pasquali SK, Pratt CN, et al. Long-Term Survival and Reintervention After the Ross Procedure Across the Pediatric Age Spectrum. *Ann Thorac Surg.* 2015;99(6):2086-2095. doi:10.1016/j.athoracsur.2015.02.068
3. Mookhoek A, Charitos EI, Hazekamp MG, et al. Ross Procedure in Neonates and Infants: A European Multicenter Experience. *Ann Thorac Surg.* 2015;100(6):2278-2284. doi:10.1016/j.athoracsur.2015.08.008
4. Lo Rito M, Davies B, Brawn WJ, et al. Comparison of the Ross/Ross-Konno aortic root in children before and after the age of 18 months. *Eur J Cardiothorac Surg.* 2014;46(3):450-457. doi:10.1093/ejcts/ezt631

### Freedom from RV-PA conduit replacement over time



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