See Article page 2037.

ADULT

Commentary: The right horse for the race in the repair of secondary mitral regurgitation

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CENTRAL MESSAGE

Restrictive annuloplasty repair of secondary mitral regurgitation had better left ventricular ejection fraction, less symptoms, and better reduction of regurgitation than transcatheter repair.

In their recently published article, Okuno and colleagues[1] explore surgical repair versus transcatheter edge-to-edge repair (TEER) for secondary mitral regurgitation (MR). This manuscript is timely after the 2020 American Heart Association/American College of Cardiology (AHA/ACC) guidelines in which TEER was given a Class IIa indication in the management of severe secondary MR.[2] This elegant, retrospective, propensity-matched study comparing 202 patients is the first surgical versus transcatheter repair comparison for secondary MR after the new AHA/ACC guidelines. After a 2-year follow-up, the authors found surgical restrictive annuloplasty (RA) plus coronary revascularization to be superior to TEER in reducing MR, improving ventricular ejection fraction, and reducing New York Heart Association class III-IV without a survival difference.

Favorable ventricular outcomes from RA are in part driven by surgical coronary revascularization.[3] Negative ventricular remodeling from RA has been documented in animal studies, and RA has been found to be inferior to papillary muscle approximation (PMA) plus annuloplasty in retrospective and prospective randomized studies.[3-8] Like the study by Okuno and colleagues,[1] TEER in COAPT (Cardiovascular Outcomes Assessment of the MitraClip Percutaneous Therapy for Heart Failure Patients With Functional Mitral Regurgitation) failed to show improvements in left ventricular ejection fraction or ventricular remodeling despite achieving reduction of MR, heart failure symptoms, and improving survival compared with guideline-directed medical therapy at 2 years.[1,9,10]

In this propensity-matched study, RA surgical repair was superior to TEER in the 2-year secondary end points, but prospective data showed RA repair alone is not universally applicable, with recurrence of moderate or worse MR of 32.6% at 1 year and 58.8% at 2 years in patients with basal aneurysms or high tenting heights.[11-13] After the work by Hvass and Joudinaud,[7] Nappi and colleagues[3,8] compared a double-level repair (PMA) with RA and found the former to be superior in achieving ventricular remodeling with lower MR recurrence in a prospective randomized trial as it addressed the ventricular component of secondary MR.

We have learned that surgical repairs for secondary MR work best when specific valvular and ventricular features are present. We know that secondary MR is not a valvular problem but predominantly a ventricular problem and that ventricular remodeling and repair durability are better with a ventricular intervention (PMA).

So, what next? The 2020 AHA/ACC guidelines advanced and kept as 2A indications TEER and surgical repair plus revascularization, respectively. Neither therapy has long-term prospective data, with surgical repair having 5-year follow-up and TEER 2-year follow-up.[3,10] Okuno and colleagues[1] give us a window into this comparison, but to have a more complete picture, a prospective comparison is in order. This task will be nuanced first by the fact that

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surgical revascularization improves LV remodeling and affords longer durability of repairs, which cannot be said of percutaneous coronary intervention/stenting plus TEER. Second, double-level surgical repair may be better than RA mid- and long-term.

With all that said, where do we go from here, RA or a double-level repair with PMA? In the surgical treatment of secondary MR, we still need to understand which horse to sign up for the race.

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