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Commentary: Aortic Uncrossing: First Time’s a Charm?

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**Central Message:** The aortic uncrossing operation can safely achieve good results, but the data is not definitive on which patients in which we should offer it as the first surgery for a symptomatic vascular ring.

**Central Image Legend:** Tracy Geoffrion, MD, MPH.

This manuscript by a multi-institution group led by Dr. Backer describes a 20-year experience with the aortic uncrossing procedure for vascular rings comprised of a circumflex aorta.¹ This is the largest series to date on this topic and updates their initial reports.²,³ The manuscript is well written, and the data presented clearly. Unlike the review out of Boston in 2020,⁴ patients in this series did not undergo additional procedures on the esophagus or trachea. In terms of symptomatic relief, the outcomes are good. Complications occurred in just over 25% of patients, though it seems that more recent patients have not experienced any major issues. However, the numbers remain small.

A general review of vascular ring literature implies that persistent or recurrent symptoms after elimination of the anatomic ring substrate (ligamentum, double arch, aberrant subclavian artery) are relatively rare. However, as these authors describe, one mechanism for residual symptoms after primary ring repair is posterior compression on the tracheoesophageal complex by a remaining circumflex aorta. In this situation, the authors have suggested to proceed next with the aortic uncrossing procedure as a second operation which is reasonable, assuming there is evidence of posterior compression on imaging. As it stands, many of the reported cases of the
aortic uncrossing procedure have been as a re-operative strategy. However, six of the eleven patients in this series had aortic uncrossing as a primary repair, most of whom had a listed diagnosis of right cervical arch with retroesophageal left subclavian artery. In the discussion, the authors provide some guidelines for criteria that might prompt consideration of using an aortic uncrossing procedure as a primary repair, but to me the indications remain nebulous. While the aortic uncrossing procedure can obviously be done with good outcomes, there remains a difference in risk profiles between a vascular ring division through a thoracotony and an aortic uncrossing procedure on bypass with deep hypothermic circulatory arrest and selective cerebral perfusion. In the largest series of adults operated on for vascular rings, only 8 of 51 (12%) had a circumflex aorta and only 1 of which required an uncrossing-type repair – and that patient had previously undergone two unsuccessful left thoracotomy operations.\(^5\) Circumflex aorta is a rare subgroup of a rare lesion and there is no clinical or epidemiologic data that can help us predict which patients will respond to a thoracotomy ring repair and which will have persistent symptoms from aortic compression. As such, it seems a stretch to believe there can be clinical equipoise between these two operations as an initial repair strategy for tracheoesophageal compression. A stepwise approach, starting with the low-risk option and progressing only if needed, still seems acceptable.

Overall, this manuscript demonstrates that the aortic uncrossing operation, without concomitant tracheobronchial procedures, can achieve good outcomes, particularly when used for persistent symptoms after a prior procedure. I would argue that the data is not definitive in supporting the idea that an aortic uncrossing procedure needs to be offered as the first surgery for all patients with a vascular ring and circumflex aorta. However, there is likely a subset of patients, with clear
anatomic criteria, in whom this strategy could be employed to avoid undergoing more than one operation.

References:


