actual ethical standard procedures to meet corresponding concerns.

Tavlasoglu and colleagues particularly pointed out in the valve-in-native-ring case that preoperative echocardiography should have determined the severe calcification and thus allowed optimized surgical planning to include the valve replacement technique in a severely calcified mitral annulus, as previously presented by Mihaljevic and associates.² In this particular case, we must recognize that the preoperative findings concerning mitral annular calcifications were obviously underestimated, resulting in the attempt at conventional mitral repair. At any rate, this apparent misinterpretation cannot be argued and thus was intentionally not included in our recently published series.¹ Despite extraordinary diligence, however, real life sometimes includes painful twists of fate. The pivotal point was when our operating surgeon came into this futile situation and a bail-out plan was needed. Too much crossclamp time had been spent to allow further extension, and death on the operating table was no option. For those reasons we performed as an absolute bail-out procedure the direct-view implantation of the transcatheter valve.¹ As Tavlasoglu and colleagues correctly remarked, this resulted in progressive paravalvular leakage and the beginning of valve dislocation on the first postoperative day. Only after second-look surgery, including refixation of the transcatheter valve with a single running suture to an atrial cuff, was a stable valvular function achieved.

We absolutely agree with the concerns stated by Tavlasoglu and colleagues. For those reasons, we have already pointed out that “this case demonstrated that ‘valve-in-native ring’ procedures are not really feasible” and this bail-out procedure potentially only “worked once, but can surely not be recommended at all.”¹ We summarized that “with the present available devices, ‘valve-in-native-ring’ seems not to be... possible.”¹ With regard to

ongoing developments, valve-in-native-ring could become feasible in the future, but at the present, it is surely not.³

From our point of view, conventional surgery unarguably remains the standard treatment for nearly any mitral valve disease. Nonetheless, we believe, that valve-in-valve and valve-in-ring procedures in the mitral position have a particular value in selected cases. In this spirit, we like to cite Michael Mack’s sophisticated commentary on valve-in-valve procedures: “The procedure is extremely promising, but as with any new technology or technique, embrace should be cautious until the limitations have been well defined and addressed.”⁴

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WHICH SUBGROUP OF MITRAL VALVE REPLACEMENT SHOULD BE COMPARED WITH MITRAL

VALVE REPAIR IN CONCOMITANT AORTIC AND MITRAL VALVE SURGERY?

To the Editor:

The article by Coutinho and colleagues¹ draws attention to a classic topic that has not been deeply investigated, whether to replace or repair the mitral valve in double-valve surgery. We congratulate them for keeping our knowledge up to date on this issue. The efforts toward defining the exact solution have great importance. In this regard, we would like to make some contributions and discuss the subject.

It is a fact that although the reported freedoms from endocarditis ($P = .002$) and major valve-related adverse events ($P = .0026$) were better for the mitral valve repair group, the expected concomitant improved survival¹ was not seen. We think that the answer should be sought in the structural differences of the left ventricles when considering etiologic classification of both groups. The mitral valve repair group mainly consisted of patients with three etiologies (functional [$n = 91$; 43.5%], degenerative [$n = 44$; 21.1%], and rheumatic [$n = 58$; 27.8%], whereas the mitral replacement group mainly consisted of patients with rheumatic etiology ($n = 40$; 76.9%). When New York Heart Association functional classification was compared between the two groups, statistically significant differences were detected ($P = .015$); however the pathophysiologic changes in the left ventricles resulting in New York Heart Association functional class III and IV were also different between the groups. It is well known that left ventricular function is well preserved in rheumatic mitral valve disease relative to degenerative or functional mitral valve disease. The primary pathologic condition in mitral valve stenosis is that the increased left atrial pressure is reflected on the pulmonary bed, whereas the primary pathologic condition in degenerative

or functional mitral valve disease is decreased cardiac output, which is compensated for by left ventricular dilatation. Both mechanisms are responsible for the symptoms. This approach was confirmed by Coutinho and colleagues¹ (left atrial diameter, 52.3 ± 8.7 vs 60.6 ± 9.4 mm; $P < .0001$; left ventricular end-diastolic dimension, 65.8 ± 9.6 vs 58.5 ± 8.3 mm; $P < .0001$; left ventricular end-systolic dimension, 46.1 ± 9.3 vs 37.8 ± 8.3 mm; $P < .0001$; and mean pulmonary arterial systolic pressure, 53.1 ± 16.7 vs 60.9 ± 17.1 mm Hg; $P = .004$). In addition, the preserved left ventricular functions were demonstrated in the mitral replacement group (shortening fraction $30.2\% \pm 8.0\%$ vs $35.5\% \pm 8.5\%$; $P < .000$).¹

When degenerative and functional mitral valve disease subgroups were compared between the mitral valve repair and mitral replacement groups in terms of cumulative patient survival, a statistically significant difference would have been detected. This situation was shown by Coutinho and colleagues¹ in their Figure 1, C. In a prospective study including patients with degenerative etiology, a better positive remodeling was observed by Pandis and coworkers² in their repair group versus their replacement group.² A retrospective study including 439 patients by Athanopoulos and associates³ indicated that when mitral regurgitation remained untreated surgically until left ventricular diameter were moderately to severely abnormal or the left atrium was moderately or severely dilated, successful reverse remodeling became less likely.

In conclusion, we speculate that had major valve-related adverse events been neglected, better survival would have been observed in the mitral replacement group because of better preserved left ventricular functions and dimensions. Likewise, if inadequate left ventricular reverse remodeling were neglected, better

survival would have been observed in the mitral valve repair group. Finally, adding major valve-related adverse events and inadequate left ventricular reverse remodeling to the calculation equalized the overall survival between the two groups.

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Reply to the Editor:

We thank Tavlasoglu and coworkers for the contribution of their letter to the interesting discussion about the decision to replace or repair the mitral valve in double valve surgery (aortic and mitral). Despite the existence of a significant number of reports in the literature dealing with concomitant aortic and mitral valve surgery, few have directly addressed this question. Some would argue that if the aortic valve needs replacement

with a prosthesis, an additional mitral prosthesis should not alter the outcome significantly.

One landmark study that approached this subject in a methodical way for the first time was published by the Cleveland Clinic group¹; however, there were differences between their study population and our own,² namely the prevalence of rheumatic disease, which would cause one to expect different results. In the Cleveland Clinic study, 70% of the mitral valves had rheumatic involvement, whereas nearly two-thirds of our patients had secondary (functional) or degenerative mitral disease. Our population is more consistent with the current daily practice in Western countries, because rheumatic etiology is declining. Furthermore, secondary (nonischemic and non-dilated cardiomyopathy) mitral regurgitation in the context of aortic valve disease is gaining importance,³ because patients are increasingly older, and moderate or moderate-to-severe mitral regurgitation is frequently found. It is thus important to know the outcome (survival and event-free survival) after repair or replacement of the mitral valve.

One major limitation of our study was the heterogeneity of the population; the groups (repair vs replacement) were very different with regard to important variables. Naturally, the decision to repair or to replace was influenced by the characteristics of the patient and of the valve, and a repair was preferred whenever possible, which may have created a bias. This was the rationale for performing propensity score matching to obtain more similar groups for comparison, a well-known and accepted statistical method for this type of analysis. Relevant demographic, patient, and echocardiographic characteristics, including mitral valve pathology, were included in the propensity score analysis.

We could not demonstrate a clear survival benefit in the repair group,