patients showed that the actuarial estimates of explant for SVD at 10 and 20 years were 1.9% and 15%, respectively,³ and therefore, with such a low incidence, a longer follow-up is certainly desirable, as it would help to identify possible SVD and the degree of calcifications over time.

The good results of the present paper have been also confirmed by other authors: Bartus and colleagues,⁴ in their series of 133 patients undergoing AVR with RESILIA bioprosthesis, reported no early or late SVD at 4 years and again good hemodynamic performance. Recently, the RESILIA tissue has been also tested in vitro in aortic valve conduit,⁵ and we can imagine that this is going to be the next step for this novel tissue. Investigating a new surgical valve prosthesis in the current era is not an easy task, as this research field is dominated by the transcatheter approach: therefore, studies like the COMMENCE trial are valuable for the cardiothoracic community. Moreover, they contribute to demonstrate that there is still room for

improvement in surgical biological valves and efforts toward better technologies are always welcome. The COMMENCE trial is part of these advancements and with such promising results we are excited to see the next study with the long-term results.

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Commentary: The future of a former valve: Inspiring, resilient, or both?

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Structural valve degeneration (SVD) is the Achilles's heel of bioprosthetic valve implantation. Up to 20% of valves require reintervention by 10 years.¹ Despite this, there has been increasing use of bioprosthetic valves in young patients, given their favorable hemodynamics, anticoagulation avoidance, and options for subsequent transcatheter valve-in-valve therapy in lieu of reoperative valve replacement.^{2,3} The prevalence of calcific degeneration,

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CENTRAL MESSAGE

The COMMENCE Trial examines a novel bioprosthetic preservation technique that aims to reduce calcification and advance the new frontier of dry storage. The long-term results are eagerly anticipated.

which is the most common form of SVD, is therefore expected to increase going forward. RESILIA (Edwards Lifesciences, Irvine, Calif) is a bovine pericardial tissue treated by a novel preservation technique that serves the dual purpose of reduced calcium deposition and dry storage.⁴

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TABLE 1. Mid-term outcomes of bovine bioprosthetic valves in the aortic position

Valve type	N	Mean age, y	Age range, y	Mean follow-up, y	Short-term mortality	Valve thrombosis	Structural valve degeneration*
RESILIA tissue ⁵	689	67.0 ± 11.6	20-90	3.7 ± 1.2	1.2%	0	0% at 3.7 y
CE PERIMOUNT ⁷	2,659	70.7 ± 10.4	16-91	6.7 ± 4.8	2.8%	0	22% at 15 y
SJM Trifecta ⁸	177	75.1 ± 6.8	–	2.3 ± 0.8	3.4%	0	0% at 2.3 y
Sorin Mitroflow ⁹	617	76.1 ± 6.3	–	3.8 ± 1.4	4.2%	–	8% at 5 y

CE, Carpentier-Edwards; SJM, St Jude Medical. *Studies used variable definitions of structural valve degeneration, which limits detailed comparison.

In this edition of the *Journal*, Johnston and colleagues⁵ present 4-year outcomes of the COMMENCE trial. This was a multicenter, single-arm, observational trial designed to assess the safety and efficacy of RESILIA tissue. With a cohort of 689 patients over a mean of 3.7 years, the authors report excellent intermediate-term safety and hemodynamic outcomes. Importantly, there were no valvular thrombotic events and no significant SVD.

The authors should be commended for pointing out the limitations of this study. First, the single-armed design limits our ability to compare these results with other currently available bioprosthetic valves. Second, detailed anatomic assessment is limited by a lack of computed tomography follow-up. Recent studies of bioprosthetic SVD have highlighted the importance of computed tomography in detecting early hypoattenuated leaflet thickening.⁶ Although the significance of this finding remains unknown, it is an important consideration when testing new bioprosthetic tissue. Finally, this is an early report, with a mean follow-up time of 3.7 years, and only 466 patients (68%) were eligible for 4-year follow-up. The goal of RESILIA is to reduce the incidence of calcific degeneration; therefore, we must await at least the 10-year results. After all, early results of other bovine valves look somewhat similar to the current study (Table 1).^{5,7-9}

The Food and Drug Administration approved the INSPIRIS valve (Edwards Lifesciences) based on the 2-year results of this trial.¹⁰ However, there are important design differences between INSPIRIS and the valve tested here. Although the tissue-preservation techniques and dry storage options are similar, there is a major difference in the design of the ring. The valve tested in this study consisted of RESILIA tissue mounted on a PERIMOUNT frame, whereas the ring used in the 19- to 25-mm versions of INSPIRIS has an expandable band allowing for future

transcatheter valve-in-valve options. We therefore do not know what effect the INSPIRIS design may have on long-term outcomes.

We believe that dry storage of bioprosthetic valves is a revolutionary concept, if these promising results continue in the long term. The novel anticalcification treatment may result in reduced SVD as well. If successful, dry storage may expand the frontier for different options to address aortic root pathology that were once only available for mechanical valves.

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