Contemporary outcomes of surgery for aortic root aneurysms: A propensity-matched comparison of valve-sparing and composite valve graft replacement

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The central message of the study by Gaudino and colleagues¹ is that elective aortic root surgery can be performed with very low perioperative risk in high-volume aortic centers. Gaudino and colleagues¹ came to this conclusion after examining their results in a cohort of 890 patients operated on from May 1997 to January 2014. They had only 2 deaths early in their experience and no deaths among the most recent 804 patients, those operated on since 2002. This is the most impressive result ever published and probably difficult, if not impossible, to reproduce. And there is more: only 4 patients had stroke, 1 had myocardial infarction, 1 had sternal infection, and only 11.2% received blood transfusions. And to make us ordinary surgeons even more envious, more than one third of their patients underwent combined procedures, such as replacement of the aortic arch and coronary artery bypass grafting. In addition, 11.8% of patients had undergone previous cardiac operations, and 7 patients had active infective endocarditis. Gaudino and colleagues¹ identified 1001 patients and excluded 111 with acute or chronic aortic dissections, leaving 890 patients for analysis. They indicated that their exclusionary criteria also eliminated patients with extensive aortic root destruction because of aortic root infection, but since the final count was 890, there must have been no patients without acute or chronic aortic dissection who had aortic root replacement for aortic root infection, something unusual in a high-volume center. A variety of operative procedures, including replacement of the aortic root with mechanical and bioprosthetic or biological valves and aortic valve-sparing operations, were performed. The perioperative outcomes were nothing short of spectacular. Are these results the same for all high-volume aortic centers?

We are a high-volume center, and our unit has the infrastructure needed to manage patients who develop all types of postoperative complications from mechanical support of the circulation to emergency cerebral angiography to treat acute stroke, but our results are not as good as those

Aortic valve-sparing procedure.

Central Message

Elective aortic root replacement is now associated with an operative mortality of less than 1%.

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described by Gaudino and colleagues.¹ The best results with aortic root surgery are when we do aortic valve-sparing operations. In our most recent report on 146 consecutive patients with Marfan syndrome, we had 1 operative death on the first postoperative day as a result of malperfusion caused by a new acute type B aortic dissection.² In another study³ on 371 patients who underwent aortic valve-sparing operations in our institution, the operative mortality was 1%, with a stroke rate of 0.5%, a renal failure rate of 0.5%, permanent pacemaker implantation in 1%, and transfusion of blood products in 50%. These 2 studies included all patients who underwent aortic valve-sparing operations without exclusion. Possibly if we had excluded patients with dissections or those who needed combined procedures, the results would have been better. And our results with aortic root replacement with mechanical, bioprosthetic, or biologic valves are not as good as with aortic valve-sparing procedures. Actually, this finding also seems to be true in the Society of Thoracic Surgeons database.⁴ Stamou and associates⁴ examined the early clinical outcomes of aortic root surgery in 13,743 patients (34% had conduits with mechanical valves, 52% bioprosthetic or homograft valves, and 14% aortic valve-sparing procedures), and the lowest operative mortality was among patients who underwent aortic valve-sparing operations. It is possible that most aortic valve-sparing operations were performed in “high-volume centers,” and that may be one of the reasons that the mortality after aortic valve sparing

operations was lower than that after aortic root replacement. In that study, the median number of aortic root operations per site in the United States was 2 per year, and only 5% of sites performed more than 16 aortic root operations annually.⁴ Despite these very low volumes, the overall operative mortality was 4.2%.⁴

Gaudino and colleagues¹ have set a new standard for early outcomes after elective aortic root surgery, with no deaths among their most recent 804 patients and very few serious postoperative complications. These outcomes are difficult to emulate, but we have to try. To be an obsessive-compulsive surgeon who pays enormous attention to technical details is not enough, because even patients who

have undergone perfectly executed operations may have serious and occasionally fatal postoperative complications.

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