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Commentary: Late leaflet perforation/tear after transcatheter aortic valve implantation—is a secondary open surgical approach justified?

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CENTRAL MESSAGE

This report presents 2 patients with late leaflet perforation after TAVR and underscores the importance of lifetime management for TAVR patients.

In the current issue of the *Journal*, Liesman and Fukuhara¹ present 2 cases with failure of an implanted transcatheter aortic valve replacement (TAVR) prosthesis due to leaflet perforation or tear. The first patient underwent valve-in-valve TAVR due to degeneration of a bio-prosthesis with development of a relevant restenosis. During follow-up, the aortic valve insufficiency became worse and symptomatic, with the need for redo surgery. Intraoperatively, the underlying mechanism of the insufficiency was identified as a leaflet perforation instead of a suggested leakage. The patient finally underwent a mechanical composite graft implantation. The second patient had coronary artery bypass surgery in his medical history and was treated for aortic valve stenosis with TAVR to prevent re-sternotomy and its associated risk. During follow-up, combined mitral valve stenosis and insufficiency with additional mild aortic valve insufficiency were diagnosed, and surgery was indicated. Again, the intraoperative finding was a tear of the leaflet in the TAVR prosthesis, with subsequent implantation of mechanical mitral and aortic valves.

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In summary, this case series underlines 3 important issues. First, TAVR certainly is a handsome tool to prevent re-sternotomy in patients with previous heart surgery and aortic valve pathologies. However, redo cardiac surgery in experienced centers provides a well-predictable result with a long-lasting benefit despite a greater surgical risk that needs to be balanced with the patient's individual characteristics.² Obviously, there cannot be only one single parameter to decide between valve-in-valve TAVR or redo surgery, but coming from a huge enthusiasm for valve-in-valve TAVR, there is a rising evidence to advocate again the “the second surgical approach.”

Second, operating on patients with previous TAVR is challenging because of several aspects. Patients who undergo TAVR usually present with significant comorbidities resulting in a relevant perioperative risk for the development of severe complications. And even though the operation will not be complicated by intrapericardial adhesions, the formerly implanted prosthesis needs to be explanted with the potential risk of damaging the surrounding annular or aortic tissue. This aspect certainly needs more attention and requires surgical experience to limit the pitfalls of open explantation of transcatheter valves.

Third, the choice of mechanical versus biological surgical prostheses gains (again) more and more importance. As demonstrated with the first presented case, valve-in-valve TAVR cannot be judged as a general and definite solution of failed bioprosthetic valves since relevant

complications can arise even after primarily uneventful valve-in-valve procedures. Surgeons are aware that mechanical prostheses can provide excellent long-term results in well-selected patients.³ Liesman and Fukuhara can be congratulated for this important case series, which stresses important aspects of decision-making in patients with aortic valve pathologies while keeping in mind a life-long therapeutic management.

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