gurgitation (IMR) by cutting the strut chordae of the anterior mitral leaflet, and they combined this approach with ring annuloplasty and left ventricular volume reduction surgery. The technique reported by Yamamoto and colleagues is an effective modality, but there are some concerns that should be clarified. As stated previously, IMR is a ventricular disease and not a valvular disease. Although the tethering of the mitral leaflet might play role in the development of chronic IMR, it is not the cause but rather the result of a pathophysiologic process. Chordal cutting increases leaflet coaptation area by abolishing the bending of the anterior mitral leaflet, but it does not address all underlying mechanisms of functional IMR. We also know that the underlying cause of chronic IMR might differ between individual patients. Because the underlying mechanism might differ between patient groups, the chordal cutting technique might not have the same effectiveness in all patients.

Lastly, I think that there was also a misinterpretation of the successful result. The authors used the combination of 3 different techniques, which addressed all the underlying mechanisms, but only emphasized the importance of chordal cutting. I believe that the successful result of this surgical intervention could not be attributed to only the chordal cutting procedure. Therefore the authors should comment on how they draw such a result from the data presented. Additionally, instead of chordal cutting, I also believe that the main factor for the disappearance of leaflet restriction is the left ventricular volume reduction surgery, which decreases the interpapillary distance.

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doi:10.1016/j.jtcvs.2005.12.068

Reply to the Editor:

We thank Dr Basaran for raising important questions concerning our report of chordal cutting in combination with ring annuloplasty and overlapping cardiac volume reduction (OLCVR) operation, which is a new clinical therapeutic approach for the treatment of ischemic mitral regurgitation (IMR).

We think that IMR associated with myocardial infarction and ischemic cardiomyopathy is a progressive disease. There is a possibility of recurrence of IMR after the operation because of the persistent left ventricular (LV) remodeling. Therefore we paid attention to not only a disappearance of mitral regurgitation immediately after the operation but also to the long-term prevention of IMR recurrence after surgical intervention.

We also think that LV plasty should be able to not only reduce the LV volume but also to correct the displaced papillary muscles (PMs), and such LV plasty will thus contribute greatly to reducing mitral tethering.

In some cases of IMR, chordal cutting is a possible additional technique, depending on the patterns of chordal attachment, and this technique will surely increase the coaptation of the mitral leaflets in comparison with LV plasty alone. In addition, we expect this technique will also help to prevent postoperative IMR recurrence.

The current surgical approach for IMR mainly focuses on annular size reduction with an annuloplasty ring, which is usually effective. However, mitral annuloplasty (MAP) is not a fundamental therapy for IMR. Zhu and colleagues¹ reported that MAP causing anterior displacement of posterior mitral annulus augments the tethering of posterior mitral annulus with an impaired mobility and coaptation, and this mechanism is also related to persistent IMR after MAP. Therefore additional mitral valve plasty will be necessary to reduce such tethering.

Several methods related to the reduction of the tethering of IMR have been reported. Two approaches have been considered. The first is to correct the displaced PMs, and the second is to perform chordal cutting. The reduction of the distance between PMs by using PM imbrication and PM sling and the reduction of the distance between the mitral annulus and PMs by relocating the posterior PM and LV plication can lead to a decrease in the degree of tethering and the disappearance of MR. The chordal cutting method, which cuts tethered

strut chordae, is a direct correction of the tethering. However, whether chordal cutting is possible depends on the attachment of strut chordae to the anterior mitral leaflet. Only in cases in which the bifurcated strut chordae are attached to the leaflet edge and the marginal portion between the rough and clear zone can chordal cutting spare the chorda attached to the leaflet edge.

In this case, with severely dilated and dysfunctional LV after anterior myocardial infarction, we thought it necessary to reduce the LV volume for end-stage ischemic cardiomyopathy. The OLCVR operation is thus considered to be an effective procedure to correct the displaced PM dimensions, but there is a risk that an LV volume reduction sufficient to correct the PM displacement might result in too small of an LV volume. Matsui and coworkers² reported OLCVR with PM plication to enhance the remodeling effect of the ventricle.

We used 3 techniques to treat IMR in this case. We also think that MAP and LV plasty (OLCVR) contributed to our successful results and that chordal cutting can therefore reinforce mitral coaptation. We hope that IMR recurrence can thus be prevented long term after surgical intervention by means of such a strategy.

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Residual strain in the aorta To the Editor:

We were excited to see yet another seminal contribution to the literature on aortic aneurysmal disease arising from the labora-