Postoperative coma in a patient with complete basilar syndrome after anterior cervical discectomy

To the Editor:

We applaud Tsai *et al.*,¹ for drawing attention to the rare but devastating postoperative complication of basilar stroke. We would like to point out that proximate surgery in the neck may be coincidental rather than causative. In fact, we have reported a similar case that occurred after nephrectomy in which the cervical spine was not manipulated at all.² Furthermore, we would like to suggest that consideration be given to early neuroradiologic or thrombolytic intervention, which may offer some chance to improve outcomes when basilar stroke is diagnosed early.³

David P. Martin MD PhD

Christopher J. Jankowski MD

Mark T. Keegan MB MRCPI

Laurence C. Torsler MD FRCPC

Mayo Clinic College of Medicine, Rochester, USA

E-mail: martin.david@mayo.edu

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Indirect vertebral artery injury during cervical spine surgery

To the Editor:

Tsai *et al.* present an interesting case of massive cerebral infarction and subsequent death after anterior cervical discectomy and fusion.¹ The authors state that the cervical hyperextension may have led to cerebral ischemia and subsequent cerebral infarction.¹ We offer several comments relevant to their case. First, it appears the patient had two primary risk factors, diabetes and

hypertension, for vascular disease. We published a very similar case on a 56-yr-old male with hypertension and diabetes who underwent a C6 anterior cervical corpectomy for myelopathy.² Our patient tolerated the procedure well, with minimal blood loss, normal intraoperative neurophysiological monitoring, and a normal intraoperative ‘wake-up’ test. Postoperatively, the patient was neurologically ‘sluggish’. An emergent computerized tomography (CT) scan of the brain and spine demonstrated posterior circulation infarcts and a normal spine. A vertebral artery dissection was demonstrated on angiography. The patient continued to have embolic infarcts requiring a suboccipital craniectomy for evacuation of edematous and infarcted cerebellum with subsequent sacrifice of the vertebral artery via aneurysm clipping. The patient died two weeks postoperatively.² We investigated at length the possible etiologies for the vertebral dissection and concluded it was likely cervical traction. We also routinely utilize cervical hyperextension in our anterior cervical spine cases, but believe that traction on an atherosclerotic vessel led to the dissection. Vertebral artery dissection has been reported to occur spontaneously, with spinal trauma, after chiropractic treatment, and associated with suicide via hanging, all of which could result in either direct or indirect arterial injury.^{3–5} There are numerous reports of cerebrovascular insults secondary to vertebral artery dissection, which are most often due to thromboemboli in the posterior circulation.⁵ Tsai *et al.* denied any direct trauma, however, a CT scan of the cervical spine might have demonstrated a breach of the transverse foramen leading to a vertebral dissection. Another potential mechanism of vertebral artery injury that was not discussed, was the possibility of vibrations from a high-speed drill, if utilized in the surgery, leading to a vertebral dissection.

To support Tsai *et al.* on the hypothesis of a hyperextension injury, there are reports of chiropractic manipulation causing vertebral injury due to extension of the neck with rotation causing intraforaminal contortion of the vessel leading to dissection.⁶ In addition, are the cases of “salon syndrome” where the neck is hyperextended for hairwashing and the person subsequently suffers neurological sequelae.⁷ Lastly, magnetic resonance angiography has demonstrated that certain patients have significantly decreased vertebral-basilar flow with cervical hyperextension, and are thus at an increased risk for ischemia with hyperextension.⁸

In closing, we support Tsai *et al.* on their recommendations for limiting cervical hyperextension in patients at risk for vascular disease, i.e., diabetes and