warranted.” A larger randomized, controlled trial with patients at higher risk that incorporates imaging in addition to clinical endpoints is needed to determine the impact of filtration. Such a study is being sponsored by the National Heart, Lungs, and Blood Institute.

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NEUROLOGIC IMPACT OF USING EMBOL-X INTRAAORTIC FILTER Reply to the Editor:

We greatly appreciate the comments of Allen and Horvath and entirely agree with their interpretation of the facts. We reported the safety and feasibility of using the new version of the EMBOL-X intra-aortic filter during transaortic transcatheter aortic valve implantation and during conventional cardiac surgery, and we documented successful capture of embolic material.¹ Although capturing emboli might be anticipated to decrease embolic events, it has been difficult to demonstrate a positive clinical effect. This may be in part because the majority of embolic cerebral events after transcatheter aortic valve implantation or conventional cardiac surgery are silent. We completely agree that a much larger, randomized study with a combination of imaging and clinical end points in patients who undergo either transaortic transcatheter aortic valve implantation or conventional cardiac surgery will be necessary for full evaluation of the potential for benefit or harm with any embolic control device.

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AORTIC SURGERY AND SPINAL COLLATERAL FLOW: A CALL FOR STRUCTURED APPROACHES TO FUNCTIONAL CHARACTERIZATION OF THE INTRASPINAL COLLATERAL SYSTEM To the Editor:

Generating knowledge of spinal collateral physiology spans over decades of scientific efforts. As will be demonstrated, historical and current knowledge of different specialized areas, such as orthopedic surgical, neurosurgical, neuroradiologic, and aortic surgical science, as well as basic research, need to be combined to generate a comprehensive picture of spinal collateral physiology.

Spinal collateral flow has been the subject of surgical large animal studies, which have proved to be the best available option among scientific models for spinal flow research. The mainstay experimental series from the Mount Sinai Hospital in New York¹⁻³ stand out in this series of experimental efforts. After more than 20 years of translational and basic work shedding light on risks of central nervous deficits after thoracic aortic surgery, tendencies of resignation now can be observed. In their recent letter, Takayama and Borger⁴ come to the conclusion that spinal cord protection might be just as “simple” as keeping perfusion pressures high and to react on evident spinal ischemia as monitored and detected by evoked potentials. It is ignored that we are still far away from solid, evidence-based individual preoperative risk prediction of spinal ischemia. Strategies with predictive validity of spinal ischemia based on individual anatomic settings still need to be established.

Lazorthes and Gouaze,^{5,6} Lazorthes and colleagues,⁷ Lazorthes and Manelfe,⁸ Lazorthes and colleagues,^{9,10} Lazorthes and Zadeh,¹¹ and Mehta¹² are to be credited for probably the most important anatomic contributions to our understanding of the spinal collateral system, more specifically the intraspinal backup system. It seems as if their work somewhat faded into the background, which is not understandable especially regarding Lazorthes and colleagues’ highly detailed and extensive investigations in cadavers. Their results have served as an anatomic basis for the numerous large animal studies by Griep and colleagues at the Mount Sinai School of Medicine in New York City. Other early contributions are by Kadyi,^{13,14} Pisco, and Pisco and Remagen.¹⁶ Paradoxically, orthopedic researchers¹⁷⁻¹⁹ studying venous return from the spinal column primarily described an important piece of the intraspinal collateral system—the serial circular epidural