

## Pulmonary conduit reoperation following the Ross procedure

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The ideal treatment for aortic valve pathology in younger low-risk patients remains a subject of debate. This subset of patients constitutes a clinical challenge due to their longer life expectancy and therefore higher cumulative lifetime risk of prosthesis-related complications. There has been a resurgence of interest in the Ross procedure for this cohort with increasing evidence suggesting that Ross patients may confer superior long-term outcomes compared to conventional aortic valve replacement (AVR) [1]. In this issue of the *Journal*, Gofus *et al.* [2] evaluated mid-term outcomes of the Ross procedure compared to a propensity-matched cohort of mechanical AVR. The authors reported a lower all-cause mortality in the Ross cohort even after adjusting for only cardiac and valve-related deaths with no difference in risk of aortic reoperation.

While the results of the study are promising and overwhelmingly supportively of the Ross procedure over mechanical AVR, we would like to draw attention to several limitations, the foremost of which is the lack of data on allograft durability. The main criticism of the Ross procedure is the need for reintervention to address pulmonary conduit dysfunction. This was not included in the authors' reoperation analysis. In our experience, pulmonary conduits are expected to last 10–15 years, and thus, progressive conduit dysfunction requiring reintervention should be anticipated especially in younger patients [3]. Thus, we speculate that including conduit dysfunction in their analysis may result in a higher overall risk of reintervention. To a patient, it

may not make much of a difference if it is an allograft or conduit reintervention, as both reintervention carry significant risks, and in our experience, has been associated with worse quality of life.

The other consideration is the appropriateness of comparing the Ross procedure to mechanical AVR. For younger patients, freedom from anticoagulation is one of the key considerations in selecting an AVR strategy. In the past decade, bioprosthetic valves, which generally do not require long-term anticoagulation, have replaced mechanical valves as the most common AVR strategy, representing over 90% of total AVR at our institution. For this cohort of younger patients whose freedom from anticoagulation is of critical importance, the Ross procedure may be more appropriately compared with bioprosthetic AVR rather than mechanical.

In the pursuit of the optimal AVR strategy, we commend the authors on an excellent study adding to the increasing evidence on contemporary outcomes of the Ross procedure and look forward to future studies with longer follow-up.

## REFERENCES

- [1] Mazine A, El-Hamamsy I, Verma S, Peterson MD, Bonow RO, Yacoub MH *et al.* Ross procedure in adults for cardiologists and cardiac surgeons: JACC state-of-the-art review. *J Am Coll Cardiol* 2018;72:2761–77.
- [2] Gofus J, Fila P, Drabkova S, Zacek P, Ondrasek J, Nemecek P *et al.* Ross procedure provides survival benefit over mechanical valve in adults: a propensity-matched nationwide analysis. *Eur J Cardiothorac Surg* 2022.
- [3] Chen LS, Hammoud M, Ghandou HZ, Frankel WC, Karamlou T. Risk of endocarditis extension in Ross reintervention with transcatheter pulmonary valve replacement. *J Am Coll Cardiol* 2022.

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