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Commentary: From bailout to standardized approach in mitral annulus calcification: It's a short step

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CENTRAL MESSAGE

Open transatrial transcatheter mitral valve replacement in severe mitral annular calcification has acceptable results. This technique maybe considered a standard approach rather than a bailout one.

Surgical mitral valve replacement in patients with extensive mitral annular calcification (MAC) remains a surgical challenge for several reasons: patients are older, with multiple associated comorbidities, and the surgical procedure is risky and associated with several well-reported complications, including left circumflex coronary damage, moderate-to-severe paravalvular leak (PVL), patient–prosthesis mismatch, and atrioventricular groove rupture. Multiple surgical techniques have been used to deal with MAC. However, over time, no strategy has gained acceptance and, in addition, early and midterm results are conflicting. Recently, an alternative approach to surgical mitral valve replacement in patients with severe MAC, that is, open transatrial implantation of transcatheter balloon-expandable valve, has emerged.

Two recent reports, from Praz and colleagues[1] and Russell and colleagues,[2] have provided encouraging results with this technique. In both articles, the authors have focused on several technical factors that may reduce the risk of left ventricular outflow tract (LVOT) obstruction, such as anterior leaflet resection, which is mandatory to strongly reduce the risk of LVOT obstruction. As with all complex and challenging clinical and surgical scenarios, patients with severe MAC should be discussed by a dedicated team before choosing the best tailored approach. The use of multidetector computed tomography in addition to the analysis of the cardiac images using commercially available software, allowing one to simulate the valve position, have provided essential details during the preoperative planning. Using multidetector computed tomography analysis, Alexis and colleagues[3] recently reported an interesting MAC classification according to the extension of annular calcification and furthermore observed that a simulated reduction of neo-LVOT area $\leq$170 mm^2, thickness of left ventricular septal, the aortomitral angle measurement, and the annular eccentricity with a cut-off $\geq$30%, may strongly predict early surgical failure.

Hamid and coauthors[4] provided 1-year results of patients with MAC who underwent open transatrial transcatheter valve implantation with the Edwards SAPIEN-3 valve (Edwards Lifesciences, Irvine, Calif). Between 2017 and 2020, 8 patients received this approach. Early and 1-year mortality were 12% and 25%, respectively, and symptomatic improvements were significative. The authors identified and discussed in detail 4 technical considerations: PVL and prosthesis migration; patient–prosthesis mismatch; LVOT obstruction; and calcium extending into myocardium. Although the surgical technique described by Hamid and colleagues is not novel and has already been reported in previous studies,[1,2] Hamid and colleagues' findings and results offer important insights to standardize this technique in patients with MAC, taking into account the poor results of conventional surgery in the precatheter therapy era. In addition, the improvement in symptoms and quality of life may

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encourage many surgeons to treat severe MAC with this new surgical approach and extend the surgical indications to that segment of patients who otherwise were deemed inoperable in the pretranscatheter therapy era and thus destined for medical therapy.

PVL has been discussed marginally and, in my opinion, needs more attention. With this approach, moderate-to-severe PVL may be due to a technical problem, tissue fragility (the prosthesis is not sutured to the annulus but predominantly to the atrial tissue that is more prone to tearing), or both. It is important to also standardize the treatment for this complication and identify in which cases it is reasonable to return for a further pump run (accepting the increased surgical risk) and which cases to not treat the PVL because of the prohibitive risk of a further pump run. Further results from multicenter studies are obviously needed in terms of short- and long-term outcomes to consider this surgical approach no longer as a bailout but as a standardized procedure.

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