Where there is smoke, is there fire?

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No sane surgeon wants to reoperate on an 82-year-old woman with a small aortic valve prosthesis who had previously undergone Dacron polyester fabric patch augmentation of her aorta and aortic annulus. But sometimes you need to do this. What are the options? The criterion standard approach would be to do a repeat median sternotomy, perform central cannulation (some surgeons may prefer axillary cannulation), and then attack the problem head on. Dacron polyester fabric patches can be difficult, because they may be firmly adherent to the right atrium. On opening the ascending aorta, the surgeon can expect that the sutures used to tie down the prosthesis can be removed by manipulating the valve, and then the previous valve can be explanted. Apparently, this was not possible for the patient in the surgical technique report of Inoue and colleagues¹ in this issue of the *Journal*. I have not been in that situation. The adhesions of the Dacron polyester fabric patch are outside the aorta and not within the wall. If needed, the valve can be bent, deformed, or even removed in portions. A standard rereplacement can then be performed. Difficult, time-consuming, tedious—all are accurate descriptions of the procedure.

In today's age, transcatheter aortic valve replacement as a valve-in-valve procedure should be seriously considered.² It is now approved in the United States by the Food and Drug Administration (it was not available in Japan in 2012 when Inoue and colleagues¹ performed their chimney procedure), and it is a practical alternative. Because the valve in this patient was a small 19-mm pericardial valve, the valve could be “fractured” with a balloon to facilitate valve-in-valve placement.³⁻⁵ If the patient had prosthetic aortic stenosis, then a left ventricular apical conduit to the descending aorta would be another consideration; in this case, however, with aortic regurgitation, it would not help. After the chimney procedure described by Inoue and colleagues,¹ the patient has a 16-mm mechanical valve inside the 19-mm pericardial valve; fortunately, after 5 years, she still has a low-pressure gradient (mean gradient 6.4 mm Hg). Apparently, the patient has not had any embolic events

Transcatheter aortic valve positioned inside a stenosed bioprosthetic valve.

Central Message

New data on valve-in-valve implantation describes techniques to “fracture” a valve, or valves that can expand to fit a transcatheter valve, providing options for patients with a small prosthesis.

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and is being maintained on anticoagulation. With the mechanical valve lodged inside the bioprosthetic valve, imaging to detect thrombus or pannus forming below the mechanical valve would be extremely difficult to perform. It probably is there, though.

I would not draw the conclusion that Inoue and colleagues¹ did, that this is a “simple and effective” procedure. It sounds complicated, and the hemodynamics in a larger series likely would be far from ideal. On the other hand, the latest outcomes with valve-in-valve in the aortic position look very encouraging, with 2.7% 30-day mortality, and 0.7% in 269 continued access patients.² The chimney procedure may be just smoke, aortic valve-in-valve rereplacement is a bright flame.

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