Walking away from thoracoabdominal aortic aneurysm repair: Advancing intervention to make it more common

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Disclosures: Author has nothing to disclose with regard to commercial support.

Received for publication Oct 25, 2016; accepted for publication Oct 27, 2016; available ahead of print Dec 8, 2016.

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J Thorac Cardiovasc Surg 2017;153:S42-3

0022-5223/\$36.00

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<http://dx.doi.org/10.1016/j.jtcvs.2016.10.042>

In their article in this issue of the *Journal*, Oderich and colleagues¹ have described in depth their extensive experience in treating thoracoabdominal aortic disease with endovascular solutions during a 9-year period. Initial treatment with physician-modified endovascular grafts yielded good results in this cohort, with historically significant risk of morbidity and mortality. In concert with a transition to off-the-shelf and custom-made devices, experience and

Axial magnetic resonance image of spinal cord infarct.

Central Message

This commentary is on Oderich and colleagues' comprehensive methodology to mitigate mortality and morbidity in endovascular repair of thoracoabdominal aortic aneurysm and description of their results.

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FIGURE 1. Axial magnetic resonance image of spinal cord infarct. Note the white appearance of the infarct in the deeper region of the spinal cord, surrounded by darker appearing normal cord. (Image courtesy of Dr Shane Greek, Department of Radiology, Royal Jubilee Hospital.)

procedural related changes produced even better results in the latter half of their endeavors. Surgeons with an interest in thoracoabdominal repair, whether they are proponents of open, endovascular, or hybrid approaches, will find this article full of practical ideas. Regardless of whether it induces one to adopt any of the strategies described, this article will incite surgeons to consider critically their own approaches to this pathology.

Oderich and colleagues¹ have described a logical, comprehensive methodology to mitigate spinal cord injury (SCI) (Figure 1). That strategy includes staging procedures for extents I and II repairs, extending the use of cerebrospinal fluid drainage to all repairs (including extent IV repairs), using evoked potential (EP) monitoring to guide intraoperative management, and using sequential maneuvers (increasing spinal perfusion pressure, restoring distal blood flow, and temporary aneurysmal sac perfusion) to interrupt threatened SCI. In addition to their low paraplegia rate, Oderich and colleagues¹ achieved enviable results with respect to renal insufficiency and mortality (survival that compares respectably with that of open repair,² despite an older age and higher risk profile, and with that of hybrid repair³). They compared their results with those of the largest series of open thoracoabdominal aortic aneurysm repair²; however, it would be more appropriate to use the contemporary cohort from that series, in which the rate of paraplegia was 6.5% and the rate of permanent paraplegia was only 2.6%.⁴

With respect to paraplegia, the difficulty lies in knowing what affects it most. Without a comparison group controlling for an intervention of potential benefit, we are left speculating. Looking at this groups' earlier work in 44 thoracoabdominal aortic aneurysm extents I through IV, with an overall 6.8% SCI rate, we know that 30% (13 patients) had no change in EPs.⁵ These patients had no SCI. Of the 70% (n = 31) who had changes, 39% had EPs improved by increasing mean arterial pressure (MAP) and draining more cerebrospinal fluid. These patients also had no SCI. Nineteen patients (61%) required further maneuvers (flow was restored to the lower extremity or internal iliac) to restore EPs. Of these 19 patients, 3 (16%) had SCI develop despite the intervention. How many would have had SCI develop had flow not been restored to the lower extremity, or had EPs not been monitored and consequently no maneuvers performed, or had EPs not been monitored but the initial maneuvers of using a higher pressure and more cerebrospinal fluid drainage been instituted as routine? A well-designed study assessing the impact of EP monitoring on SCI is needed.

In this study, Oderich and colleagues¹ did not specify the number of patients who had changes in EPs driving each intervention to mitigate SCI. We look forward to future reports as Oderich and colleagues¹ follow this cohort out in time, describing other aspects of their analyses in both depth and breadth.

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