We also agree that further studies with an intravenous form of sildenafil, which is currently not available in our country, should be performed, especially with regard to the period of weaning from cardiopulmonary bypass, and we hope that our study will draw much attention and further clinical research in this area.

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References

1. Shim JK, Choi YS, Oh YJ, Kim DH, Hong YW, Kwak YL. Effect of oral sildenafil citrate on intraoperative hemodynamics in patients with pulmonary hypertension undergoing valvular heart surgery. *J Thorac Cardiovasc Surg.* 2006;132:1420-5.
2. Marshall BE, Marshall C, Frasch F, Hanson CW. Role of hypoxic pulmonary vasoconstriction in pulmonary gas exchange and blood flow distribution. *Intensive Care Med.* 1994;20:291-7.
3. Rudolph AM, Yuan S. Response of the pulmonary vasculature to hypoxia and H^+ ion concentration changes. *J Clin Invest.* 1966; 45:399-411.

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Redo mitral valve repair

To the Editor:

We read with interest the recent article of Suri and colleagues¹ in the *Journal*. The authors reported their 35-year experience of redo surgery for mitral valve (MV) repair failure in degenerative disease. They concluded that MV re-repair should be performed whenever technically feasible owing to the improved survival and better left ventricular performance allowed by the procedure in comparison to MV replacement. Although our surgical management of such patients is similar, we found some concerns with their reported data that need clarification.

Most patients were operated on between 1980 and 2000. Regarding the survival curve (Figure 1 from their article), only 25% of patients from both groups (repair and replacement) were still at risk at 5 years. Because mortality within that time frame was certainly not 75%, that means that many patients were lost to follow-up. This raises questions about the accuracy of the survival comparisons between the two

groups. On the other hand, it would have been interesting to have the actuarial survivals at 10, 15, and 20 years inasmuch as the study extends over a period of 35 years.

There is some inconsistency with the results of multivariate analysis of the predictors of late survival. According to the authors, "late" survival was better after MV re-repair. Survival was also better when the indication for reoperation was recurrent mitral regurgitation. However, this later group of patients (with regurgitation) underwent predominantly MV replacement. Do the authors have an explanation for these contradictory results?

It would have been interesting to have some echocardiographic data regarding the MV function when reading the results of a (long-term) MV repair study.

Six patients from the re-repair group underwent a third operation during their follow-up. Unfortunately, the intraoperative anatomic findings were not reported. In our experience, failure of re-repair is usually related to retraction of the posterior leaflet (type IIIa). This lesion is easily corrected by pericardial patch extension of the posterior leaflet, even in a third operation.² Most important, we believe that surgeons should carefully inspect the posterior leaflet for any retraction before performing re-repair for primary MV repair failure. Even when failure is due to an anterior leaflet prolapse, surgeons should not hesitate to extend the posterior leaflet when it appears retracted, even moderately. We believe that is a simple way to improve the long-term results of MV re-repair.

Finally, our surgical experience in MV repair failure in degenerative disease is in favor of re-repair. We therefore agree with the conclusion from the Mayo Clinic study, but we do have some concerns regarding the way it was presented.

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References

1. Suri RM, Schaff HV, Dearani JA, Sundt TM, Daly RC, Mullany CJ, et al. Recurrent mitral regurgitation after repair: should the mitral valve be re-repaired? *J Thorac Cardiovasc Surg.* 2006;132:1390-7.

2. Chauvaud S, Jébara V, Chachques J-C, El Asmar B, Mihaileanu S, Perier P, et al. Valve extension with glutaraldehyde-preserved autologous pericardium: results in mitral valve repair. *J Thorac Cardiovasc Surg.* 1991;102: 171-8.

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Reply to the Editor:

We thank Drs Zegdi, Achouh, and Fabiani for their comments and are happy to provide the requested clarifications.

Regarding the issue of patients at risk in the survival analysis, mean follow-up was 3.3 years, and 73% of patients alive at follow-up had this information available within 5 years of the date of review. Questionnaires were sent to all patients; however, current US Health Insurance Portability and Accountability Act (HIPAA) laws prohibit telephone inquiries to those who do not respond to mailed surveys. We also tracked vital statistics through the Social Security Death Index and have no reason to suspect that we missed a high number of deaths. We believe that the remaining patients were lost to follow-up at random.

Of 145 patients undergoing reoperation for recurrent mitral regurgitation alone, 64 (44%) had re-repair and 81 (56%) had replacement. The concern in the letter to the Editor as to whether recurrent mitral regurgitation and mitral re-repair are "contradictory" predictors of improved long-term survival is somewhat perplexing. Multivariate analyses attempt to control for confounding interrelated variables and identify independent predictors of end points such as survival, which is impossible to accomplish from a simple comparison of univariately significant factors alone.

The echocardiographic follow-up of these patients is an area of ongoing investigation by our group and is currently being analyzed in other clinical studies. In our practice, the recurrence of moderate-to-severe mitral regurgitation or significant stenosis usually leads to surgical assessment and intervention.

All patients in our study had primary mitral regurgitation owing to purely degenerative mitral valve disease. Leaflet retraction is usually rare unless ischemic or inflammatory components coexist. Additionally, we do not generally perform quadrangular resections and sliding repairs, which may explain the frequency with which Dr Zegdi's group reports mitral leaflet retraction at reoperation. The 6 patients who required a second re-