

are not appropriate targets for propensity score adjustment, largely because score-based alignment of observed characteristics may create distortions in unobserved characteristics—a phenomenon that has been described as “squeezing the balloon”—when group assignment is fixed by nature and cannot be made probabilistically.⁴ These findings are potentially very important, but does our second track tell us that they are novel truths, or outliers that we should disregard? Or even more, is our fast track correct?

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See Article page 534.



Commentary: Patients with descending and thoracoabdominal aortic aneurysms need expert centers and expert surgeons

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In their recent *Journal* article, Gambardella and colleagues¹ at Weill Cornell show that although a low left ventricular ejection fraction (LVEF) indicates an unfavorable preoperative state, it does not predict adverse outcomes in patients undergoing descending and thoracoabdominal aortic surgery, whereas preoperative pulmonary and renal impairment do. Dr Girardi's group at Cornell is well known for its contributions to open repair of descending thoracic (DTA) and thoracoabdominal aortic aneurysm (TAAA), and Dr Gambardella and colleagues must be congratulated for their research efforts and for bringing to our attention this important subject.

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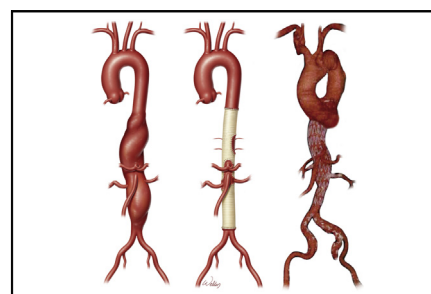
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Open and endovascular repair of a TAAA.

CENTRAL MESSAGE

Taking care of patients with descending and thoracoabdominal aneurysms requires expertise and judgment regarding open or endovascular procedures or both. Expert centers are needed.

Others, too, have shown that impaired preoperative pulmonary and renal function affects postoperative outcomes in these patients.²⁻⁵ In patients scheduled for TAAA repair, preoperative echocardiographic assessment combined with continuous medical therapy, percutaneous coronary intervention (PCI), or both can help identify and reduce their risk of postoperative adverse events and facilitate close monitoring. The Weill Cornell group has advocated elegantly that patients with single- or double-vessel coronary artery disease should undergo PCI before elective TAAA repair. Others have shown that impaired LVEF is independently associated with mortality.⁶ However, using LVEF as the sole metric of preoperative left

ventricular function, without a complete preoperative risk stratification and knowledge of LV dimensions (end-diastolic and end-systolic) and aortic valve function, is not very helpful. In addition, in patients with reduced LVEF, heart failure with or without symptoms is important and can affect surgical outcomes.

It is also true, as the Weill group has suggested, that although hybrid or endovascular methods have been promoted for TAAA repair, the choice of technique should rely not only on preoperative risk profile, but also on anatomic criteria. There is little reason to waste resources comparing thoracic endovascular aortic repair (TEVAR) with open repair in patients with DTA and favorable anatomy; TEVAR will prevail as the most desirable approach among patients and among centers that perform open and endovascular procedures with similar efficiency, and TEVAR has already become the standard of care in these patients. On the other hand, open TAAA repair is performed with excellent results at highly specialized aortic centers, in the same way that endovascular TAAA repair is performed successfully at aortic centers with operators highly skilled in the use of wire and catheters. It is not unreasonable for patients with poor preoperative risk profiles and various comorbid factors to be referred to a highly specialized center where endovascular TAAA repair or challenging TEVARs can be performed. In addition, although endovascular technology has advanced considerably in the 15 years since the US Food and Drug Administration approved the first endovascular device for DTA repair, it remains cumbersome, with many pitfalls in patients with unfavorable anatomy.

Immediate, off-the-shelf options for TAAA repair are limited, trials are on the way, and specific anatomic measurements are required for custom-made endografts, making their use in emergency endovascular TAAA repair

extremely difficult, if not impossible. If the aneurysm is isolated to the descending thoracic aorta and the anatomy is unfavorable, local expertise usually dictates the treatment of these patients; subsequent interventions are deferred to high-volume aortic centers.

It is imperative that the education system for cardiothoracic surgeons ensure maintenance of open operative skills and teach wire and catheter skills, because individualized treatment is key to obtaining better and more durable results for these patients. Given the unique intraoperative and postoperative care that patients with TAAA pathology require, transfer to centers with expertise in either open or endovascular repair is important for better long-term outcomes. Open TAAA repair is a major procedure, and understanding and optimizing the preoperative status of these patients is key to a better and faster recovery.

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