All Eyes on TEVAR

During the past several years, the endovascular community has turned a great deal of focus toward research and innovation in the thoracic aorta, which has truly become one of our most exciting and interesting areas of clinical study. The first FDA approval of a thoracic stent graft (Gore TAG, Gore & Associates, Flagstaff, AZ) was for the treatment of aneurysms in the descending thoracic aorta, and concerted effort between physicians and industry continues in this area, with several more devices expected to become available soon and numerous clinical studies underway. For surgeons accustomed to having open repair as their only option for treating these patients, the benefit of offering a therapy with significantly lower morbidity and mortality rates is immeasurable.

Many questions also remain regarding the ideal applications of endovascular devices in thoracic pathologies, such as dissections, ruptures, penetrating ulcers, intramural hematomas, and transections. The INSTEAD trial, the IRAD registry, and our growing clinical experience have shown us that there is much to learn about how best to apply endovascular repair in dissection patients. The IRAD registry not only showed that partial thrombosis of the false lumen is a significant predictor of late death, but it also told us that the 3-year mortality rate for all acute type B dissections (medically treated) was much higher than we believed (25% at 3 years excluding early death that occurs in approximately 10%). This study suggests that there is much more work to be done in this group of patients and provides us with a significant opportunity.

The INSTEAD trial randomized uncomplicated acute type B dissections to medical management versus stent grafting, and its preliminary report has been presented. At 1-year follow-up, there was no benefit of stent-grafting in terms of aortic disease-related death, and many have viewed this as a negative result. However, in my mind, the jury is still out. One of the benefits of stent-grafting for patients with uncomplicated acute type B dissection is probably the prevention of late aneurysm formation, and the INSTEAD trial has not followed its patients long enough to prove this. In both of these studies, Dr. Christoph A. Nienaber has played a key role, and I would like to acknowledge his contribution to our field and also say thank you. Many other important trials and registries are underway to determine when TEVAR is appropriate, and importantly, when it is not. New dissection-specific devices are on the horizon as well. Clearly, thoracic dissection is an area of rapidly increasing research and interest, as are several other disease and injury states.

With all of these developing areas of study, we have asked thoracic aortic specialists to share their experiences, opinions, and the relevant literature pertaining to particular topics. To begin, Frank J. Criado, MD, offers insights into access, delivery, and fixation to achieve optimal endograft placement—an excellent overview to begin our cover feature section. Next, Peter H. Lin, MD, and colleagues provide a comprehensive look at the many pitfalls that may be encountered in treating traumatic thoracic aortic injuries. Thoracic specialists will be key in guiding the development of next-generation devices by sharing their wish lists for new features, as W. Anthony Lee, MD, has done in his article.

James F. McKinsey, MD, and colleagues have collaborated to address another challenging emergent indication—TEVAR for the ruptured thoracic aorta. Alan B. Lumsden, MD, and colleagues have authored a very interesting article on hybrid interventions for complex aortic pathologies. Although the currently available devices can reliably treat descending thoracic aneurysms, they cannot handle distal arch aneurysms unless a debranching procedure is performed. One promising technology to address this issue includes the use of fenestrated devices, as described by my colleagues, Shin Ishimaru, MD; Satoshi Kawaguchi, MD; and Yoshihiko Yokoi, MD. Next, Karthik Kasirajan, MD, presents an update on the use of pressure sensors to monitor thoracic stent grafts postprocedurally. To close our feature section, Ross Milner, MD, provides an interesting look at the use of stent grafts in treating type B dissections, a significant clinical need that requires careful patient selection (and exclusion), and perhaps dissection-specific devices.

The relative value of any endovascular procedure is measured by the difference in invasiveness and performance between the new and the "gold" standard. In this regard, TEVAR probably has one of the highest values among today's endovascular therapies. As for me, I have additional work to do because there is currently no approved thoracic stent graft in Japan. We are grateful for the opportunity to share the perspectives of this esteemed group of physicians with our readers, and we hope you find them interesting and informative. ■

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