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Conflict of Interest Statement

H.J.P. is a consultant for WL Gore and Associates, Edwards, and Medtronic, and these efforts are modest. All other authors reported no conflicts of interest.

The *Journal* policy requires editors and reviewers to disclose conflicts of interest and to decline handling or reviewing manuscripts for which they may have a conflict of interest. The editors and reviewers of this article have no conflicts of interest.

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Key Words: acute aortic dissection, aortic arch management, arch branch vessel dissection

Discussion

Presenter: Elizabeth L. Norton



Dr Rita C. Milewski (Philadelphia, Pa). This timely analysis addresses several key questions in management of these patients. The specific repair for patients with catastrophic type A dissection must involve consideration of both the short-term and long-term outcomes. Two major questions in approaching type A dissection are what specific procedure should be performed to decreased stroke rate and at the same time decrease the need for further aortic reoperation? To address the issue of stroke after type A hemiarch repair, in your study, why do you think patients with ABVD treated with hemiarch replacement had a 2-fold higher stroke rate than patients without ABVD, though not significant?



Ms Elizabeth L. Norton (Omaha, Neb). The real reasons for the higher postoperative stroke rate you mentioned are unknown. However, possible explanations could be a change in flow pattern, with the dissected branch vessel causing a pulsatile flow and then once being put on bypass more of a continuous flow and just that change in flow pattern. Another possibility would be a thrombus due to that dissection in the interrupted aortic arterial wall. In addition, during surgery

the manipulation of the head vessels could cause any thrombus to dislodge. Although we don't know the true reason for the increased stroke rate, I think those would be possibilities.

Dr Milewski. Recent studies have addressed both the issue of stroke and long-term aortic reoperation in type A dissection. A large study using the Society of Thoracic Surgeons database by *?* reported that total arch replacement was associated with greater risk for stroke versus hemiarch. Others, including Dr Desai from Penn and your group from Michigan, after adjusting for anatomic complexity, have reported no increased risk in stroke with total arch and a trend to decreased aortic reoperations. Because patients with ABVD treated with hemiarch had higher stroke rates, do you recommend all patients with arch branch muscle dissection have aggressive arch replacement and replacement of dissected arch branch vessels, a zone 1/2/3 arch?

Ms Norton. ABVD and MPS (cerebral or upper extremity) are indications for an aggressive arch replacement to restore flow. However, in patients with ABVD without malperfusion, the study shows that a hemiarch replacement is adequate. An aggressive arch replacement does not decrease the rate of postoperative stroke.

We had a previous study that compared hemiarch replacement with aggressive arch replacement in a cohort of patients with ABVD, and you can see that the stroke rate and the operative mortality are similar between the hemiarch and aggressive arch replacement groups. The stroke rate was 11% in the hemiarch group and 10% in the aggressive arch group.

The aggressive arch replacement does not improve short-term outcomes. However, it could prevent future reoperations. Also in this study, we looked at reoperations between hemiarch and zone 1/2/3 arch replacements and found that the hemiarch group had a reoperation rate of 23% at 8 years compared with 9% in those with an aggressive arch replacement. Therefore, an aggressive arch replacement does not improve short-term outcomes. However, it could have a benefit in preventing future long-term reoperations.

Dr Milewski. Certainly all cardiac surgeons are fully trained to care for all emergencies. However, given the data that you presented, what do you think a nonaortic cardiac surgeon should do when he or she is required to do an operative repair in a patient with type A dissection with ABVD without cerebral or upper-extremity malperfusion?

Ms Norton. In that scenario, hemiarch would be appropriate, especially for cardiac surgeons (not specialized aortic surgeons) who may be unfamiliar with an aggressive arch replacement—and those who don't perform ATAAD repairs often. The hemiarch replacement can save a patient's life, just recognizing the fact that there is a higher risk of reoperation in the future.

However, if a surgeon is experienced and comfortable with the procedure—per se an aortic surgeon, an aggressive arch replacement could be performed to prevent future reoperations. However, no immediate benefit in the short term would be applicable.

Dr Milewski. I agree. Great answer.