Managing the atheromatous aorta: Solutions still in evolution

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Central Message

Advanced imaging and embolic protection devices may alter management and reduce embolic burden to the brain, but they have not yet been proved to change clinical outcomes.

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Perioperative stroke remains a significant risk for patients undergoing cardiac surgery, with rates ranging from 1.2% to 6.6%, depending on the procedure. The presence of aortic atheroma has been identified as a major independent predictor for the development of a stroke, increasing the risk 3- to 4-fold.¹ Although it has not been proved to be causative, the association between the presence of aortic atheroma and the occurrence of perioperative cerebrovascular events is significant. It must, however, be taken in context. Specifically, although the denominator (the number of strokes) is known, the numerator is less clear. We do not know what percentage of embolic strokes are related to aortic atheroma versus other etiologies of embolic stroke, such as intracardiac thrombus, valve debris, air, or other particulate matter in the surgical field, nor do we know whether the emboli originate proximal or distal to the aortic crossclamp. The difficulty in clarifying this number adds to the challenge of reducing the rate of perioperative stroke.

Nevertheless, given the association between the presence of aortic atheroma and the occurrence of perioperative strokes, Andersen and colleagues² have written an excellent review in this issue of the *Journal* on the association between the two. This expert review discusses management strategies that potentially could reduce the occurrence of perioperative strokes that may be attributable to aortic atheroma. Andersen and colleagues² appropriately conclude that pharmacotherapy with statins or aspirin may be beneficial, but the data are conflicting. What is of greater interest and debate is the utility of imaging and embolic protection devices to reduce stroke rates.

Andersen and colleagues² describe epiaortic ultrasound as the criterion standard for detecting aortic atheroma, but this must not be interpreted as the standard of care. The current evidence suggests that epiaortic ultrasound is the best modality to image aortic atheroma, and that it can lead to changes in surgical decision making, but its use has not been proved to reduce the incidence of stroke.³ This point, in addition to the minor disadvantages that Andersen and colleagues² describe, has likely limited the widespread adoption of epiaortic ultrasound thus far.

Andersen and colleagues² also provide an up-to-date discussion regarding the results of recent trials examining the benefit of embolic protection devices.⁴⁻⁷ Although both the Embol-X (Edwards Life Sciences, Irvine, Calif) and the CardioGard (CardioGard Medical, Or Yehuda, Israel) have demonstrated efficacy in capturing embolic debris, the lack of clinic benefit (with the exception of certain subgroups) has been disappointing. As Andersen and colleagues² acknowledge, these are first-generation devices, and with continued development, there is optimism for improved clinical results.

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