Size matters: How low should we go?

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Central Message

Despite improvements in disease process understanding and surgical intervention, aortic pathology is complex, and patient management should be individualized to achieve optimal outcome.

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The current US and European guidelines for asymptomatic proximal thoracic aortic pathology involving the ascending aorta or aortic sinuses recommend a diameter of 5.5 cm as the threshold for surgical intervention.^{1,2} In the current era, surgical outcomes are outstanding, with operative mortality being reported in the range of 0.5% to 1.9% for elective composite root replacement, 0% and 1.0% for elective root-sparing ascending aortic replacement, and 1.4% and 1.2% for elective aortic arch replacement.³⁻⁵

For more than 2 decades, the investigational efforts from Ziganshin and colleagues⁶ at Yale have provided us with a greater overall understanding of the natural history and progression of untreated thoracic aortic disease. As a result of these contributions, their research has played a significant role in the establishment of standard guidelines for surgical intervention in the treatment of thoracic aortic pathology.

In this latest contribution, using an expanded database with a larger patient population and a greater period of longitudinal follow-up, the Yale group provides us with new data suggesting that current guidelines for intervention at 5.5 cm for ascending aneurysmectomy may be too conservative and should be reexamined. Six specific observations were described as to why there should be a leftward shift in the guidelines for earlier surgical intervention. These include (1) the earlier ascending aortic hinge points in recent natural history analyses, (2) the smaller aortic size just before the dissection occurs, (3) the impact of the centerline method on absolute aortic measurements, (4) the low risk of aortic surgery in the present era, (5) the recent capability to select our patients with malignant genetic disorders for early surgery, and (6) the dramatic familial prognostic impact of a single prior dissection. Their conclusion was that the overall thrust of these findings suggests that in the future the criteria for elective aortic replacement may need to undergo a “left shift.”⁶

The surgical results from the Yale group for the proximal aorta are outstanding and may not be necessarily translated across all centers. Given that institutional volume and expertise can play an important role in operative outcomes,

recommendations for a more aggressive surgical management strategy can be justified only with clinical results similar to those observed at Yale or in other centers of excellence.

The management of aortic disease is complex and diverse. In the current era of cardiovascular surgery, numerous options are available for repair and reconstruction of the aorta and aortic root and arch. Other confounding factors also include the great variety of clinical settings in which aortic disease may be encountered, including dissection, prior cardiac surgery, various genetic syndromes, and a strong family history, all of which should play a role in surgical decision making. We agree that earlier surgical intervention can be considered in some cases, but it is of utmost importance to match aortic pathology and preoperative patient characteristics to the procedure and experience level of the surgeon in an individualized manner to achieve an optimal, safe, and durable outcome.

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