

See Article page 52.



Commentary: Tricuspid repair—why the hesitation?

Heidi B. Nafday, MD, and Eugene A. Grossi, MD

Functional tricuspid regurgitation is unusual among valvular lesions in that it may improve, stabilize, or worsen after mitral valve repair or replacement. Historically, this has created a debate over the indications for intervention and best approach. In their excellent review, Chikwe and Megna¹ delineate the rationale and indications for tricuspid valve repair at the time of mitral intervention in patients with moderate or greater regurgitation or annular dilatation and contend that superior long-term clinical outcomes are attainable when repair is performed when indicated by American Heart Association and European Society of Cardiology consensus guideline recommendations. Despite those recommendations, rates of concomitant repair remain relatively low at 15.8%.² Why is this the case when most tricuspid repairs can be performed relatively quickly and without significant technical difficulty or morbidity?

There are several examples in cardiac surgery where societal recommendations do not always correspond with practice patterns. For example, rates of multiple arterial grafts during coronary bypass remain low despite evidence of superior long-term survival and modified maze procedures for atrial fibrillation in patients undergoing concomitant mitral valve surgery.^{3,4} In these cases, surgeons often argue that despite understanding those recommendations, when faced with an individual patient, the surgery is tailored for additional considerations. For example, a patient with obesity or diabetes may be selected to not undergo bilateral mammary grafting for concern of



Heidi B. Nafday, MD, and Eugene A. Grossi, MD

CENTRAL MESSAGE

Surgeons may hesitate to repair functional tricuspid regurgitation at time of mitral intervention if reluctant to extend operative time, particularly when less experienced with mitral valve repair.

developing a sternal wound infection, or there may be questionable benefit in more elderly patients. Similarly, surgeons may be concerned about the incremental risk of adding tricuspid repair to mitral surgery or the risk of heart block. As discussed by Chikwe and Megna, those risks may be overestimated and decreasing in more recent cohort studies.

Most surgeons have unfortunately experienced untoward outcomes in patients undergoing multiple valve interventions despite sound planning and good surgical technique and perioperative management. While the Society of Thoracic Surgeons predicted mortality risk for mitral repair or replacement is not increased with the addition of tricuspid repair, there is an incremental increase in the risk of morbidity with severity of tricuspid regurgitation.² Although these unfortunate outcomes may be the exception, the surgeon will reflect on what could have been done differently to prevent a patient's death. When no obvious answer is apparent—such as inadequate cardioplegic protection or poor ventricular function—longer operative bypass and crossclamp times are often blamed. Moving forward, when a similar patient presents for surgery, the surgeon may hesitate to proceed with tricuspid repair for moderate regurgitation or with borderline annular dilatation.

This hesitancy to extend an operation is compounded by the significant number of surgeons with low annual volume of mitral procedures. At last year's Transcatheter

From the Department of Cardiothoracic Surgery, NYU Langone Health, New York, NY.

Disclosures: The authors 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 June 4, 2020; revisions received June 4, 2020; accepted for publication June 10, 2020; available ahead of print July 22, 2020.

Address for reprints: Eugene A. Grossi, MD, Department of Cardiothoracic Surgery, NYU Langone Health, 530 First Ave, Suite 9V, New York, NY 10016 (E-mail: Eugene.Grossi@nyulangone.org).

JTCVS Open 2020;3:64-5

2666-2736

Copyright © 2020 The Authors. Published by Elsevier Inc. on behalf of The American Association for Thoracic Surgery. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

<https://doi.org/10.1016/j.xjon.2020.06.001>

Cardiovascular Therapeutics meeting, analysis of linked Society of Thoracic Surgeons and Centers for Medicare and Medicaid Services databases again demonstrated that one half of the cardiac surgeons in this country perform 5 or fewer mitral repairs per annum. In addition, when comparing by surgical volume the lower- to upper-quartile centers, there were significant differences with increased mortality (odds ratio [OR], 2.1), morbidity (OR, 1.35) and 1-year mortality (OR, 1.6) all observed in the lower-volume centers!⁵

This editorial elegantly organizes the benefits and techniques of concomitant tricuspid repair for the cardiac surgical community. Unfortunately, what remains unspoken is the major problem of a relative lack of experienced surgeons for the primary mitral valve repair, which does negatively impact outcomes. Experience in primary mitral

repair needs to be bolstered for a great majority of surgeons to extend the operation to concomitant tricuspid repair.

References

1. Chikwe J, Megna D. Invited Editorial: rationale and surgical strategy for concomitant tricuspid repair. *J Thorac Cardiovasc Surg Open*. 2020;3:52-61.
2. Badhwar V, Rankin JS, He X, Jacobs JP, Gammie JS, Furnary AP, et al. The Society of Thoracic Surgeons mitral repair/replacement composite score: a report of the Society of Thoracic Surgeons quality measurement task force. *Ann Thorac Surg*. 2016;101:2265-71.
3. Samadashvili Z, Sundt TM III, Wechsler A, Chikwe J, Adams DH, Smith CR, et al. Multiple versus single arterial coronary bypass graft surgery for multivessel disease. *J Am Coll Cardiol*. 2019;74:1275-85.
4. Saint LL, Damiano RJ Jr, Cuculich PS, Guthrie TJ, Moon MR, Munfakh NA, et al. Incremental risk of the Cox-maze IV procedure for patients with atrial fibrillation undergoing mitral valve surgery. *J Thorac Cardiovasc Surg*. 2013; 146:1072-7.
5. Badhwar V. The mitral valve surgery volume-outcome relationship in the United States. Presented at: TCT 2019; September 27, 2019; San Francisco, CA.