Craniocervical dissociation

Advances in prehospital life support of patients who have sustained high-energy trauma have resulted in an increase in the number of patients with craniocervical dissociations (CCDs) surviving. With better imaging and more severely injured patients surviving, we are now seeing other associated injuries. CCDs in association with unstable, noncontiguous, subaxial spine injuries have not been described. The objective of this study was to (1) describe this injury pattern and its characteristics, including the mechanism of injury, injury levels, and neurological deficits, and (2) understand prognosis and outcome.

Methods: After institutional review board approval, a retrospective study of patients who sustained CCD in association with an unstable, circumferential, subaxial, or cervicothroacic spine injury (C3-T2) between January 1, 2003, and August 31, 2018, was done. Review of imaging was performed to identify spine injury localization and type. Demographic data, mechanism of injury, neurological status, type of treatment, and patient outcomes were obtained from the electronic medical records.

Results: One hundred seventeen patients with CCD were identified, of which 105 had full spine radiographs. Thirteen (8 male and 5 female) had an associated, noncontiguous, unstable cervical, or cervicothoracic injury. Mean age was 45.4 ± 19 years. No exam could be obtained in 6; in the other 7, 1 was American Spinal Injury Association (ASIA) E, 1 ASIA D, and 5 ASIA A. Operative management of both injuries was planned for all 13 patients; however, 2 died before surgery. At discharge, there were 9 survivors with mean follow up of 2 years; 4 patients were independent (3 ASIA D, 1 ASIA E), and 5 were dependent (1 ASIA C, 4 ASIA A).

Conclusions: Approximately 12% of patients with CCD have a floating cervical spine injury. Floating cervical spine injuries have an unfavorable prognosis with 69% surviving to hospital discharge but only 31% functioning independently (ASIA D or E)¹⁾

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Taylor M, Tavolaro C, Bellabarba C, Bransford RJ. "Floating Cervical Spine Injuries": Craniocervical Dissociation with Associated, Noncontiguous, Unstable Cervical or Cervicothoracic Spine Fracture. Int J Spine Surg. 2021 Oct;15(5):862-870. doi: 10.14444/8111. Epub 2021 Sep 22. PMID: 34551921; PMCID: PMC8651208.

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