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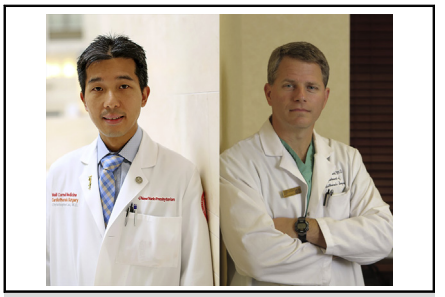
Commentary: Nothing lasts forever, including valve-sparing root replacement with reimplantation of the aortic valve

Christopher Lau, MD, and Leonard N. Girardi, MD



Christopher Lau, MD, and Leonard N. Girardi, MD

CENTRAL MESSAGE

Valve-sparing root replacement with reimplantation of the aortic valve has excellent long-term durability but patient selection is key.

Nothing lasts forever and nothing is certain, except for taxes and death. Although there remains no perfect solution for aortic root aneurysms, valve-sparing root replacement (VSRR) with reimplantation of the aortic valve (RAV) offers the potential of a permanent solution to at least some patients without the need for anticoagulation associated with mechanical valve-conduits. In this issue of the *Journal*, David and colleagues[1] report an update on the long-term results of RAV with nearly 30 years of long-term follow-up. With 465 consecutive patients and a mean follow-up of 10 ± 6 years, the 20-year cumulative incidence of aortic valve reoperations was 6% and of moderate or severe aortic insufficiency was 10.2%. The results confirm the excellent long-term durability of the preserved native valves.

The report is largely a descriptive series that avoids focusing on detailed analysis of the intricacies and specific repair techniques associated with VSRR that are debated in the literature. However, it shows us the evolution of the technique's application to increasingly complex situations by the Toronto group and the long-term durability of some of these decisions. We see a glimpse of the risk of applying the RAV technique to imperfect cusps requiring leaflet repair and bicuspid aortic valves (BAVs), which was the only variable associated with reoperation in this series. With the authors' admittedly conservative use of RAV with only good leaflets, this series assures us that this very select group will have excellent long-term results. However, the surgical community must continue exploring the frontiers to optimize outcomes in a broader, and potentially greater-risk, population. While most authors comparing the outcomes of VSRR in BAV versus trileaflet valves have found similar mid-term durability,[2,3] longer-term follow-up is starting to show compromised durability with BAVs.[4] Similarly, cusp-repair strategies broaden the applicability of VSRR to more patients. While mid-term outcomes of cusp repair are favorable,[5,6] follow-up beyond 10 years has revealed a divergence in outcomes favoring those not requiring cusp repair.[7] These and other patient selection factors need further clarification.

The need for analysis of long-term outcomes is further highlighted by the fact that only time since surgery was associated with the development of postoperative aortic insufficiency by multivariable analysis in this series. Furthermore, the cumulative risk of future aortic dissection was 13.8% at 20 years and was significantly greater in patients with connective tissue disorders. While the operative, short-, and mid-term outcomes of VSRR operations have been highly optimized, further focus is necessary on the future implications of these operations. The effects of creation of neo-sinuses and alterations of laminar blood flow patterns on durability of the aortic valve and downstream aortic events need further investigation.[8] As the authors highlight, the key to excellent long-term outcomes lies not only in the skill of the surgeon but largely in the selection of the appropriate patients and valves to preserve. The quest to find the patients in whom the preserved aortic valve may last forever continues.

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Commentary: "Details make perfection, and perfection is not a detail" (Leonardo da Vinci)

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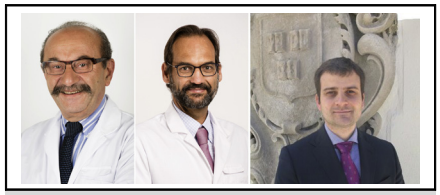
Laurent de Kerchove, MD, PhD, and
Gebrine El Khoury, MD



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CENTRAL MESSAGE

Aortic valve reimplantation provides a comprehensive treatment of aortic root dilatation and aortic regurgitation and has shown excellent long-term results.

In 1995, I (G.E.K.) had the chance to visit during some months Professor Carpentier in Paris and Professor David in Toronto. Both events marked undoubtfully my further professional career; nonetheless, the months spent in Toronto decided my main field of development in cardiac surgery. While reading the last report by David and colleagues[1] on the reimplantation of the aortic valve (AV), published in the current issue of the *Journal*, I reflected on the evolution of valve-sparing procedures during these last 25 years, in particular on what is widely known as the David procedure. Also, I could not help but thinking about the development of mitral valve repair during the same time span. David and colleagues have unequivocally shown that reimplantation of the AV is associated with an excellent survival that is not matched by the best-available valve prosthesis, a low risk of recurrence of severe aortic regurgitation over time, an even lower risk of valve stenosis and, overall, a very low risk of valve reoperation. Further, although initially valve reimplantation was applied to tricuspid AV with little regurgitation, nowadays this procedure is implemented also in bicuspid AV and valves with severe insufficiency. So, although we've come a long way in the last 20 years, why this procedure is still not as widely spread as mitral valve repair? Mitral regurgitation due to dilatation of the annulus (type I) can be simply and effectively treated with

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