Comparison of Bioprostheses in Patients With Small Aortic Annulus

I am writing to comment on the study by Botzenhardt et al. (1) in a recent issue of the Journal.

This interesting report compared different forms of bioprostheses, particularly in the small annular sizes for the aortic root. My reason for writing is related to the conclusion and the discussion regarding patients, particularly elderly ones, who need aortic valve replacement and who have relatively small annular diameters, namely 19, 21, or 23 mm. I would disagree with the authors’ conclusions that “especially older women who often present with narrow left ventricular outflow tracts small aortic annulus and therefore a surgical procedure in this patient group, according to our results properly require root enlargement.” I would like to emphasize strongly that this is a somewhat hazardous recommendation, particularly in the elderly who have many other comorbidities and where a prolonged operation could lead to increased morbidity and even mortality. The researchers quote recommendations by the American College of Cardiology that the surgical procedure in this patient group should be a root enlargement. I strongly suggest that many of us who deal with these very frail elderly and oftentimes very sick patients would do well to implant these newer forms of more hemodynamically efficient bioprostheses, as mentioned in their study, even in the 19-mm range rather than extensive root enlargements for theoretical hemodynamic gain.

Increasing numbers of elderly patients (numbering some 50 million by the year 2015) will require aortic valve replacement. We must devise strategies and use the best bioprostheses in this group to get patients through surgery and improve their hemodynamics, while balancing the risk and reward of these procedures.

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REFERENCE


REPLY

Our study about four stented bioprostheses implanted in patients with a small aortic annulus observed high incidences of patient-prosthesis mismatch in subjects with an aortic annulus of 18 to 20 mm independent of the chosen valve type (1). These patients may hemodynamically benefit from aortic root enlargement and the implantation of a larger stented bioprosthesis. However, the decision to extend the operative procedure from an isolated aortic valve replacement to valve replacement plus root enlargement, which may lead to increased morbidity and mortality (2), must always be integrated in a differentiated and extensive assessment of the patient’s comorbidities, age, and lifestyle and must not be misunderstood as a general recommendation. Prolongation of the cardiopulmonary bypass time may be especially associated with increased operative and 30-day mortality in patients ≥80 years of age (3).

Thus, we concur with Dr. Cohn that “we must devise strategies and use the best bioprostheses in this group to get patients through surgery and improve their hemodynamics, while balancing the risk and reward of these procedures.” We emphasized this concept with reference to the American College of Cardiology/American Heart Association (ACC/AHA) guidelines for the management of patients with valvular heart disease: “A narrow LV [left ventricular] outflow tract and a small aortic annulus sometimes present in elderly women may require enlargement of the annulus. The decision to proceed with valve replacement depends on an imprecise analysis that considers the balance between the potential for improved symptoms and survival and the morbidity and mortality of surgery” (4). We did not cite these guidelines to support the widespread use of aortic root enlargement. The operative procedure at our department reflects the integration of investigational results in real-world surgery, as “we do not always perform aortic root enlargement in case of patient-prosthesis mismatch in this patient group, setting priority to achieve low rates of perioperative adverse events. However, we sometimes have to accept suboptimal hemodynamic performance” (1).

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REFERENCES


The Morphed Specialist—An Androphinx?

Dr. DeMaria in his editorial (1) on the morphing of cardiovascular specialists rightly points out that there will be a blurring of the borders between specialties. Newer technological developments