



Intermediate outcomes of functional moderate mitral valve regurgitation and aortic valve replacement

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“It had long since come to my attention that people of accomplishment rarely sat back and let things happen to them. They went out and happened to things.” —Leonardo da Vinci

The presence of concomitant valvular disease at the time of primary open heart surgery is familiar. We often face concurrent valve disease at the time of surgery, even at the severity of mild valve dysfunction, knowingly or unknowingly. These mitral valve degrees of regurgitation tend to be favorably mild to moderate in most circumstances at the time of aortic valve replacement. These situations are typically met with quiet relief that the mitral valve is not severe; therefore, the surgeon can save the mitral valve without touching it. Traditional teaching portends that most mitral valve regurgitation will improve or stay the same at the time of aortic stenosis relief has held the test of time; however, until it does not. The correct statement is that moderate functional mitral regurgitation improves following aortic valve replacement. At the same time, organic mitral valves such as myxomatous or rheumatoid due to dysfunction in the leaflet, chord, or papillary muscle may persist or worsen (1).

Let us revisit the indication for surgery in the first place. Replacing the aortic valve for a patient with severe aortic stenosis or regurgitation is the first step toward favorable ventricular remodeling (2). The authors of this article, Zhao *et al.*, make an extra effort to enhance ventricular remodeling by reducing the diastolic ventricular volume through reducing mitral valve regurgitation (3). This group's combined aortic valve replacement and mitral valve repair outcomes were excellent, without excess mortality

but with increased acute kidney injury.

Long-standing mitral regurgitation increases ventricular volume with a direct effect on the endocardium and, later on, the heart strain. Spectral Doppler tracing shows reduced ventricle relaxation over time (4). The authors wanted mitral-related diastolic volume eliminated by repairing the valve. However, any surgical procedure carries risk, and while there was selection bias by the surgeon in choosing those patients who ended up with mitral valve repair, not all mitral valves are repairable with an annuloplasty ring alone.

The current understanding and practice are to not intervene in functional mitral valve during simultaneous cardiac surgery unless it is moderate to severe. The authors should be congratulated on placing another stack of data suggesting a good number of patients who underwent both aortic valve replacement and mitral valve repair (n=42 patients) with increased cardiopulmonary bypass time and cardiac arrest time under 40 minutes on average.

The cohort of patients was limited to moderate functional mitral regurgitation. While surgical schools in the west would not intervene in mild-moderate functional mitral regurgitation because of the favorable long-term prognosis following an aortic valve replacement (5), other schools argue that a selective approach to intervening on the mitral valve when the left atrial size (>5 cm), nonfunctional mitral regurgitation, poor ejection fraction and atrial fibrillation (6). In the paper by Zhao *et al.*, the history of atrial fibrillation was about 19% (treatment group) and left atrial diameter of 47.9±7.5 mm (treatment group). Cardiac ventricular diastolic dimensions were mentioned, but those

with mitral valve repair versus non in this cohort were not statistically different among such parameters. Nonetheless, the data provided by Zhao *et al.* once again reaffirms that intervening in moderate mitral regurgitation during aortic valve surgery does not add any benefit or significant harm when performed by experienced surgeons.

The message for the readers in this paper leaves little residual interpretation. However, in general, the paper is a fine addition to the already collective documents of the favorable natural history of mitral valve regurgitation after Aortic valve replacement when the mitral is left alone. The readers look forward to long-term follow-up in 7–10 years of this study cohort to determine if there are any related long-term benefits to the addition of repairing a mitral valve by this accomplished group.

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