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## Is it Too Much to Request a Formal Neurology Consult following TEVAR?

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Spinal cord ischemia (SCI) following thoracic endovascular aortic aneurysm repair (TEVAR) is defined as development of a new in-hospital neurologic deficit or paralysis not attributable to intracranial disease, and can be further classified as permanent (no recovery of neurological deficit before discharge) or transient (recovery of neurological deficit before discharge).<sup>1</sup> SCI following TEVAR is a devastating complication associated with significantly increased morbidity and mortality. The Society for Vascular Surgery (SVS) created a registry known as the Vascular Quality Initiative (VQI) that contains data from vascular procedures performed across the United States and Canada for the purpose of improving “the quality, safety, effectiveness, and cost of vascular health care.”<sup>2</sup> According to the VQI registry, the overall rate of SCI following all 11,473 reported TEVAR procedures between June 2014 and June 2019 was 3.7% (n = 422).<sup>1</sup> Regardless of the nature of the SCI – transient (42.4%; [n = 179]) or permanent (57.6%; [n = 243]) – patients who experienced any SCI following TEVAR had a significantly lower 1-year survival compared to patients who did not experience SCI (65% vs 87%).<sup>1</sup> Permanent SCI was associated with worse 1-year survival compared to transient SCI (54% vs 80%).<sup>1</sup> Despite the complicated nature and devastating consequences of SCI, current diagnosis and reporting of SCI in the VQI is “dependent on physician reporting, and no independent adjudication by a non-surgeon or corroboration with imaging.”<sup>1</sup> This stark difference in mortality for patients who experience SCI following TEVAR, and the current identification process of these patients, highlights a potential area for improvement. We believe the first step in improvement of early identification and management could best be accomplished with a neurology consultation in patients at increased risk for SCI following TEVAR. With the consultation of our neurology colleagues, we believe improved early identification and reporting of SCI following TEVAR will occur, and 1-year survival rates among these patients could be improved with the development of long-term, multimodal management plans under a neurologist’s expert guidance.

The idea of involving neurologists to aid in the identification of SCI following TEVAR is simple in theory, requiring only placement of a consult. However, it would be impractical and costly to enlist the aid of neurologists in the post-operative course of thousands of TEVAR patients every year, especially when the current recorded incidence of SCI following TEVAR is only 3.7%.<sup>1</sup> Studies have been published to identify patients who are at

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increased risk for SCI following TEVAR by identifying risk factors that predispose patients to SCI; these can serve as a guide to focus efforts in this cause. As an example, Mousa et al.<sup>3</sup> recently developed a risk scoring system to identify patients at low, moderate, and high risk for SCI secondary to TEVAR for the purposes of guiding operative management of these patients. This same risk scoring could be utilized to reduce cost and focus efforts to involve neurologists in the post-operative course for patients at increased risk for SCI following TEVAR.

Even when utilizing risk scoring systems, one of the major limitations to consulting neurologists is the variable presentation of SCI. If the consultation is placed too early or too late, transient SCI in the post-operative course may be missed, especially if the resulting deficit is subtle. Maximum symptomatology of SCI typically presents within 12–72 hours for most patients<sup>4</sup>, therefore, we believe it would be best to make the consultation 12–72 hours following TEVAR, or at first concern for SCI; whichever comes sooner.

Finally, if the diagnosis of SCI is obvious even without the aid of a neurologist, it calls into question the need for their involvement. In these cases, we still believe there can be value in a neurology consultation to classify the extent of disease, establish baseline functionality, assess risk factors for disease progression, and begin the rehabilitation process.

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