In summary, we emphasize the significance of proper surgical technique as an extremely important factor in both neurologic and cognitive outcomes after cardiac surgery. We believe that in future study designs it is paramount to use a single standardized surgical technique or, if multiple techniques are used, to stress the differences among them to collect the objective data necessary for forming proper conclusions and avoiding bias. We congratulate Chaudhuri and colleagues¹ on their useful and elegantly conducted research.

Marko Borojevic, MD
Zeljko Colak, MD, PhD
Bojan Biocina, MD, PhD
Department of Cardiac Surgery
Clinical Hospital Center Zagreb
Zagreb, Croatia

References

1. Chaudhuri K, Storey E, Lee GA, Bailey M, Chan J, Rosenfeldt FL, et al. Carbon dioxide insufflation in open-chamber cardiac surgery: a double-blind, randomized clinical trial of neurocognitive effects. *J Thorac Cardiovasc Surg.* 2012; 144:646-53.e1.
2. Selman MW, McAlpine WA, Albregt H, Tatan R. An effective method of replacing air in the chest with CO₂ during open-heart surgery. *J Thorac Cardiovasc Surg.* 1967;53:618-22.
3. Svenarud P, Persson M, van der Linden J. Effect of CO₂ insufflation on the number and behavior of air microemboli in open-heart surgery: a randomized clinical trial. *Circulation.* 2004;109: 1127-32.
4. Jan van der Linden J, Casimir-Ahn H. When do cerebral emboli appear during open heart operations? A transcranial Doppler study. *Ann Thorac Surg.* 1991;51:237-41.
5. Hammon JW, Stump DA, Butterworth JF, Moody DM, Rorie K, Deal DD, Kincaid EH, Oaks TE, Kon ND. Coronary artery bypass grafting with single cross-clamp results in fewer persistent neuropsychological deficits than multiple clamp or off-pump coronary artery bypass grafting. *Ann Thorac Surg.* 2007;84:1174-8.
6. Filsoufi F, Rahmanian PB, Castillo JG, Bronster D, Adams DH. Incidence, imaging analysis, and early and late outcomes of stroke after cardiac valve operation. *Am J Cardiol.* 2008;101:1472-8.

<http://dx.doi.org/10.1016/j.jtcvs.2012.09.089>

Reply to the Editor:

We thank Borojevic and colleagues for their interest in our article and for

their letter. They quite rightly point out the importance of surgical technique, in particular standardization of that technique, in any trial that looks at neurologic outcomes after cardiac surgery. We are well aware of the evidence that shows that a single-crossclamp technique is superior to multiple cross-clamping and other manipulations of the aorta in terms both of high-intensity transient signals on transcranial Doppler ultrasonography and of neurologic outcome.¹ This was further demonstrated in a meta-analysis of off-pump coronary artery bypass grafting with and without aortic manipulation.²

We can reassure Borojevic and colleagues that all of our surgeons who took part in the trial used a uniform technique with respect to aortic cross-clamping (all used a single-crossclamp technique), manipulation of the aorta, and mechanical deairing of the cardiac chambers. This was also true across both sites of the trial, because only surgeons who were already involved in the trial at the primary site (The Alfred Hospital) were involved at the secondary site (The Epworth).

We did report gross neurologic outcomes in our study (cerebrovascular accident), which were included in the Appendix Table 2, although we did not collect or report data on delirium. No patient in our study cohort sustained a transient ischemic attack. We thank Borojevic and colleagues for their comments.

Silvana Marasco,
MSc, MBBS, FRACS
Krishanu Chaudhuri, MBBS
Cardiothoracic Surgery
Alfred Hospital
Melbourne, Victoria, Australia

References

1. Hammon JW, Stump DA, Butterworth JF, Moody DM, Rorie K, Deal DD, et al. Single cross-clamp improves 6-month cognitive outcome in high-risk coronary bypass patients: the effect of reduced aortic manipulation. *J Thorac Cardiovasc Surg.* 2006;131:114-21.
2. Misfeld M, Brereton RJ, Sweetman EA, Doig GS. Neurologic complications after off-pump coronary artery bypass grafting with and without aortic ma-

nipulation: meta-analysis of 11,398 cases from 8 studies. *J Thorac Cardiovasc Surg.* 2011;142:e11-7.

<http://dx.doi.org/10.1016/j.jtcvs.2012.11.024>

SHOULD IATROGENIC TYPE A AORTIC DISSECTION IN PATIENTS WITH PREVIOUS CARDIAC SURGERY BE MANAGED CONSERVATIVELY? To the Editor:

Should iatrogenic type A aortic dissection (AD) in patients with previous cardiac surgery (CS) be managed conservatively? We read with interest the report by Timek and colleagues¹ presenting the clinical course of a 55-year-old patient with a history of coronary artery bypass grafting and coronary catheter-induced acute type A AD. This hemodynamically stable patient was treated conservatively, and the vascular injury healed uneventfully.

The decision as to whether to operate on AD in a patient with previous CS can be difficult. Recent guidelines are inconclusive, and mandatory surgical treatment has recently been questioned.² Patients with type A AD and a history of CS were found to be twice as likely to be managed medically as those with spontaneous AD, perhaps because of a perceived excessive risk of surgery.³ The argument in favor of conservative management in this case was based on the patient's clinical stability, morbid obesity, previous sternotomy, and mechanism of dissection.¹ In fact, however, rupture and instability are rare because of postcardiotomy scarring and protective adhesions.⁴ Contrary to expectation, body mass index, diabetes, sex, type of primary surgery, and acuity of dissection, among others, were not identified as significant determinants of operative outcome in a series of patients with AD after previous CS.⁴

Although the term "iatrogenic AD" is frequently used regardless of the mechanism of aortic injury, we believe that catheter-induced aortic injury must be clearly distinguished from other etiologies. As Timek and colleagues¹