Commentary: The next quarter century

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In this edition of the Journal, Nissen and colleagues1 report on nearly a quarter century’s experience with the management of thoracic aortic graft infections. Of interest is the year in which the study period ended; 2013 was the year in which the US Food and Drug Administration added acute and chronic type B aortic dissection as indications for use of the Conformable Gore TAG Thoracic Endoprosthesis (W.L. Gore and Associates, Inc, Flagstaff, Ariz). It was also the year that Nienaber and associates2 published the 5-year results of the Investigation of Stent Grafts in Aortic Dissection with Extended Length of Follow-up (INSTEAD-XL) trial, showing that elective thoracic endovascular aortic repair (TEVAR) of uncomplicated type B aortic dissections had superior outcomes compared to best medical therapy alone for all-cause mortality, aorta-specific mortality, and aortic disease progression. Just a few months later, Bavaria

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and colleagues presented the findings of the DISSECTION trial for acute complicated type B dissections, which was rapidly followed by US Food and Drug Administration approval of the Valiant Captivia System (Medtronic Inc, Minneapolis Minn) for the treatment of type B aortic dissections.

Although the study period of Nissen and colleagues pre-dates these landmark events, the study findings may be most significant for the imminent wave of patients who will undergo TEVAR for acute or chronic dissections, or for aneurysmal degeneration. In the entire cohort, 30-day mortality of thoracic aortic graft infection treatment was a very respectable 9.4%, despite more than one-third of the patients having aortic fistulization. Comparison with a cohort of patients without infection undergoing aortic reoperations showed similar 5-year overall and reinfection-free survivals. These excellent results are likely due to aggressive treatment, with a mean time of 4 to 5 days from admission to intervention and nearly 75% of patients having vascularized tissue coverage, a factor that was associated with a 30-day mortality of 0%. One group, however, did not benefit from such excellent results. Among patients with endograft infection, surgical treatment was universally fatal, with 0% survival at 2.5 months. Although Nissen and colleagues cite advanced age and concomitant aortic fistulization as potential confounders, this group, albeit representing a small proportion of the study (12.5%), is one to which aortic surgeons should pay heed.

Examination of the existing TEVAR literature is helpful but limited. In the INSTEAD-XL trial, none of the early or late aorta-related events (death or additional open surgery) were related to infectious etiologies (C. Nienaber, personal communication, November 11, 2019). The population was highly selected, however, with only 23% of those screened enrolled into the study. In observational studies, Szeto and coworkers reported the rate of reintervention for thoracic endografts to be 11.7%, of which only 3.75% were for infectious complications. This institution also reported the overall incidence of aortic endograft infection (both abdominal and thoracic) at 0.6%, with a notable increase in hospital transfers for this problem in the latter half of the study. Of the 6 patients with TEVAR infections, 4 were deemed to have inoperable disease and were managed conservatively; of the other 2, who underwent explantation, only 1 survived at 24.7 months’ follow-up. Notably, these studies were also before the expansion of TEVAR indications and were from another highly experienced aortic center.

As TEVAR undergoes implementation beyond clinical trial conditions and by an expanding pool of operators, the small cohort of 4 endograft patients in the study of Nissen and colleagues and the patients from the University of Pennsylvania group may serve as a cautionary tale. Of special consideration are patients undergoing TEVAR for blunt trauma. In addition to the lack of good quality registry data and loss of follow-up that characterize the trauma population, coexisting injuries (such as splenic injury requiring splenectomy or resulting in hyposplenism) and the emergency or urgent nature of intervention may increase the risk of infection. For all patients with aortic disease, the condition remains a lifelong risk, even after treatment. As we move into the new age of TEVAR for long-term benefit, we should keep in mind the small but significant signal raised by the article of Nissen and colleagues.

References