IMPACT OF MULTIPLE GRAFTS TO EACH MYOCARDIAL TERRITORY ON LONG-TERM SURVIVAL

To the Editor:

We read with great interest the recent article by Chu and colleagues¹ examining the impact of multiple grafts to each myocardial territory on long-term survival after coronary artery bypass grafting. We think, however, that a number of points need to be clarified before their conclusions that multiple grafts to each myocardial territory do not confer survival benefit can be supported.

The first point is in relation to the difference between the groups with respect to the total number of grafts used. It appears that the difference between the two groups was 0.8 vein grafts. The number of internal thoracic arteries (ITAs) used was the same at 0.9 (presumably the left ITA in most cases), and no comment was made about the use of the radial artery or the right ITA. Consequently, we would not expect any difference in long-term survival between the two groups.

Second, there is no information about which territories received the multiple grafts. If most of the patients received multiple grafts only in the left anterior descending arterial territory (that is, had diagonal arteries grafted), again we would not expect any difference in long-term survival. Indeed, Sergeant and coworkers² demonstrated no additional benefits of

multiple arterial grafts in the left anterior descending arterial territory in terms of a reduction in perioperative or postoperative myocardial infarction.

Third, the survival curve is probably only meaningful up to 6 years, because after that the number of patients at risk was small. It is likely that much longer follow-up is required before any real differences in survival could be detected. Lytle and colleagues³ have demonstrated that even when bilateral ITAs are used, a survival advantage relative to a single ITA becomes evident only during the second postoperative decade, and the magnitude of that benefit increases through to 20 postoperative years.

Overall, we think that if patients in the group with multiple grafts to each myocardial territory had received grafts to territories other than the left anterior descending arterial territory, if radial artery or right ITA grafts had been used more extensively, and if the patients had been followed up for longer, such as for more than 10 years, differences in long-term survival might have been observed.

Finally, although data on long-term survival are clearly important, perhaps even more relevant are data on return of angina symptoms and repeated interventions, either percutaneous or surgical. We are interested in the comments of the authors.

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doi:10.1016/j.jtcvs.2009.03.061

Reply to the Editor:

We thank Akowuah and colleagues for their interest regarding our article¹ and appreciate the opportunity to reply.

The mean difference in the number of vein grafts between the two groups of patients was indeed 0.8, and the number of internal thoracic artery grafts was the same in both groups. It is certainly possible that our study committed a type II statistical error in that we were not able to detect small differences in long-term survival between the groups. Nevertheless, as we mentioned in article,¹ our study was designed to detect a long-term survival difference of at least 8% between the groups. We agree with Akowuah and colleagues that for an actual long-term survival benefit of less than 8% for patients with multiple grafts to each diseased myocardial territory, we would not have been able to detect the difference with our study design. The Veterans Affairs Continuous Improvement in Cardiac Surgery Program database does not have specific anatomic information on the use of radial artery or right internal thoracic artery as grafts.

We did not perform a subgroup analysis on patients according to which specific myocardial territory received multiple grafts. Such a subgroup analysis would be better suited to a much larger sample of patients, which would have enough power to detect a true difference in long-term survival benefit. In a retrospective study involving 9600 patients, Sergeant and colleagues² concluded that the use of multiple arterial grafts in general confers no additional benefit in the reduction of perioperative infarcts. Their study did not specifically address the impact

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