Valve-sparing repair of sinus of Valsalva aneurysm: Does early success predict long-term durability?

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In this issue of the *Journal*, Pedroza and colleagues¹ describe a 52-year-old female patient who presented with an acute coronary syndrome secondary to left main coronary compression from a large left sinus of Valsalva aneurysm (SVA). The patient underwent emergent valve-sparing aortic root replacement (VSRR) via a reimplantation technique. The left main followed an intramural course that required an unroofing procedure and bypass of the left anterior descending artery. The authors noted significant prolapse of the left coronary leaflet of the aortic valve and performed free-edge plication to resolve the aortic insufficiency (AI). The patient did well and was discharged on postoperative day 11.¹ Mild AI was noted on a follow-up echocardiography obtained 1 month after surgery.

SVA is a rare cardiac condition reported in less than 0.15% of all patients undergoing open heart surgery. SVA is thought to occur as a result of incomplete fusion of the distal bulbar septum and truncal ridges and most commonly arises within the right coronary sinus. Associated congenital anomalies (ventricular and atrial septal defects) and varying degrees of AI are quite commonly present with SVA. Approximately 50% of patients will present in congestive heart failure and require emergent repair to alleviate the significant left-to-right shunting when aneurysms rupture and fistulize into adjacent cardiac chambers. The remainder require surgery when aneurysm growth is documented and progressive right ventricular outflow tract obstruction appears imminent.² Coronary obstruction and ischemia is quite rare and, in this case, may have had as much to do with the intramural course of the left main coronary as the size of the SVA.

A number of surgical techniques have been espoused for repair of SVA. In 2 of the largest series in the literature, primary aneurysm plication and patch repair were by far the most commonly performed procedures.^{2,3} However, primary repair has been associated with a greater risk of recurrent fistula formation⁴ and may be most appropriate when the aneurysm neck is 8 mm or less.³ Providing a

A 4.1-cm right sinus of Valsalva aneurysm (SVA) with right coronary artery (RCA) button.

Central Message

The long-term durability of valve-sparing repair of sinus of Valsalva aneurysm is unknown; however, composite valve-graft replacement provides complete resolution with consistent low operative risk.

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durable solution to AI in the presence of a SVA appears to be more complicated, as multiple pathologic mechanisms unite to create free-edge damage, cusp prolapse, and loss of

FIGURE 1. A 4.1-cm nonruptured right sinus of Valsalva aneurysm (SVA) with right coronary artery (RCA) button prepared for composite valve-graft replacement. Note the paucity of annular tissue along right coronary cusp.

annular support. Even in experienced hands, 9-year freedom from the need for reoperative aortic valve replacement was only 83% when SVA repair was accompanied by native aortic valve preservation.⁴ Composite valve-graft replacement provides complete resolution of root pathology with consistent low operative risk and excellent durability,⁵ albeit with the long-term risks of valve replacement. VSRR had previously been reported as a viable option for SVA repair.^{3,6} However, experience is limited, and long-term follow-up is nonexistent beyond 1 year. Given the paucity of quality aortic tissue above the annulus (Figure 1), the frequent need for correction of cusp prolapse and the potential for compromised patient hemodynamics, perhaps VSRR would be best used in the elective setting or by surgeons with extensive experience with complex aortic root reconstruction and aortic valve repair in a variety of clinical settings.

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