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Letter to the Editor

Letter to "Outcomes in Patients With Severe Coronary Artery Disease and Aortic Stenosis Undergoing Surgical Aortic Valve Replacement and Coronary Artery Bypass Grafting vs. Transcatheter Aortic Valve Replacement"

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I am writing in response to the recently published above-mentioned study by Kucera *et al*. [1] in the August edition of your esteemed journal, Heart Surgery Forum. Concomitant severe aortic stenosis (AS) and coronary artery disease (CAD) are now commonly encountered and are a challenging cohort. Multiple factors could affect the outcome, including age, comorbidities, and multiorgan involvement. I believe the authors deserve recognition for their nuanced and timely investigation comparing two different interventional strategies for this cohort.

Transcatheter aortic valve replacement (TAVR) has undoubtedly become one of the favored treatment approaches in the replacement of the severely stenosed aortic valves for symptomatic patients. TAVR is now being used in intermediate and low-risk surgical patients, and has expanded the horizon due to its less invasive approach and its benefits particularly for elderly, fragile or comorbid populations. Kucera *et al*. [1] now report the short-term safety of TAVR in these patients, demonstrating a significant decrease in the risk for perioperative stroke (0.4% vs 3.9%, OR 0.08, $p = 0.027$) and similar early survival (98% vs 99% at 30 days).

These results are consistent with larger registry and trial data and illustrate the early safety profile and recovery benefits of TAVR, by potentially avoiding the use of cardiopulmonary bypass, and facilitating post-procedure mobilization and discharge within a few days. The shorter intensive care unit stay and a decreased risk of complications can significantly impact the choice of treatment in these patients.

Despite these benefits, the present study reports the disadvantage of TAVR when utilized alone to treat patients with severe aortic valve stenosis with severe CAD. Although the aortic valve can be percutaneously replaced, significant atherosclerotic coronary disease is left unresolved. According to the literature, there is no comparable durability to surgical revascularization of stenosed coronary arteries, even with the most effective antithrombotic management or attempts at staged or simultaneous percutaneous coronary intervention (PCI). This distinction is highlighted by the study's five-year survival rate, which revealed that patients treated with isolated TAVR had a significantly lower long-term survival rate (hazard ratio for death between 2 and 5 years: 1.69, 95% CI 1.05–2.70, $p = 0.03$).

Furthermore, transcatheter aortic valve anatomical placement may block coronary access in the future, resulting in increased risks and technical difficulty for any future PCI that may be necessary. Complex, diffuse, or proximal CAD left untreated is a missed opportunity for potentially lifesaving, disease-modifying therapy, specifically for those with left main or multi-vessel disease.

The benchmark for definitive treatment in patients with significant valvular and coronary pathology, not amenable to optimal medical therapy, has historically been set by surgical aortic valve replacement (SAVR) in conjunction with coronary artery bypass grafting (CABG). Although SAVR with CABG carries a slightly higher risk in the aging population and patients with unfavorable anatomy, it has demonstrated to have better long-term survival, a decreased incidence of future revascularization, and more robust protection against myocardial infarction and the progression to heart failure, as shown by the body of evidence including the propensity-matched long-term results from Kucera *et al*. [1] and in previous studies.

Current ESC/EACTS guidelines have made a Class I recommendation for concurrent CABG at the time of SAVR in patients with significant coronary obstructions [2]. The single-stage procedure decreases the need for repeated coronary interventions. Even though this study highlights the realities of older age patients with multiple comorbidities that cardiac surgeons increasingly face, in selected patients and with good preparation, this still could be the ideal strategy for this patient cohort.

Dismissing TAVR as inappropriate for all patients with significant CAD and AS would be shortsighted in view of the technique's safety record and patient-centered benefits. However, the data from Kucera *et al*. [1] should reinforce the long-standing conclusion that a strategy combin-

ing valve replacement and surgical coronary revascularization is most likely to improve longevity and quality of life for patients who are not at high surgical risk.

Further randomized and registry analyses are therefore warranted, with a focus on staged or combined strategies (e.g., hybrid minimally invasive surgical revascularization plus TAVR, PCI followed by TAVR, Trans-aortic TAVR with off-pump CABG to LAD) for patients who are at high risk for surgery or are inoperable. Importantly, the study by Kucera *et al*. [1] has paved the way for further studies of planned staged PCI or TAVR in conjunction with PCI, both of which are increasingly being used in modern-day practice. This topic will require further investigation to better define the role and timing of combined valvular and coronary interventions, to better determine the most suitable treatment for patients who may benefit from a less invasive revascularization stategy.

Author Contributions

IM and HJ made substantial contributions to conception and design the manuscript. IM and HJ have been involved in drafting the manuscript and reviewing it critically for important intellectual content. Both authors read and approved the final manuscript. Both authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

Not applicable

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Conflict of Interest

The authors declare no conflict of interest.

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