

 IMAGES OF SPINE CARE

Hyperextension injury of the C1–C2 cervical spine with neurologic deficits: horizontal splitting fracture of the C1 arch

A 45-year-old man was admitted to the emergency department of another medical center after a fall from a height of 7 m, accompanied with neck extension. He was transferred to our hospital 2 days after the injury. He was in a quadriplegic state, with Grade 0 motor power of the upper extremity and Frankel classification Grade B on physical examination. The lateral view of a cervical computed tomography (CT) image revealed a Type II odontoid fracture and a splitting fracture of the C1 anterior and posterior arches. A normal atlantodens interval was revealed (Fig. 1, Left). A Jefferson fracture was observed on the axial view of a CT image. An oblique occipital condyle fracture accompanied with an odontoid fracture was revealed on a coronal CT image (Fig. 1, Right). Magnetic resonance imaging revealed a signal change in the spinal cord at the C2 level, and no rupture

of the transverse ligament was observed (Fig. 2). The patient underwent an operation 3 days after the injury considering a diagnosis of central cord syndrome with occipital condyle, Jefferson, and odontoid fractures. Excellent reduction and fixation of the dens were confirmed on a postoperative plain radiograph (Fig. 3). Postoperative magnetic resonance imaging performed 5 days after the operation demonstrated the expansion and high density of the signal change in comparison with that before the operation (Fig. 4). Neurologic symptoms of the upper extremity indicated that sensory deficit recovered gradually with time.

Woo-Kie Min, MD, PhD

Ju-Eun Kim, MD

Department of Orthopedic Surgery
Kyungpook National University Hospital

130 Dongdeok-ro
Jung-gu, Daegu
700-721, South Korea

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Fig. 1. (Left) A sagittal computed tomography image of the cervical spine showing an odontoid oblique fracture with a horizontal splitting fracture of the C1 arch. (Right) A coronal axial computed tomography image of the cervical spine showing a combination of an occipital condyle fracture and the bursting nature of a Jefferson fracture at the C1 level.

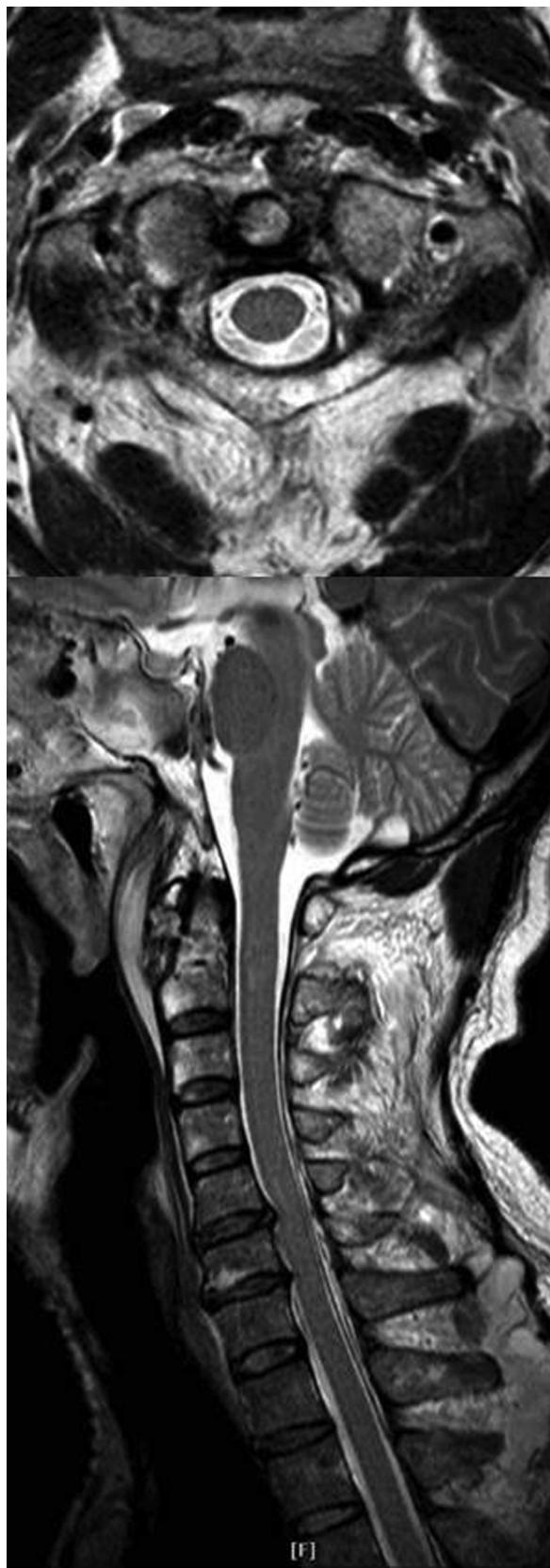


Fig. 2. A T2-weighted axial magnetic resonance image of the cervical spine showing no significant transverse ligament rupture, and a T2-weighted sagittal magnetic resonance image of the cervical spine showing a preoperative high-signal change of the spinal cord at the C2 level.



Fig. 3. A lateral radiograph of the cervical spine showing bicortical screw placement for the C2 odontoid fracture.



Fig. 4. A T2-weighted sagittal magnetic resonance image of the cervical spine taken 5 days after the operation showing an extended and higher signal change than that observed on the preoperative image.