Commentary: Rooting around dilated left ventricles has implications for the fate of aortic valves

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That what cannot be repaired is not to be regretted.
—Samuel Johnson

Guo and colleagues report on the durability of valve-sparing root procedures on freedom from aortic insufficiency (AI) and how this varies with left ventricular (LV) dilatation. Using a best-fit model, LV end-systolic diameter index (LVESDi) was found to predict occurrence of AI better than LVESD, LV end-diastolic diameter, or LV end-diastolic diameter index. Occurrence of >1+ AI at 6 years was low (7.8%) in those with small ventricles (LVESDi ≤1.4 cm/m²), worse (19.1%) in those with LVESDi 1.5 to 1.9 cm/m², and further worse (49.7%) in the group with large ventricles (LVESDi ≥2.0 cm/m²). The all-inclusive study did not examine recurrence of AI per se, because one-third of patients had trivial or no AI before surgery. However, in the subset of patients with preoperative AI, recurrence of >1+ AI at 6 years was 55.0% in the group with LVESDi ≥2.0 cm/m² and 23.7% in those with LVESDi <2.0 cm/m². The study relied on retrospective reports of echocardiographic examinations that are susceptible to errors that might otherwise be circumvented through use of a core lab. The study should be taken in this context, but this does not significantly diminish the results.

Guo and colleagues offer some predictive power regarding the fate of the aortic valve that we can use to guide our approaches. If there is no significant AI preoperatively and the LV is not dilated, then the durability of the aortic valve is highly likely. But if there is significant preoperative AI and the LV is dilated, there is significant probability that AI will recur. There was indication on univariate analysis that the number of cusps repaired and shaving of the valve correlated to fallibility of the repair. Leaving the operating room with residual 1+ AI was found to predict fallibility on multivariable analysis (risk adjusted odds ratio, 5.77), but 6 (22%) of 27 patients with intraoperative residual 1+ AI had no progression of AI. These findings suggest improvement of AI over time or resilience of the valve should not be expected routinely and minor flaws are incompletely forgiving.

Is it better to leave someone with his or her own valve that is mildly incompetent or to replace the valve once it is apparent that residual AI is the best repair that can be achieved? Many factors will go into this decision, including the choice of prosthesis in the event repair is abandoned. We are moving closer to personalized medicine and tailoring care to a specific person. Guo and colleagues remind us that the way we achieve this is by measuring outcomes of interventions with granularity so that findings can be applied with greater precision to the person who stands before us.

Reference