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EDITORIAL

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Caution regarding potential changes in AVR practices during the COVID-19 pandemic

Abstract: To improve resource allocation in face of the COVID-19 pandemic, hospitals around the country are restricting the performance of elective surgery to preserve ventilators, operating rooms, ICU beds and protect anesthesiologists. For patients with severe aortic stenosis, efforts to bring treatment to symptomatic patients amid this pandemic might lead to favored use of catheter based management using minimalist techniques that do not require these elements. In this context, some patients with well tested surgical indications for valve replacement may be treated by catheter-based methods. It is important that outcomes for these cases are followed closely both at respective sites and in national registries. As we recover from this pandemic, surgical cases should once again be driven by multi-disciplinary discussion and clinical trial data, and not a mentality of crisis management.

KEYWORDS

aortic valve replacement, COVID-19, SAVR, TAVR, valve repair/replacement

The COVID-19 pandemic has resulted in numerous changes to our health care system including broad restrictions on elective procedures and surgery. In addition to limiting viral exposure, such drastic change has been supported by the Center for Medicare and Medicaid Services (CMS) in an effort to preserve personal protective equipment (PPE) and hospital resources in anticipation of a potential pandemic surge.[1] While such measures are necessary to combat this pandemic, this inevitably results in care delays for patients with advanced chronic illness—often managed *electively*. It is estimated that 50% of all elective surgical cases which are canceled or delayed may impose significant harm on patients over the coming months.[2] Patients with severe aortic stenosis (AS) fall in this category. Left without treatment, there stands to be significant accrual of associated morbidity, heart failure hospitalizations, and mortality, including sudden death.[3]

Recognizing provider and patient concerns in tackling this difficult scenario, as well as the economic strife latent therein, professional societies have engaged wide-spread discussion on mechanisms to safely bring treatment to patients.[4,5] An important initial step was revising nomenclature from a question of *elective* case designation, to *essential* versus *nonessential*. Following a disease-state specific definition of essentiality (a complete discussion of which is beyond the scope of this document), hospitals have initiated protocols favoring and permitting management options which minimize the use of (a) anesthesiologists, (b) ventilators, (c) operating rooms, and (d) intensive care unit beds. While surgical interventions require all of these elements, transcatheter aortic valve replacement (TAVR) can be performed without them—using widely described "minimalist" methodology.[6]

Bolstered by the recent expansion of TAVR to include low society of thoracic surgery risk AS patients, there may be a tendency towards catheter-based treatment in symptomatic patients even during the COVID-19 pandemic.[7,8] However, we must understand that transcatheter therapy has specific limitations when compared to surgical AVR (SAVR) and acknowledge that SAVR remains the standard in specific patient populations. This includes patients with bicuspid valve stenosis, aneurysmal disease of the ascending aorta, small aortic roots and annuli, isolated aortic regurgitation or noncalcified valve disease, low coronary heights, multivessel coronary disease or those who are young enough to be better candidates for mechanical prostheses.[9] Many of these patients were excluded from clinical trials for TAVR. However, given the desire to treat patients, address symptoms, and modify the course of morbidity—without resource use or hazard—patients with these features may preferentially be treated with TAVR during this time.

It is important that these instances do not go overlooked as we traverse and eventually rise out of this pandemic. The short and long-term clinical outcomes of patients with surgical indications treated by TAVR should be followed closely at respective sites and in national registries. In addition, the clinical community should maintain vigilance to ensure that compensatory habits formed during this pandemic do not turn into *bad* habits once the usual procedural operations resume. Patient care should once again be managed by multidisciplinary teams, driven by randomized outcomes data and fueled by continuous quality improvement and patient safety initiatives, rather than by a mentality of crisis management.

