See Article page XXX.

Commentary: Are we really choosing between less delirium or better quality of life when comparing transcatheter aortic valve implantation with surgical aortic valve replacement?

Jean-Francois Legare, MD

In the present manuscript entitled “Postoperative Delirium and Quality of Life After Transcatheter and Surgical Aortic Valve Replacement: A Prospective Observational Study,” Hoogma and colleagues¹ provide a rare example of a prospective cohort study of intervention for aortic stenosis in which all subjects underwent daily screening for postoperative delirium (POD) using the 3-minute Diagnostic Confusion Assessment Method (ie, 3D-CAM) and Confusion Assessment Method–Intensive Care Unit (ie, CAM-ICU). The authors were able to demonstrate that POD was common and affected 37% of all patients undergoing intervention. The primary outcome for the study showed that POD was significantly lower in patients undergoing transcatheter aortic valve implantation (TAVI; 15%) when compared with surgical aortic valve replacement (SAVR; 51%) (Figure 1). These findings are especially relevant, given that delirium has been shown by others to be associated with prolonged hospitalization, failure to be discharged home, increased mortality, and consequently increased health care costs.^{2,3}

However, it is important to note that patients who underwent TAVI (n = 84) were significantly older, frailer, and had a significantly greater European System for Cardiac Operative Risk Evaluation score compared with patients who

Jean-Francois Legare, MD

CENTRAL MESSAGE

Patients undergoing TAVI have significantly lower risk of postoperative delirium (POD) when compared with patients undergoing SAVR for the treatment of aortic stenosis.

underwent SAVR (n = 166). To adjust for these differences, the authors chose to perform a propensity weighing approach to balance the groups and allow meaningful comparison. Propensity weighting should not be confused with propensity matching, which would have resulted in loss of subjects for comparison. The approach of propensity weighting has been previously validated and ensured that all patients who underwent TAVI (n = 84) and SAVR (n = 166) were included in the comparison.

One cannot help noticing that the patients included in the TAVI group were also largely moderate- to high-risk patients based on a mean European System for Cardiac Operative Risk Evaluation score of 7.28. This group of greater-risk patients may not reflect current trends worldwide, where TAVI is being increasingly offered to lower-risk groups.⁴ One could also speculate that the reported POD of 15% in the patients who underwent TAVI could have been lower should fewer patients have needed general anesthesia (29%) or required a nontransfemoral approach (12%). Current experience with TAVI has demonstrated the safety of avoiding general anesthesia and maximizing transfemoral approach to help achieve early discharge home (day 1) after intervention.⁴

What is harder to explain is the unusual finding from the study suggesting that patients who underwent SAVR appeared to have significantly better quality of life at 6 months after their intervention versus patients who underwent TAVI. These findings were based on a good

From the Department of Surgery, Dalhousie Medicine New Brunswick, The New Brunswick Heart Center, Saint John, New Brunswick, Canada.

Disclosures: The author reported no conflicts of interest.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling or reviewing manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.

Received for publication Nov 19, 2021; revisions received Nov 19, 2021; accepted for publication Nov 19, 2021.

Address for reprints: Jean-Francois Legare, MD, New Brunswick Heart Center, 400 University Ave, PO Box 2100, Saint John, New Brunswick E2L 4L2, Canada (E-mail: legarej@me.com).

J Thorac Cardiovasc Surg 2021; ■:1-2

0022-5223/\$36.00

Copyright © 2021 by The American Association for Thoracic Surgery

<https://doi.org/10.1016/j.jtcvs.2021.11.046>

FIGURE 1. Balancing outcomes in choosing the optimal treatment for AS comparing TAVI with SAVR. AS, Aortic stenosis; POD, postoperative delirium; TAVI, transcatheter aortic valve implantation; QOL, quality of life; SAVR, surgical aortic valve replacement.

response rate, with quality of life data available in 80% of patients who underwent TAVI and 90% of patients who underwent SAVR. One wonders if the propensity weighting approach used by the authors was able to address all important differences between groups, in particular, the fact that patients who underwent TAVI were significantly frailer. Frailty is particularly important here, as patients who are frail tend to have poor self-reported health outcomes sometimes weeks after intervention. Patients who are frail can continue to suffer from fatigue, poor energy, and persistent symptoms despite having their valve pathology addressed successfully, potentially confounding outcomes.⁵ This highlights the value and importance in quantifying frailty in our patients to better understand their risks and benefits from intervention.

References

1. Hoogma DF, Venmans E, Tmimi LA, Tounoy J, VerBrugghe P, Jacobs S, et al. Postoperative delirium and quality of life after transcatheter and surgical aortic valve replacement: a prospective observational study. *J Thorac Cardiovasc Surg.* November 17, 2021 [Epub ahead of print].
2. Goldfarb M, Bendayan M, Rudski LG, Morin JF, Langlois Y, Ma F, et al. Cost of cardiac surgery in frail compared with nonfrail older adults. *Can J Cardiol.* 2017; 33:1020-6.
3. Yanagawa B, Graham MM, Afilalo J, Hassan A, Arora RC. Frailty as a risk predictor in cardiac surgery: beyond the eyeball test. *J Thorac Cardiovasc Surg.* 2018;156:172-6.e2.
4. Carroll JD, Mack MJ, Vemulapalli S, Herrmann HC, Gleason TG, Hanzel G, et al. STS-ACC TVT registry of transcatheter aortic valve replacement. *J Am Coll Cardiol.* 2020;76:2492-516.
5. Borregaard B, Dahl JS, Lauck SB, Ryg J, Berg SK, Ekholm O, et al. Association between frailty and self-reported health following heart valve surgery. *Int J Cardiol Heart Vasc.* 2020;31:1-8.