no statement was made on how many of the operations of these patients were performed on an emergency basis. We wonder whether differences were present between the emergency and elective operations in terms of postoperative neurologic complication rates, because in a limited number of studies it has been reported that the risk of development of postoperative neurologic accident in patients undergoing surgery for aortic dissection is greater in emergency procedures.^{2,3} If any data regarding this is available in the study by Shi and colleagues,¹ we believe that sharing this information would contribute to both their own study and the published data.

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REPAIR OR REPLACE THE AORTIC VALVE? MORE QUESTIONS, NO ANSWERS To the Editor:

We read with interest the article by de Meester and colleagues¹ on outcomes after aortic valve (AV) repair versus AV replacement. This report comes from a center of excellence concerning the treatment of AV disease.

In their study, de Meester and colleagues¹ observed a survival advantage in the AV repair group. The question that naturally comes to mind is whether this survival advantage should be attributed to the AV repair itself. Although the tenor of the article seems to be in favor of repair, we believe that the answer to this question might not be that simple. A significant proportion of deaths might not have anything to do with the AV, because 5 deaths in the replacement group were classified as of miscellaneous or noncardiovascular causes. Should these events serve in the comparison of the 2 groups, and do these noncardiovascular deaths provide evidence of a survival advantage? The adjusted death hazard in the replacement group seems to be 10 times (95% confidence interval, 2.8-33.3) that of the repair group, an enormous effect size! Could this be a false-positive finding with an extreme tendency² related to the small sample size? Why should patients undergoing AV repair have better survival than matched patients receiving the “standard of care” with AV replacement? Perhaps the morbidity attributable to the prosthetic valve or the superior AV repair hemodynamics can drive a potential survival benefit. This difference must translate into measurable clinical outcomes, however, and the cardiovascular event-free survival and the cardiovascular event rate were more or less comparable between the 2 groups.¹

Another way to look at the same data is to ask why the patients with AV replacement fared worse. In the

time course of 6 to 8 years, survival with a prosthetic valve was about 60%. The absolute and relative survivals seem to be much lower than expected.³ Is the survival of this cohort representative of the outcomes that should be expected after AV replacement in patients with few comorbidities and a mean age of 63 years? Should this matched cohort serve as a benchmark for judging AV repair procedures? The average age in the total Brussels AV repair cohort is approximately 50 years,⁴ which poses the question of whether the expected AV repair benefits should be the same across all age groups.

Despite the excellent results of the AV repair reported by de Meester and colleagues,¹ no definite answer can be provided regarding the effect of AV repair versus AV replacement on long-term patient survival. To evaluate a cause and effect relationship, a prospective, randomized, multicenter study is needed. There have been many calls for randomized, controlled trials in the field of heart valve surgery, but very few such studies have been conducted because of a variety of barriers, such as high costs, long follow-up duration, limited generalizability, and, most importantly, surgeon and patient preferences. This is certainly true for AV repair, which is still considered complex surgery and is mainly practiced in dedicated centers of expertise, such as that of the Brussels group. The way to move forward is through inclusive international collaborative efforts, such as the recently initiated Aortic Valve Insufficiency and Ascending Aorta Aneurysm International Registry (AVIATOR) initiative, which is aimed to prospectively evaluate surgical outcomes of patients with aortic regurgitation, aortic root dilatation, or both. In this effort we can embed a preference randomized, controlled trial⁵ that will help us find the holy grail.

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REPAIR OR REPLACE THE AORTIC VALVE: THE WEIGHT OF EVIDENCE

Reply to the Editor:

We thank Charitos and Takkenberg for their interest in our work. They raise interesting and important questions about the potential differences in survival between patients undergoing aortic valve (AV) repair and those undergoing AV replacement. They question the fact that patients undergoing replacement had a higher mortality than those undergoing repair and suggest that this may be due to false-positive findings in a small series.

Obviously, we can hardly deny that the matched comparison in our study only involved a limited number of subjects and could therefore have been subject to statistical

inaccuracies. There are nonetheless several lines of evidence that this was not the case.

As far as AV repair is concerned, the outcome data in the matched group were quite similar (in fact almost identical) to those in the unmatched population. Figure 1 shows overall survival of the 241 patients undergoing repair who met the inclusion criteria and from whom the 44 matched patients were selected. In these patients, overall survival was similar (83% at 9

years) to that of the age- and sex-matched Belgian population (86% at 9 years). Furthermore, similarly good results have been reported by several other groups as well. Among 331 patients who underwent elective AV repair for aortic regurgitation at the Mayo Clinic, in-hospital mortality was 0.6% (2 of 332 patients), and overall survivals were 91% and 81% at 5 and 10 years, respectively.¹ Similarly, in 640 patients undergoing AV repair for regurgitation, Aicher and

FIGURE 1. Kaplan-Meier survival curves comparing overall postoperative survival between patients undergoing aortic valve (AV) repair (solid line) and the age- and sex-matched Belgian population (dashed line). NS, Not significant.

FIGURE 2. Relative survival in patients undergoing aortic valve (AV) repair (solid line) or aortic valve replacement (AVR, dashed line).