There remains uncertainty regarding the time course of COVID-19, and this, in turn, may continue to deprive patients of judicious care consideration. Acknowledging that each hospital must attend to its ambient clinical, financial, and geographic disposition uniquely,

surgical care should be reinstituted as soon as safely possible with appropriate safeguards in place including testing protocols and sufficient PPE elaboration. If this remains infeasible, patients with surgical aortic valve disease who have stable symptoms should be closely followed and offered the opportunity to wait until community health and hospital resources might allow for safe and established management of their valve disease. For patients with advanced symptoms and deteriorating clinical status portending poor prognosis, multidisciplinary collaboration incorporating administration will be necessary to determine the best course of action on a case by case basis.

While our hope is that we should never have to face such a calamity as this again, there is much we continue to learn from this experience to inform future preparedness and operational efforts. How we adapt and engage with challenges borne by sudden resource scarcity and communicable hazard can have significant effects on the care patients are allotted and the integrity of our discipline. When appropriately safeguarded, patients and providers should continue to reinforce streamlined care based on outcomes and clinical evidence.

CONFLICT OF INTERESTS

Bibhu D. Mohanty serves on the medical advisory board for Boston Scientific, has received consulting fees from Medtronic, and is on the speaker's bureau for Abbott. The remaining authors report no conflict of interests.

Jeet J. Mehta MD
Jaymin Patel MD
Bassam Ayoub MD
Bibhu D. Mohanty MD

Division of Cardiology, Department of Medicine, Morsani College of Medicine, University of South Florida, Tampa, Florida

Correspondence
Jeet J. Mehta, MD, Division of Cardiology, Department of Medicine, Morsani College of Medicine, University of South Florida, 2 Tampa General Circle, 5th-floor Cardiology, Tampa, FL 33606.
Email: mehtaj@usf.edu

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ORCID

Jeet J. Mehta http://orcid.org/0000-0002-0851-9611

REFERENCES

1. Stahel PF. How to risk-stratify elective surgery during the COVID-19 pandemic? *Patient Saf Surg*. 2020;14:8.
2. Zhang S What it really means to cancel elective surgeries: to make room for coronavirus patients, hospitals are delaying procedures that would make major differences in people's lives. The Atlantic, March 17, 2020.
3. Schwarz F, Baumann P, Manthey J, et al. The effect of aortic valve replacement on survival. *Circulation*. 1982;66(5):1105-1110.
4. Wood DA, Sathananthan J, Gin K, et al. Precautions and procedures for coronary and structural cardiac interventions during the COVID-19 pandemic: guidance from canadian association of interventional cardiology [published online ahead of print March 24, 2020]. *Can J Cardiol*. https://doi.org/10.1016/j.cjca.2020.03.027
5. Shah PB, Frederick GP, Mahmud E, et al. Triage considerations for patients referred for structural heart disease intervention during the coronavirus disease 2019 (COVID-19) pandemic: an ACC/SCAI consensus statement [published online ahead of print April 6, 2020]. *Catheter Cardiovasc Interv*. https://doi.org/10.1002/ccd.28910
6. Wood DA, Lauck SB, Cairns JA, et al. The vancouver 3M (multidisciplinary, multimodality, but minimalist) clinical pathway facilitates safe next-day discharge home at low-, medium-, and high-volume transfemoral transcatheter aortic valve replacement centers: the 3M TAVR study. *JACC Cardiovasc Interv*. 2019;12(5):459-469.
7. Mack MJ, Leon MB, Thourani VH, et al. Transcatheter aortic-valve replacement with a balloon-expandable valve in low-risk patients. *N Engl J Med*. 2019;380(18):1695-1705.
8. Popma JJ, Deeb GB, Yakubov SJ, et al. Transcatheter aortic-valve replacement with a self-expanding valve in low-risk patients. *N Engl J Med*. 2019;380(18):1706-1715.
9. Quimby DL, Brown G, Belli EV, Mohanty BD. The importance of surgical therapy with expansion of TAVR to low-risk patients. *J Card Surg*. 2019;34(12):1432-1433.