Feature Editor summary: Highlighting Invited Expert Opinions on aortic subjects

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This past year, 4 groups of authors accepted our invitation to submit expert opinions regarding surgical decision making for thoracic aortic disease. A few highlights of these article are outlined here.

Gambardella and colleagues1 published an interesting article making the assertion that, given the high acuity and technical challenges associated with type A aortic dissection repair, there is a valid argument that treatment for this disease should be regionalized to high-volume centers (performing >13 cases per year) and performed by high-volume surgeons (performing >5 cases per year). The article nicely summarizes the current literature regarding regionalization of surgery for acute type A aortic dissection and provides cogent insights.

Mehta and colleagues2 contributed a consensus document for the triage and management of aortic emergencies during the coronavirus disease 2019 pandemic. In their article, the authors make valuable recommendations on many aspects of the aortic emergency management in patients with coronavirus disease 2019, including interfacility patient transfer, preoperative assessment, anesthetic considerations, and operating room environments. It is certainly a timely and interesting read.

Girardi and colleagues3 submitted a provocative article on the current status of the assessment of aortic dimensions as a predictor of adverse events. The authors discuss the origins of aortic diameter as the primary assessment metric, then go on to discuss indexed aortic size. Finally, they introduce the concept of measurement of aortic length as a supplemental predictor and comment on the potential utility of using both aortic diameter and length to more accurately predict risk in patients with aortic disease.

Along the lines of the article by Girardi and colleagues, Czerny and colleagues4 contributed an article on risk prediction for dissection formation in patients with thoracic aortic aneurysm disease. Current guidelines regarding aortic size indications for invasive treatment have focused primarily on absolute arterial diameter, and to a lesser extent, diameter indexed to body surface area or cross-sectional area measurements. They note that attempts to enhance the sensitivity and sensitivity of this predictive ability using plasma profiling of proteases and other biochemical intermediates, or stress measurements within the aortic wall have proven tedious; imprecise; costly; and perhaps most importantly, clinically impractical given our current technology. Czerny and colleagues7 review the current thinking and published evidence regarding the use of aortic length as an additional assessment and introduce a preliminary algorithm for its clinical use.

Overall, these expert opinion articles on thoracic aortic disease are welcome and timely additions to the Journal. We anticipate that they will stimulate advancement of risk prediction and appropriate therapy for these potentially devastating conditions.

Suzuki and colleagues5 provide perspective on whether prophylactic root replacement is necessary in patients with bicuspid aortic valve anatomy. With an aortic root diameter of ≥45 mm, irrespective of whether the valve has significant stenosis versus insufficiency, best evidence supports root replacement to avoid reoperations for aortic growth or dissection. When the root is <45 mm, root replacement should likely be contemplated only by experienced surgeons who routinely perform this complex procedure with exceptionally low mortality. Their overview of the data supporting these recommendations is outstanding and the reference section is worth reviewing.

CENTRAL MESSAGE

Highlights of a few invited expert opinion articles published during the past year.
Norton and Yang provide an exhaustive review of the current state of genetic testing and its role in decision-making for patients and families with heritable thoracic aortic disease. Their central picture summarizes the surgical indications for the most common genetic aortopathies and their Table 2, A, is among the most complete lists of available genetic tests ever produced.

Anzai and colleagues address another issue related to the aortopathy associated with bicuspid aortic valve. Should the arch be routinely replaced or do the data support a more limited role for arch repair? If the arch diameter is <40 mm at the time of either root or tubular ascending replacement, an overwhelming majority of patients will not dilate the remaining arch within 10 years of the index operation. When the arch is ≥45 mm, arch replacement is reasonable. However, the decision to proceed with arch repair when the diameter is between 40 and 45 mm is nuanced and should be based on patient age and comorbidity in addition to individual surgeon and center experience.

De Baker and Roman have produced a thorough and well-written treatise on the importance of genetic screening in first-degree relatives of patients who have experienced an aortic dissection. For those patients with nonsyndromic, hereditary thoracic aortic disease, the disease has variable penetrance, especially in female subjects, as well as age-dependent expression. Genetic testing and a high index of suspicion on the part of cardiologists or cardiothoracic surgeons are necessary measures to avoid aortic catastrophes. The authors’ Figure 1 outlines a useful algorithm when evaluating new patients with ascending aneurysms.

Finally, Dawson and LeMaire create a provocative framework for personalizing the management of patients with heritable thoracic aortic disease. Through their work within the Aortopathy Working Group, significant improvements have been made linking a definitive genetic diagnosis to an increasing body of knowledge regarding the expected clinical course of a pathogenic variant. Evidence-based information such as this may ultimately provide personalized recommendations that not only dictate the timing of surgery but may also influence choice of medical therapy.

Haverich and Boyle present their grand unified theory of aortic pathology, coupling the pathogenesis of intramural hematoma and acute aortic dissection as manifestations of the same process but at different stages. The locale of origin is the media, and the process is related to dysfunction of the vaso vasorum. Part of the evidence is appreciation of some of the same contributions the vaso vasorum make to the development of atherosclerotic disease. Their theory could provide avenues for early therapeutic interventions, but further work needs to be done.

Drawing from an incredible institutional experience, Hong and Coselli provide their expert opinion on the preferred approach to repair of the chronic DeBakey type I dissection that progresses to a thoracoabdominal aortic aneurysm. Of 3309 patients who underwent thoracoabdominal aortic aneurysm repair, 1020 patients were identified as having chronic dissections. Although thoracic endovascular aortic repair with some modification to address the visceral branches (ie, either fenestration or debranching) has arisen as an option, the authors make the argument that open repair is the preferred approach because it creates a single lumen without any question of false lumen patency and/or pressurization that could lead to progression. Their outcomes corroborate their argument.

In another arena of aortic surgery, approaches to pathology involving the arch remain fraught with concerns for neurological complications. In an invited expert review, Fa-lasa and colleagues review the historical and current practices in both neuroprotection as well as neuromonitoring during surgery on the aortic arch. Given the heterogeneity in pathology and anatomy, and hampered by the sparse clinical evidence available, it is not surprising that numerous techniques in both monitoring and approach have been proposed and advocated. The authors provide a nice summary of the different techniques, and confidently provide their own recommendations for achieving low stroke rates.

In a similar approach to thoracoabdominal aortic aneu-rysm, Kemp and colleagues discuss the pathogenesis of acute and delayed spinal cord ischemia associated with surgery on the thoracoabdominal aorta. Like the review by Fa-lasa and colleagues, the authors summarize the various etiologies and risk factors for paralysis and paraparesis. Kemp and colleagues provide a nice review of adjuncts to reduce the risk of spinal cord injury.

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References

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Invited expert opinions on “aortic” subjects: Recent Articles From AATS Journals

**JTCVS: Has the time come for regionalization of surgery for acute type A dissection?**


**Commentary: A situation where time is of the essence except when it is not.** Coselli JS, Orozco-Sevilla V. *J Thorac Cardiovasc Surg*. 2021;161(5):1739-1741.


**Commentary: In the absence of convincing evidence, more is not better.** Falasa MP, Arnaoutakis GJ, Beaver TM. *J Thorac Cardiovasc Surg Open*. 2021;5:44-45.
