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Commentary: The Ross procedure: One surgeon's journey toward mastery

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Stelzer and colleagues¹ present a study looking at the outcomes of more than 700 patients who underwent a Ross procedure over a 30-year period. Although the number of patients undergoing operation by a single surgeon during this time period is in itself an achievement, the perioperative outcomes described in this article speak of the mastery that one can achieve with dedication to this procedure. Indeed, whereas the Ross procedure was once seen as a high-risk operation reserved for very select patients, there has been renewed interest for this aortic valve replacement (AVR) option in recent years. In fact, multiple groups have recently published excellent mid- and long-term outcomes associated with this procedure.²⁻⁵ Although the field of AVR in low-risk patients is becoming increasingly complex, the Ross procedure stands out as the only option that preserves the viability

CENTRAL MESSAGE

The Ross procedure can be performed with surgical risk similar to standard AVR. However, mastery takes a dedicated career of reassessment focused on quality improvement to achieve optimal results.

of the aortic root. This has profound influence on quality of life, exercise tolerance, hemodynamic parameters, and long-term survival. In nonelderly patients with a life expectancy >15 years, these features are of the utmost importance for optimal long-term care. Thus, as some authors have suggested, the Ross procedure may be the best AVR option in this population, provided that it can be offered with similar risk to that of a standard AVR.⁶ In this regard, the article from Stelzer and colleagues¹ strongly supports the idea that dedicated surgeons can perform the Ross procedure, with low perioperative morbidity, even in complex cases such as active endocarditis or reoperation. Although critics may argue that the results from this study are those of a single, highly experienced surgeon, a number of studies (both single and multicenter) have now demonstrated similar outcomes in institutions with dedicated Ross programs.^{3,4}

Similar to complex aortic root surgery or mitral repair, this study also reinforces that patients eligible for the Ross procedure should be referred to centers of excellence for evaluation and management. Patients should be presented with all options to make an informed decision regarding the ideal treatment for their valve dysfunction that is not limited by the offerings of the surgeon seated before them. Ultimately, the decision must be tailored to each individual patient, taking into consideration

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comorbidities, anatomical details, degree of physical activity, risk of reintervention, life expectancy, and a patient's personal values.

Alternatively, experienced, high-volume aortic root surgeons might start Ross programs, provided adequate mentorship can be obtained. Doing so would require concerted efforts from various surgical societies to train a new generation of surgeons in reconstructive aortic root surgery, as well as defining benchmarks for centers of aortic excellence, as has been done for mitral surgery.

The Ross procedure remains a more complex procedure than a standard AVR. In this study, including 15% of patients with prior sternotomy, Stelzer and colleagues¹ report an overall perioperative mortality of 1%, very similar to the risk associated with standard AVR.⁷ Because it focused on short-term outcomes, it is impossible to ascertain from this report whether the pulmonary autograft held its promises in the long-term. Nevertheless, multiple groups have reported on the excellent long-term outcomes associated with this surgical option.^{2,8,9} The Ross procedure is the only AVR option consistently associated with survival similar to that of an age- and sex-matched population.²⁻⁴ This is in stark contrast with the excess in late mortality associated with bioprosthetic and mechanical valves.¹⁰⁻¹² However, as is highlighted by Stelzer and colleagues,¹ excellent outcomes require dedication and career-long adaptation to perfect surgical techniques. Their honest account in sharing outcomes, lessons learned, and the potential pitfalls one may encounter when performing a Ross procedure are invaluable. Perfection remains an aspirational (and often elusive) goal, but learning from others' lifelong commitment to

achieve technical mastery of the Ross procedure brings us one step closer.

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