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 Cardiology and European Society of Cardiology/European Association for Cardio-Thoracic Surgery 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 colleagues 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.

At first glance, it seems puzzling why the study by McCarthy and colleagues 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, whereas the operative mortality of redo TV repair has a mortality as high as 35% and hence it begs the question whether it is prudent to risk following a more
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 sur-
gery 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 effect-
ive percutaneous valve therapies.

References
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