

 IMAGES OF SPINE CARE

Traumatic brachial plexus root avulsion and cervical spine epidural hematoma in an 18-year-old man

Case

An 18-year-old, otherwise healthy man, was an unrestrained passenger in a vehicle that collided with a tree at high speed. Subsequent clinical and radiographic evaluation revealed his nonspinal injuries including splenic laceration, multiple left-sided rib fractures, left pulmonary contusions, left acetabulum fracture, right tibia pilon fracture, and right mandibular fracture.

On limited examination, his left upper extremity was flaccid without any movement. A computed tomography scan of his cervical spine demonstrated evidence of right occipital condyle fracture, right C1 lateral mass fracture, and a cervical epidural hematoma from levels C4–C7. A magnetic resonance imaging (MRI) was obtained that

confirmed these findings and depicted a left-sided hematoma from the inferior aspect of C2 to the T4/T5 levels that compressed the spinal cord with nearly complete effacement from C6–T1 levels ([Figs. 1 and 2](#)). On axial MRIs, asymmetric shift of the spinal cord was also noted ([Fig. 2](#)).

The patient was taken to the operating room for a laminoplasty and decompression of the epidural hematoma. Pre-operatively, somatosensory-evoked potentials produced no signals of the left upper extremity. The hematoma was decompressed using irrigation and suction. After further exposure, the C3–C7 left-sided nerve roots were found to be either partially or completely avulsed from their origin at the level of the spinal cord ([Fig. 3](#)). There was no active extravasation of cerebrospinal fluid leak identified intraoperatively.

Discussion

The early and accurate diagnosis of cervical spine injuries is crucial. Computed tomography and MRI both revealed a large cervical epidural hematoma posterolateral to the spinal cord from C2–T4/T5. In retrospect,



Fig. 1. Sagittal T2-fast relaxation fast spin echo magnetic resonance imaging sequence depicting a left-sided hematoma from the inferior aspect of C2 to the T4/T5 levels that compresses the spinal cord with nearly complete effacement at the distal cervical levels.



Fig. 2. Axial T2-fast relaxation fast spin echo magnetic resonance imaging sequence at the C6–C7 level showing right-sided shift of the spinal cord.

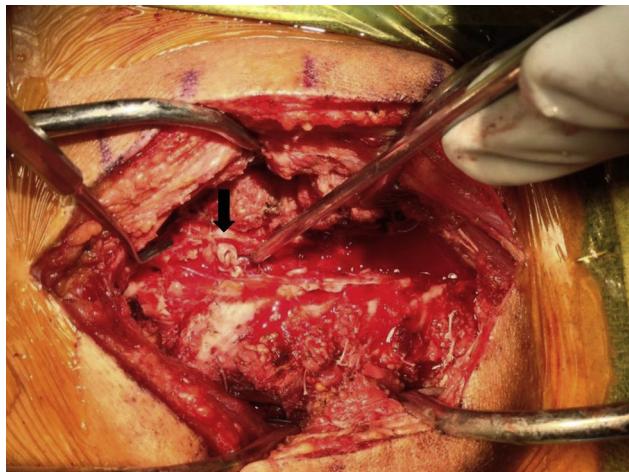


Fig. 3. Intraoperative photograph. Black arrow indicates an avulsed nerve root.

the asymmetric shift of the spinal cord on the axial MRIs may have represented underlying nerve root avulsions (Fig. 2). Exploration of the spinal cord unveiled partial and complete avulsions of C4–C7 left nerve root (Fig. 3). It was noted by Harper et al. [1] that nerve root avulsions cannot be ruled out based on negative MRI studies. It has been speculated that the epidural venous plexus is a likely source of traumatic spinal epidural

hematomas, but in this case, its contribution was directly observed.

This case represents a unique injury complex including both traumatic spinal epidural hematoma and cervical nerve root avulsions. In this case, laminoplasty proved to be an effective treatment option for exposure and thorough decompression of the epidural hematoma.

Reference

- [1] Harper CM. Preoperative and intraoperative electrophysiologic assessment of brachial plexus injuries. *Hand Clin* 2005;21:39–46.

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