Pump the brakes: Getting ahead of ourselves with concomitant tricuspid annuloplasty?

David D. Yuh, MD, FACS, FACC

From the Department of Surgery, Stamford Hospital, Stamford, Conn.

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Address for reprints: David D. Yuh, MD, FACS, FACC, Department of Surgery, Stamford Hospital, Stamford, CT 06902 (E-mail: DYuh@stamhealth.org).

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David D. Yuh, MD, FACS, FACC

Central Message

Although tricuspid repair concomitant with left-sided valve surgery for mild regurgitation may confer benefits to right ventricular function, more study is required before this should be routine.

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The study by Sakata and colleagues¹ adds to the growing body of evidence supporting the performance of tricuspid annuloplasty for functional tricuspid regurgitation in conjunction with left-sided valve surgery. The significance of this work lies in providing kernels of data that suggest even more aggressive surgical treatment of functional tricuspid regurgitation concomitantly with left-sided valve surgery than outlined in the most recent 2014 American Heart Association/American College of Cardiology consensus clinical guidelines.² The authors showed that patients undergoing left-sided valve surgery without concomitant tricuspid annuloplasty experienced right ventricular remodeling (ie, increased diastolic diameter) after only 1 year, whereas those who did undergo tricuspid repair demonstrated reverse right ventricular remodeling over the same time interval. Significantly, the clear majority of these patients had only mild tricuspid insufficiency and a mean tricuspid annular diameter significantly less than the 40 mm threshold for concomitant tricuspid repair specified in current guidelines; this was demonstrated both before and after propensity score-matching analyses. One can infer that these data support concomitant correction of even mild tricuspid regurgitation regardless of the type of left-sided valvular disease and degree of annular dilatation.

However, one must be cautious in extrapolating the results from this heterogeneous and relatively small patient cohort to suggest that mild tricuspid regurgitation without significant annular dilatation should be routinely addressed in patients undergoing degenerative mitral surgery, given that longer-term evidence of right ventricular remodeling supports concomitant repair of moderate to severe tricuspid regurgitation or annular dilatation.^{3,4} Although some studies, including this one, suggest that tricuspid repair adds little to the operative risk of left-sided valve surgery, Jouan and colleagues⁵ recently reported a significantly higher incidence of high-grade heart block lasting more than 3 days postoperatively among patients undergoing tricuspid annuloplasty in conjunction with mitral valve surgery (41.2% vs 14.5%) and a significantly lower freedom from permanent pacemaker implantation at 3 years

(94.1% vs 99%); tricuspid ring annuloplasty was found to be an independent predictor of heart block.⁵ Moreover, mild functional tricuspid regurgitation without significant annular dilatation can be effectively treated with (1) left-sided valve surgery alone in patients with pulmonary arterial hypertension stemming from left-sided valve lesions or, as the authors note, (2) standard medical therapies (eg, diuretics). The challenges of assessing the relative contributions of fixed and reversible pulmonary hypertension on mild to moderate tricuspid regurgitation make it difficult to apply these guidelines across broad populations.

Finally, it is important to note that tricuspid annuloplasty did not result in significant improvement of right ventricular function after 1 year in this study. This is consistent with the findings of Chikwe and colleagues,³ who noted an initial deterioration in right ventricular function from baseline among patients undergoing concomitant mitral and tricuspid repair over the first year, followed by progressive recovery and improvement compared with baseline over the ensuing 4 years. Naturally, it is important to see eventual improvement of right ventricular function among the patients in this or future studies of this issue to substantiate the case for more aggressive surgical correction of tricuspid insufficiency.

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