Delayed Spinal Cord Ischemia After Fenestrated And Branched Endovascular Aortic Repair

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Objective:

Spinal cord ischemia (SCI) following fenestrated-branched endovascular repair (FB-EVAR) for complex abdominal and thoracoabdominal aortic aneurysms (TAAAs) typically presents within 24 hours postoperatively, however, few patients present with delayed onset SCI. We aim to characterize incidence and predisposing factors of delayed SCI after FB-EVAR.

Methods:

A retrospective, single-center review of prospectively collected data on patients undergoing FB-EVAR was performed. Patients were classified as having early-delayed SCI (7-28 days postoperative) or late-delayed SCI (>28 days postoperative).

Results:

A total of 862 patients underwent FB-EVAR between 2007-2024, with SCI occurring in 40 patients (4.8%, eight permanent). Four patients who underwent elective FB-EVAR presented with early-delayed SCI and two presented with late-delayed SCI (mean age 62±19 years; 5 males). Four patients had extent II, one had extent I and one had extent III TAAA. Prophylactic cerebrospinal fluid drainage was used in the index operation of five patients. Endograft designs included custom-made manufactured devices in five patients and Thoracoabdominal MultiBranch Endoprosthesis (TAMBE) in one. Median time from FB-EVAR to delayed SCI was 16 days. A secondary ischemic insult was identified in five patients and included emergent type A aortic dissection repair 36 months after index repair in one, open target vessel bypasses due to index technical failures on post-operative day 8 and 14 in two, respectively, post-operative hypotension in a patient who underwent debridement of enterocutaneous fistula on post-operative day 13 and dehydration/hypotension in one on post-operative day 13. One patient presented with SCI five years after index repair without clear etiology. Therapeutic spinal drainage on delayed SCI presentation was used in four patients; three had complete symptom resolution, two had residual weakness, and one had permanent paraplegia.

Conclusion:

Late SCI after FB-EVAR is rare and often occurs secondary to an ischemic insult. Monitoring and prevention should extend beyond the immediate post-operative period.