1155 adult patients undergoing cardiac surgery, found that both β -blockers and volatile anesthetics are potentially influential factors in cardioprotection by RIPC, a finding confirmed in univariate metaregression and subgroup analyses. The role of β -blockers remained significant in the CABG subgroup (Figure 1). In addition, the potential interference of β -blockers was independent of volatile anesthetics in the subsequent multivariate analysis (Table 1). Moreover, previous studies that used animal hearts or human isolated atrial trabeculae have suggested that β -blockers could abolish the cardioprotection of ischemic or anesthetic preconditioning (see discussion in reference 4). In addition, no cardiac benefit from RIPC in CABG was observed in Lucchinetti and associates' study,⁵ which had a mean β -blocker proportion of 91%. These evidence suggested greater significance of β -blockers in the cardioprotective effect of RIPC, which is thus more important in the potential interference with cardioprotection by RIPC.

Is it β -blockers or anesthetic choice? The findings from my group are based mainly on the aggregate patient data. We are therefore interested to know whether this would hold true for the individual patient data in Kottenberg and colleagues' study² if multivariate linear regression analyses at least including β -blockers and anesthetic choice in a total of 72 patients were performed.

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DEFINITION OF LOCAL AND REGIONAL RECURRENCE IN THE AMERICAN COLLEGE OF SURGERY ONCOLOGY GROUP Z0030 TRIAL

To the Editor:

We read with great interest the report by Darling and colleagues¹ regarding the impact on patient survival of mediastinal lymph node dissection (MLND) during lung cancer surgery. This study focused strictly on whether MLND had any impact on survival relative to reliable mediastinal lymph node sampling. This is one of the most challenging questions in thoracic surgery; to answer it, Darling and colleagues¹ prepared and executed an elaborate protocol. Although the result was negative—that is, MLND did not show any survival benefit relative to mediastinal lymph node sampling—the data acquired from this study are of great clinical value for benchmarking. Whereas this study was carried out by authorized expert thoracic surgeons, our *real-world* practice can be assessed by comparing our results with the published outcomes of morbidity and mortality.²

Darling and colleagues¹ reported 285 recurrences, including 54 local,

74 regional, and 225 distant recurrences, in the eligible subject population. Although it is unclear whether each recurrence number was counted by case or site, we are very interested in the definition of the terms, namely, local, regional, and distant recurrence. Because the local and regional recurrence rates vary according to the definition of the terms³ and a standard definition does not currently exist, we would like investigators to specify their definitions of these terms. Several locations should be considered as the recurrence sites in the definition, including bronchial stump, ipsilateral hilum, interlobar staple line, ipsilateral mediastinal lymph node, ipsilateral lung parenchyma, ipsilateral thoracic cavity (pleural dissemination and malignant pleural effusion), contralateral mediastinal/hilum lymph node, supraclavicular lymph node, contralateral lung parenchyma, chest wall, and malignant pericardial effusion. We hope that standard definitions for recurrence sites will be established in the near future.

The American College of Surgery Oncology Group Z0030 trial results continue to produce new findings.⁴ We believe the full utilization of this landmark database is important to improve clinical practice and future studies.

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PROSTHETIC AORTIC VALVE EVALUATION: SHOULD THE ASSESSMENT OF HEMODYNAMIC PERFORMANCE DURING EXERCISE COMPLETE THE ANALYSIS?

To the Editor:

In a recent publication, Suri and colleagues¹ evaluated the hemodynamic performance of the latest generation of biologic aortic valve prostheses. The results evidenced small but consistent early postoperative hemodynamic differences among current third-generation bioprostheses (Edwards Magna, Sorin Mitroflow, and St Jude Epic). We read the article with interest and were also impressed by Dr David's comment in the meeting discussion. We congratulate Suri and colleagues¹ on this study; however, we would like to add some comments.

First, Suri and colleagues¹ likely included in their study any type of aortic valve disease, which could be misleading for comparative results. Aortic stenosis, aortic incompetence, and their combination have differences in physiology, histology, and anatomy, leading to different behaviors after the valve replacement.

Second, patients were assessed for hemodynamic performance before hospital discharge. This is contrary to previous studies, which indicate that in vivo values should be taken at 1-year follow-up because gradients may change during the first postoperative year, with significant impact on

either the hemodynamic results or the exercise capacity.²

Third, any realistic assessment of hemodynamic behavior of a prosthesis should include evaluation during exercise. Results obtained under stress are by far more suitable to evaluate the performance of a valve type than hemodynamic data obtained at rest, and they also reflect more closely the situation in daily life. In this regard, Gerosa and colleagues³ used the Sheffield pulse duplicator to demonstrate in vitro that different prostheses perform differently in different hemodynamic circumstances. In vivo evaluations are even more difficult. Stress-induced echocardiographic assessment could be hindered by several confounding factors: heart rate, cardiac output, left ventricle diastolic pattern, hypertension, reduced systemic arterial compliance, and so on.

In a recent study, we evaluated by echocardiography the hemodynamic performance at rest and during exercise of 2 different aortic prostheses of similar size implanted in patients who underwent surgery for pure aortic stenosis.⁴ Although the study compared a mechanical valve with a porcine bioprosthesis, our results validated the technical procedures as model for evaluations under stress.

As we were aware that the sole measurement of gradients does not entirely represent the complex function of a valve during physical exercise, we also analyzed the stress-induced abnormalities of the cardiac cycle 1 year after aortic valve replacement. As is widely known, the total cardiac cycle duration is algebraically dependent on the heart rate (60,000 ms/heart rate), which is the major determinant affecting diastolic and systolic duration. Systolic time has a negative linear correlation with heart rate. Diastolic time is longer at low heart rates and decreases more markedly than systolic time during exercise. Transprosthetic gradient is a function of both diastolic duration

and systolic/diastolic ratio, which depends on a number of cofactors but could also be attributed to the flexibility of the stent and the geometric design of the bioprostheses. These factors interfere with the delicate physiologic mechanism of active annulus motion and aortic root expansion at each phase of the cardiac cycle, especially during exercise. This is more valid for mechanical valves and for 19- to 23-mm bioprostheses. A meaningful evaluation of a bioprosthesis should therefore further consider the stent flexibility during exercise and the effective tolerability of its distortion when upsized.

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LIMITATIONS IN THE USE OF LEFT CAROTID ARTERY TURNDOWN FOR INTERRUPTED AORTIC ARCH REPAIR

To the Editor:

Todman and associates¹ recently described favorable outcomes after