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Commentary: Transcatheter mitral valve-in-valve: Not yet a replacement for surgery

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Javadikasgari and colleagues¹ report the experience of mitral valve re-replacement for structural valve deterioration at the Cleveland Clinic over 27 years. A total of 525 patients with a mean age of 67 years had a second mitral valve replacement (MVR): isolated redo-MVR in 25% and with concomitant procedures in 75%. The results are outstanding, with mortality <0.75% for isolated redo-MVR and 7.1% for those with concomitant procedures. The authors identify New York Heart Association functional class IV symptoms, concomitant coronary artery bypass grafting, prolonged cardiopulmonary bypass time, and transfusion as independent risk factors for mortality. Ten-year survival for isolated redo-MVR and redo-MVR with concomitant procedures was 52% and 48%, respectively.

This article raises a number of important points. The ratio of observed mortality to that expected from the Society of Thoracic Surgeons Database was 0.12. This underscores that national estimated percentages cannot always be generalized to high-volume centers that are commonly performing these risky procedures compared with smaller programs in which redo-MVR may be done a couple of times a year. In fact, just looking at US centers performing primary, isolated MV repair, only 13% perform 10 or more procedures per year.² Secondly, the patient cohort in the current series is relatively young and may represent a very select group of patients because no data are available on the proportion of patients either not offered redo-MVR or those who went

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CENTRAL MESSAGE

Reoperative mitral valve replacement can be performed with excellent results in some centers. Additionally, transcatheter mitral valve-in-valve offers high-risk patients an opportunity for treatment.

the way of transcatheter valve therapies. An older cohort of patients (mean age, 78 years) undergoing redo-valvular surgery at another high-volume expert center reported an operative mortality of 10%.³

The experience in transcatheter mitral valve-in-valve (ViV) replacement is early. The procedure is safe, but long-term data are lacking. Furthermore, those patients with a previous mechanical mitral valve prosthesis or those with a narrow postimplant neo-left ventricular outflow tract will be excluded from transcatheter therapeutic options. A comparison of surgical redo-MVR and transcatheter mitral ViV has demonstrated similar early mortality, albeit in groups with different risk profiles.⁴ Surgical redo-MVR patients had a lower transvalvular gradient at 1 year. This has mirrored the enormous enthusiasm for transcatheter aortic valve replacement ViV as an alternative for redo-surgical aortic valve replacement in the setting of failed bioprostheses. Recent publications with >5-year follow-up have supported the early safety of this approach but long-term data highlight that not all bioprosthetic structural valve deterioration is best treated with transcatheter aortic valve replacement ViV; especially, those with small failed surgical prostheses.^{5,6}

Until a randomized trial is performed, it is going to be very difficult to determine the relative efficacy of redo-valvular surgery compared with a transcatheter approach. The increasing availability of transcatheter mitral ViV

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procedures offers those who are high-risk for redo-surgery—or are inoperable—an opportunity for treatment. For patients who are of low or intermediate risk, heart teams must debate the relative efficacies of each approach, acknowledging the excellent outcomes of redo-surgery available at some centers together with the unknown long-term results of ViV procedures.

References

1. Javadikasgari H, Chemtob RA, Gillinov AM, Pettersson GB, Lowry AM, Desai MY, et al. Outcomes of mitral valve re-replacement for bioprosthetic structural valve deterioration. *J Thorac Cardiovasc Surg*. 2022;163:1804-12.e5.
2. Gammie JS, Chikwe J, Badhwar V, Thibault DP, Vemulapalli S, Thourani VH, et al. Isolated mitral valve surgery: the Society of Thoracic Surgeons Adult Cardiac Surgery Database analysis. *Ann Thorac Surg*. 2018;106:716-27.
3. Maganti M, Rao V, Armstrong S, Feindel CM, Scully HE, David TE. Redo valvular surgery in elderly patients. *Ann Thorac Surg*. 2009;87:521-5.
4. Kamioka N, Babaliaros V, Morse MA, Frisoli T, Lerakis S, Iturbe JM, et al. Comparison of clinical and echocardiographic outcomes after surgical redo mitral valve replacement and transcatheter mitral valve-in-valve therapy. *JACC Cardiovasc Interv*. 2018;11:1131-8.
5. Deharo P, Bisson A, Herbert J, Lacour T, Etienne CS, Porto A, et al. Transcatheter valve-in-valve aortic valve replacement as an alternative to surgical re-replacement. *J Am Coll Cardiol*. 2020;76:489-99.
6. Bleiziffer S, Simonato M, Webb JG, Rodés-Cabau J, Pibarot P, Kornowski R, et al. Long-term outcomes after transcatheter aortic valve implantation in failed bioprosthetic valves. *Eur Heart J*. 2020;41:2731-42.

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Commentary: Doing it and (re) doing it well

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Mitral valve replacement in the United States still represent of 34% of isolated mitral valve procedures with 70% of implanted prostheses being bioprosthetic valves.¹ Unfortunately, mitral bioprostheses have limited durability, yet reoperative mitral valve surgery has been associated with increased morbidity and mortality with some reports advocating use of mechanical valves for patients younger than age 70 years.² Transcatheter valve technologies have been developed to mitigate the risk of valvular surgery for prohibitive- and high-risk patients, with recent expansion of indications for valve-in-valve treatment of structural deterioration of mitral bioprostheses.³ Although short term-outcomes of this treatment strategy have been encouraging,³ distant results are lacking. To best define treatment pathways for patients with failed mitral bioprosthetic

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CENTRAL MESSAGE

Mitral valve re-replacement for bioprosthetic structural valve deterioration in selected patients can be performed with very good perioperative and long-term survival.

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valves, reoperative surgical risk needs to be benchmarked versus less invasive but potentially less durable transcatheter therapies. Javadikasgari and colleagues⁴ from the Cleveland Clinic present a large cohort of 525 patients who underwent bioprosthetic mitral valve re-replacement for structural valve deterioration. The authors should be congratulated on very low mortality of only 0.75% in the isolated valve replacement subgroup, 7.1% mortality for combined procedures, and impressive long-term survival of approximately 50% at 10 years.

Although the outcomes for patients undergoing combined procedures are quite good, the outstanding results in