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REPLY: PROSTHESIS−PATIENT MISMATCH: NO CONSENSUS YET
Reply to the Editor:

The definition and clinical impact of prosthesis−patient mismatch (PPM) has been a matter of intense debate and controversy.[1,2] In response to the manuscript "Why the Categorization of Indexed Effective Orifice Area Is Not Justified for the Classification of Prosthesis−Patient Mismatch," Ternacle and Pibarot[3] proposed a new algorithm to better categorize patients having true severe PPM. They have used solid arguments to demonstrate that although mean transprosthetic gradients (m$\varDelta$p) may underestimate the presence of true severe PPM, the opposite occurs when using measured effective orifice area indexes (mEOAi) for the same purpose. Considering that echocardiographic measurements were correctly performed and in the absence of low-flow states, the authors suggest that in patients with m$\varDelta$p <20 mm Hg, predicted EOAi is more reliable than mEOAi to confirm the presence or absence of true PPM.[3]

The challenge to establish accurate and reliable "normal" EOA reference value tables for different prosthetic valves is reflected by the creation of a task force in this respect. Reference EOAs provided by valve manufacturers are based in "in vitro" pulse duplicator studies and, for reasons beyond the scope of this comment, yield consistently greater values than those observed in clinical practice.[4] Contrary to a geometric orifice area that can be physically measured, EOAs are influenced by imprecisions during echocardiographic data acquisition, circulatory conditions, and individual anatomical characteristics of the left ventricular outflow tract and aortic root.[5,6] In addition, surgical factors including the choice of the suture technique, use of mattress pledget versus single interrupted sutures, implantation in supra versus intra-annular position, and correct sizing of the stented valve been shown to significantly influence the final mEOAi.[7,8]

Due to uncertainties to determine the real degree of prosthetic aortic valve obstruction other alternative echocardiographic parameters such as Doppler velocity index, acceleration time, jet contour, valve resistance, percentage stroke work loss, and energy loss have been proposed and may provide additional information in doubtful cases.[9] Others advocate using cardiac magnetic resonance or invasive catheter measurements in discordant cases.[10]

In the current era, where different interventional procedures (surgical aortic valve replacement vs transcatheter aortic valve replacement) are being equally offered to a broader range of patients with lower risk profile, younger age, small aortic annulus, bicuspid valves, and reinterventional procedures, it is desirable that a standardized definition of true moderate and severe PPM be uniformly applied and reported in academic research not only to better understand the clinical consequences of the varying degrees of PPM, but also aid in proper patient selection and prosthesis choice based in solid scientific background to improve clinical outcomes. Continued work on the field may help to further clarify the appropriateness and limitations of mEOAi or predicted EOAi in clinical practice.

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