

*L.H. Hollier, MD, FACS, FACC, FRCS*

---

**P**araplegia is one of the most dreaded complications of endovascular repair of thoracic and thoracoabdominal aneurysms. As more extensive coverage of the thoracic aorta is performed by emboldened vascular surgeons, one has to ask, What is the risk of paraplegia after endovascular coverage of extensive segments of the thoracic aorta, and how it can be prevented?

In our experience with thoracic endografts, the overall incidence of neurologic injury to the spinal cord is 3%. In all our cases, there were no acute deficits; all were delayed, with neurologic injury manifested 1 day to 6 weeks after endograft deployment. In the worldwide experience, neurologic injury occurs with greater frequency in those patients who had previous or concomitant graft replacement of the abdominal aorta, as well as extensive endovascular coverage of the thoracic aorta.

There are several possible etiologies for paraplegia in these patients. In some cases, it is reasonable to assume that direct coverage of one or more critical intercostal arteries with an endograft would cause immediate ischemia of the cord and result in immediate neurologic injury. In other cases, the endograft may occlude some of the important collateral vessels to the cord, but the cord may remain perfused by other vessels if blood pressure remains adequate; if postoperative hypotension occurs, cord perfusion may fall and cord ischemia may result. In yet other situations, the endograft may cover critical intercostal arteries but initial endoleak (through multiple intercostal arteries) may allow continued perfusion of the cord; when the endoleak subsequently closes, cord ischemia may result. Cytokine activation, especially in prolonged or complicated procedures, may also play a role in spinal cord injury.

Prevention of paraplegia may be possible if one were able to identify the critical vessels providing flow to the spinal cord. Although conventional angiography may be able to identify the vessels supplying the flow to the anterior spinal artery, there have been reported risks with this technique. Recent experience with high-resolution magnetic resonance angiography may allow a safer method for identifying these vessels. If postoperative cord ischemia occurs, the current recommendations for treatment include pharmacologic elevation of the blood pressure and immediate cerebrospinal fluid drainage. In our experience, as well as that of others, these measures have resulted in the return of neurologic function.