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Commentary: Unraveling the secrets of the neglected tricuspid valve

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Despite being dubbed as the forgotten valve, there has emerged a growing body of evidence highlighting the adverse impact of untreated tricuspid regurgitation (TR) in patients undergoing left sided heart valve surgery. Based on this, the current American Heart Association/American College of Cardiology¹ and European Society of Cardiology/European Association for Cardio-Thoracic Surgery² guidelines recommend concomitant tricuspid repair for both severe TR (Class I) as well as mild or moderate functional TR if tricuspid annular diameter is ≥ 40 mm for patients undergoing left-sided valve surgery (Class IIa, Level of Evidence B). These guidelines are far from perfect, owing to large knowledge gaps regarding the etiology and natural history of secondary TR.

Most studies to date have lumped together all the left-sided valvular lesions, assuming that the resulting secondary TR has the same pathogenesis and natural history irrespective of whether the primary left-sided disease is DMD (degenerative mitral disease), functional mitral regurgitation, mitral stenosis, aortic stenosis, etc. Such assumptions could be misleading and might be a major source of bias. The guidelines further fail to specify the impact of comorbidities like preoperative atrial fibrillation (AF) on the progression of TR and survival.

In the current issue of the *Journal*, McCarthy and colleagues³ have demonstrated that concomitant tricuspid valve (TV) repair during mitral valve (MV) surgery might not be of benefit unless the tricuspid annular diameter is ≥ 45 mm instead of the ≥ 40 mm threshold per current guidelines and for patients with AF there is a significant, steadily increasing, and heretofore-unrecognized risk of late TR even with concomitant AF ablation.

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CENTRAL MESSAGE

Contrary to current guidelines, TV repair during mitral valve surgery might not be of benefit unless the TAD is ≥ 45 mm instead of the guideline-directed ≥ 40 mm threshold, and for patients with AF there is a significant progressive risk of late TR despite a-fib ablation.

At first glance, it seems puzzling why the study by McCarthy and colleagues³ failed to show progression of TR in the subset of patients with a tricuspid annulus 40 to 45 mm in contrast to the ≥ 40 mm threshold per current guidelines. A likely answer could be that unlike previous studies, the current study focuses purely on DMD rather than all left-sided lesions and thus might be more reflective of the natural history of TR in DMD. Thus, it is compelling to suggest that future studies on this subject should focus on teasing out the subtle differences between subtypes of concomitant mitral and tricuspid disease. However, it is also plausible that in the current study the benefit of operating on guideline-directed lower threshold of ≥ 40 mm may have been missed, as late follow-up echo was available for just 40% of patients, mean interval from index operation to follow-up echo was just 4.0 ± 3.3 years, a significant number (212) patients did not have the recommended apical views for evaluating the TV, and finally follow-up echos were done randomly based on wishes of the cardiologist.

From a practical standpoint in the current era, adding TV surgery during MV procedures in valve centers of excellence does not significantly add to the mortality and morbidity,⁴ whereas the operative mortality of redo TV repair has a mortality as high as 35%⁵ and hence it begs the question whether it is prudent to risk following a more

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Disclosures: Author has nothing to disclose with regard to commercial support.

Received for publication Nov 29, 2019; revisions received Nov 29, 2019; accepted for publication Nov 29, 2019; available ahead of print Dec 14, 2019.

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J Thorac Cardiovasc Surg 2021;161:2041-2

0022-5223/\$36.00

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<https://doi.org/10.1016/j.jtcvs.2019.11.116>

restrictive ≥ 45 mm threshold rather than the guideline-directed liberal ≥ 40 mm?

The current study further demonstrates the lingering impact of comorbid AF on progression of TR after MV surgery despite a high percentage of patients (97%) receiving surgical maze procedure and despite a high percentage (87%) of patients free of AF on follow-up. These results are hard to ignore despite the various sources of bias accepted by the authors, and it seems reasonable to be more aggressive in proceeding with concomitant TV repair during MV repair in patients with AF. However, it is worth emphasizing that the study fails to define a clear size threshold for concomitant intervention on the TV in patients with AF or whether it should be done irrespective of annular diameter.

In conclusion, further work needs to be done to define the optimal size threshold for TV intervention in the subgroup of patients with secondary TR with AF, and furthermore there is a need for well-designed randomized studies to

weed out the controversies of TV repair during MV surgery, especially in the current era of rapidly evolving and effective percutaneous valve therapies.

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Commentary: Late tricuspid valve insufficiency following mitral valve repair: A marker or a cause for inferior outcome?

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The ongoing debate on the appropriate surgical approach to patients with moderate or less tricuspid valve regurgitation at the time of mitral valve (MV) repair for degenerative disease is far from being resolved. This is not because of lack of extensive observational research, it is simply due to the

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In this issue, the contribution of McCarthy and colleagues to the field is significant. They highlight the importance of AF, even when treated effectively, as a risk factor for recurrent TR.

fact that the clinical question of whether and when to repair a leaking tricuspid valve (TV) at the time of surgery is very complex to answer and the current tools and evidence we

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Received for publication Dec 16, 2019; revisions received Dec 16, 2019; accepted for publication Dec 16, 2019; available ahead of print Jan 7, 2020.

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J Thorac Cardiovasc Surg 2021;161:2042-4

0022-5223/\$36.00

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<https://doi.org/10.1016/j.jtcvs.2019.12.053>