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EDITORIAL COMMENTARY

Don't touch that aorta!

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See related article on pages 175-80.

In this issue of the *Journal of Thoracic and Cardiovascular Surgery*, a multidisciplinary research group from Emory University present important information regarding surgical technical maneuvers to reduce the incidence of stroke in the perioperative period after coronary artery bypass operations (CABG).¹ They discuss stroke rates in 12,079 patients divided into 3 groups with different methods of aortic manipulation. The authors should be congratulated for their extensive data collection and rigorous analysis.

In the group with no aortic manipulation (no-touch technique), the stroke incidence was 0.06%, significantly different from the group with aortic clamping (1.5%). The ratio of observed to expected stroke rate increased from 0.48 in the no-touch group, to 0.61 in the clamless facilitating device (CFD) group, and 0.95 in the clamp

group. This was true whether or not cardiopulmonary bypass was used for the procedure. So is this publication another ho-hum retrospective study on postoperative stroke after CABG or an important news flash with information to significantly improve outcomes?

I would say that there are some of both in this article. It would be ideal to have a multicenter randomized study of the 3 techniques measured here but in this era of increased scrutiny of outcomes, this study would be almost impossible to perform because few centers have surgeons who are comfortable with all 3 techniques. One reason for the reluctance to perform off-pump coronary artery bypass (OPCAB) is that published prospective studies reporting on perioperative stroke incidence are underpowered to show differences in technique because stroke is such a rare event after CABG.^{2,3} If the incidence is so low, why get so concerned about stroke after CABG?

Thoracic surgeons are striving to offer safe and effective treatment to patients with severe coronary artery atherosclerosis. Several recent risk-adjusted randomized trials have demonstrated superior long-term cardiac subsystem results with CABG compared with an alternative catheter-based procedure, percutaneous coronary intervention (PCI).⁴ Unfortunately, the periprocedure stroke rate for PCI was less than 1% compared with 1% to 2% for CABG.^{5,6} Because stroke is such a devastating complication of an otherwise successful CABG operation, this finding has been used by some clinicians as a reason to push patients toward PCI. In

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this article, the perioperative stroke rate of 0.06% using the no-touch technique is no different from periprocedure stroke rates in PCI, a highly significant finding.

Because some cardiac surgeons are not comfortable with performing off-pump multiple distal anastomoses with arterial grafts, especially side-to-side anastomoses, it would be reasonable for those surgeons to use a clampless facilitating device because there was no statistical difference between the no-touch technique and proximal aortic anastomoses using a CFD. We cannot completely absolve cardiopulmonary bypass (PUMP) from causation of stroke in that the risk of stroke in the CFD group did not significantly differ from the off-pump partial clamp group, however it was significantly lower than the on-pump group. This difference may be explained as a result of aortic cannulation plus flow-created emboli and other emboli related to the PUMP.

Not surprisingly, the no-touch group had the greatest incidence of severe aortic plaquing determined by epiaortic ultrasound (EU). The CFD group had the highest overall aortic grade but these 2 groups had the lowest stroke rate compared with the 2 clamped groups, which had the lowest epiaortic scores. Because the no-touch and CFD groups had the highest atherosclerotic burden, the operative team, using EU, had good evidence of what areas of the aorta to stay away from or to choose the no-touch approach if the aorta was extensively diseased.

The only criticism I have is that the no-touch and CFD groups are much smaller than the clamp group. This probably results from the fact that the patients in the on-pump clamped group were operated on earlier in the history of

this study as the authors gradually switched to OPCAB and minimally invasive techniques. This group has been a pioneer in developing off-pump CABG and has shown a major advantage that was anticipated but has now been realized. It would be advantageous to our specialty to offer simulator training in all arterial-multivessel OPCAB to benefit our patients in the future. I hope the Emory Group and other interested cardiac surgeons will continue to collect patient information so that we can learn if there is a real difference in the stroke rate between no-touch and CFD off-pump techniques.

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