Treating valvular heart disease has never been one size fits all

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The case report by Capestro and colleagues in this issue of the *Journal* illustrates the many therapeutic options cardiac surgeons now have at their disposal to treat complex valvular heart disease.¹ Capestro and colleagues have described a difficult patient scenario that occurs commonly after homograft implantation. The rate of structural valve deterioration with homografts approaches nearly 40% at 10 years, and the accompanying extensive calcification of these prostheses complicates reoperative aortic valve replacement surgery by predisposing toward paravalvular leaks, the implantation of small prostheses, and perioperative stroke.² Capestro and colleagues are to be commended for their thoughtful preprocedural planning, for obtaining advanced computed tomographic imaging, and for considering newer technologies at their disposal.

The options for this type of patient are multiple and range from a Bentall procedure to valve-in-valve procedures, either directly with a surgical prosthesis or through transcatheter aortic valve replacement (TAVR). Each of these therapies, of course, has its own specific advantages and weakness.^{3,4} Whereas Bentall procedures in this setting have had reported good outcomes at some centers, the overall results are mixed, with significant morbidity and mortality. Similarly, the combination of a calcified root and annulus without leaflet calcification poses technical complications for any valve-in-valve procedure with either surgical or TAVR prostheses. Capestro and colleagues have chosen to implement the strategy of “sutureless in the stentless,” first described by Villa and colleagues in 2013,⁵ and implanted a sutureless aortic valve prosthesis, the Perceval S (Sorin Group, Milan, Italy), within the degenerated homograft. This newer, less commonly reported strategy obviates

the need for placing sutures within a calcified aortic annulus and eliminates the risk of malpositioning or embolization that can occur with TAVR in this setting because of the paucity of fluoroscopic anatomic landmarks of homografts and the difficulties in appropriately sizing and anchoring a TAVR prosthesis without bulky, calcified leaflets.^{5,6}

As newer procedures become commercially available to treat valvular heart disease, it is important to realize that the cardiac surgeon sits at the nexus of these technologies, a critical member of the heart team, perfectly positioned to evaluate patient factors such as age and risk for surgical intervention and anatomic factors such as left ventricular outflow tract size and calcium and ideally suited to choose the best therapy for an individual patient. As Capestro and colleagues have demonstrated, surgeon awareness of these newer technologies and their strengths and weaknesses will yield the best results for our patients.

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