the Ross procedure in the absence of a stand-alone technically proficient and high-volume Ross surgeon.

In summary, this study demonstrates that excellent results can be achieved with the Ross procedure in patients age >50 years, provided that the technical expertise is available. However, it does not show (and in all fairness, the

authors do not imply) that the Ross procedure should be performed preferentially in these patients.

Reference

1. Chauvette V, Bouhout I, Tarabzoni M, Wong D, Bozinovski J, Cu MWA, et al. The Ross procedure in patients older than 50: a sensible proposition? *J Thorac Cardiovasc Surg.* 2022;164:835-44.e5.

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Commentary: Out with the new, in with the old: Evaluating the Ross procedure in patients aged >50 years

Ryan P. Plichta, MD, and Edward P. Chen, MD

The ideal aortic valve replacement option remains elusive. The conventional choice between mechanical prostheses with life-long anticoagulation therapy or tissue prostheses with the potential need for future reintervention is difficult to make.

The Ross procedure, initially described in 1967, involves translocation of a patient's pulmonary valve to the aortic position and pulmonary homograft replacement of the native pulmonic valve.¹ Ross procedures currently make up <1% of surgical aortic valve replacement procedures in North America.² Reported advantages include excellent hemodynamic parameters and elimination of anticoagulation therapy, as well as outstanding durability and patient survival. Traditionally, it has been performed in young patients with an anticipated life expectancy >15 to 20 years.

El-Hamamsy and colleagues³ provide a compelling argument for consideration of the Ross procedure in patients older than age 50 years. In a retrospective analysis from 5 Canadian centers, performing a Ross procedure in appropriately selected patients older than age 50 years was a safe surgical option and associated with excellent valve

Ryan P. Plichta, MD, and Edward P. Chen, MD

CENTRAL MESSAGE

The Ross procedure, when performed at high-volume centers, is a safe and durable option for select patients aged >50 years with aortic valve disease.

durability and survival. The outcomes were excellent and when compared with patients younger than age 50 years who had a Ross procedure, there was no difference in in-hospital mortality, perioperative complications, rate of reintervention, or 6-year survival. There were 2 in-hospital mortalities—1 from each group—and the 6-year actuarial survival for both study groups was >95%.

Patient selection is critical in the decision to offer a Ross procedure and in this report, both the older and younger cohorts had a low median Society of Thoracic Surgeons risk score for mortality (0.6%). The older group had more comorbidities, whereas younger patients had more previous interventions, unicuspid valves, and pure aortic regurgitation. The patients were followed with annual echocardiography with 99% completion and a median follow-up of 2.4 years. The mean gradient at up to 6 years postoperatively was 4 ± 0.5 mm Hg. There was no difference in the rate of

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annular dimension progression; however, the younger cohort saw a significant size increase in the sinuses of Valsalva.

It is important to recognize that of the 497 patients included in this analysis, a single surgeon performed more than 70% of the procedures and provided proctoring to the individual site surgeons for this complex aortic procedure. One must exercise caution when generalizing these outcomes across all centers and it is unclear whether the success demonstrated by the authors will be reproducible on a larger scale.

The transcatheter aortic valve replacement era has brought sweeping changes to the treatment paradigm of aortic valve disease and how the various surgical options are contemplated when considering a patient's long-term outlook. Recent trends favor the use of tissue valves performed with minimally invasive

techniques and are often driven by the lower risk and younger patient populations. Such choices may ultimately increase the need for potentially higher risk interventions later in life.

We commend the authors for seeking a durable procedure that is aimed at avoiding both the perils of anticoagulation therapy and the need for future reintervention. The question remains: How will patients respond to this option?

References

1. Ross DN. Replacement of aortic and mitral valves with a pulmonary autograft. *Lancet*. 1967;2:956-8.
2. Reece TB, Welke KF, O'Brien S, Grau-Sepulveda MV, Grover FL, Gammie JS. Rethinking the Ross procedure in adults. *Ann Thorac Surg*. 2014;97:175-81.
3. Chauvette V, Bouhout I, Tarabzoni M, Wong D, Bozinovski J, Chu MWA, et al. Ross procedure in patients older than 50: a sensible proposition? *J Thorac Cardiovasc Surg*. 2022;164:835-44.e5.

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Commentary: Expanding the utility of the Ross procedure—proceed with caution

Ramsey S. Elsayed, MD, MS, Craig J. Baker, MD, and Vaughn A. Starnes, MD

Clinical equipoise remains regarding the Ross procedure and its utility. The choice of conduit for aortic valve replacement in adults continues to represent a significant challenge for some clinicians and must be carefully tailored to each individual patient.¹ The ideal valve procedure should carry a low incidence of stroke and other valve-related complications and be durable, reliable, anticoagulation-free, and fairly reproducible by a wide array of young and experienced surgeons. Continued technical improvements to the Ross procedure have expanded its indications over the past 2 decades, making it a viable option in older patients.² Despite being offered to infants, children, adolescents, and

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CENTRAL MESSAGE

The Ross procedure provides excellent hemodynamics and mid-term survival in patients >50 and should be contemplated in older patients with high levels of physical activity and small aortic annuli.

young adults, the long-term safety of the Ross procedure in adults >50 years has not been well studied.³

In this issue of the *Journal*, Chauvette and colleagues⁴ provide a formidable multicenter report of early- and mid-term outcomes of nearly 500 carefully selected adult patients divided into cohorts of younger and older than 50 years of age who underwent the Ross procedure over a span of 9 years. Due to the retrospective nature of this study and lack of a randomized protocol, the authors rightfully compared cohort

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