Cervical spine injury

- C5 Nerve Palsy After Posterior Instrumentation and Decompression in Cervical Spine Surgery: A Review of the Literature
- Spinal Motion Restriction for Possible Traumatic Cervical Spine Injury: A Scoping Review
- Traumatic Jumped Cervical Facets in Adult Patients: A Case Series
- Letter: Traumatic Vertebral Artery Injury After Subaxial Cervical Spine Injuries: Incidence, Risk Factors, and Long-Term Outcomes: A Population-Based Cohort Study
- Interrater reliability between surgeons and pediatric emergency providers in the cervical spine assessment of injured children
- Craniocervical Junction and Upper Cervical Spine Fractures: Historical Systems and Advancements with the AO Spine Classification
- Exercising Increased Caution Before Removing C-collars in Altered Patients and Patients With Chronic Cervical Spine Changes: Reports of Neurological Deficit or Injury Following C-collar Removal Despite Normal Imaging
- Traumatic central cord Syndrome: An integrated neurosurgical and neurocritical care perspective

Epidemiology

Cervical spine injury epidemiology.

Classification

Cervical spine injury classification.

Etiology

Cervical spine injury etiology.

Clinical features

Neurological deterioration ranging from complete spinal cord injury (SCI) to incomplete spinal cord injury or single cervical radiculopathy are potential consequences.

Diagnosis

Cervical spine injury diagnosis.

Treatment

see Cervical spine injury treatment.

Outcome

Fractures of the cervical spine are a leading cause of morbidity and mortality in trauma patients, and a bony fracture is associated with 56% of cervical traumatic spinal cord injury.

The age factor modulates human cervical spine tolerance to impact injury [1].

The cervical spine injury represents a potential devastating disease with 6% associated in-Hospital mortality.

Cervical spine injury complicates the care of approximately 4% of injured patients admitted to trauma centers across the United States.

Guidelines

In 2013 the American Association of Neurological Surgeons and the Congress of Neurological Surgeons released updated management guidelines for the acute cervical spine injury and spinal cord injury SCI.

Of 56 studies published in the Cochrane Library Central Register of Controlled Trials, 19 met the inclusion criterion of acute cervical spine injury and are summarized across 4 subcategories: diagnosis, surgical stabilization, scopes/instrumentation, and therapeutic outcomes. Yup et al. confirm the utility of computed tomography for diagnosis, and improved outcomes associated with early (<24h) decompressive surgery. They describe advances in laryngoscopy and intubation under various SCI indications. They explore the benefits of continuous positive airway pressure protocols for reducing respiratory insufficiency and patient education standards for transfer and mobility success. They report on ongoing randomized controlled trials (RCT) for surgical and therapeutic approaches for subpopulations of interest, including incomplete cord lesion, canal stenosis, and riluzole pharmacotherapy. They recommend a large, multicenter, prospective confirmatory RCT to assess the impact of the timing of surgery versus conservative management to generate Class I evidence on the topic. Such a study should utilize shared, common variables as outlined by the National Institutes of Health SCI Common Data Elements to enable international collaboration and data pooling for robust, reproducible analyses [2].

Case series

A retrospective multicenter study included 462 patients. They included patients with traumatic acute cervical spinal cord injury aged ≥65 years who were treated surgically, whereas patients with American Spinal Injury Association (ASIA) Impairment Scale E, those with unknown operative procedures, and those waiting for surgery for >1 month were excluded. The minimum follow-up period was 6 months. Sixty-five patients (early group, 14.1%) underwent surgical treatment within 24

hours, whereas the remaining 397 patients (85.9%) underwent surgery on a standby basis (delayed group). The propensity score-matched cohorts of 63 cases were compared.

Results: Patients in the early group were significantly younger, had significantly more subaxial dislocations (and fractures), tetraplegia, significantly lower ASIA motor scores, and ambulatory abilities 6 months after injury. However, no significant differences in the rate of complications, ambulatory abilities, or ASIA Impairment Scale scores 6 months after injury were observed between the matched cohorts. At 6 months after injury, 61% of the patients in the early group (25% unsupported and 36% supported) and 53% of the patients in the delayed group (34% unsupported and 19% supported) were ambulatory.

Early surgery is possible for CSI in elderly patients as the matched cohort reveals no significant difference in complication rates and neurological or ambulatory recovery between the early and delayed surgery groups [3)].

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729 patients with Cervical Spine Trauma (CST) were retrospectively analyzed, including rates of vertebral artery injury (VAI), age at injury, cause of injury, cardiovascular history, smoking history, substance abuse history, embolization therapy, and antiplatelet or anticoagulant therapy prior or after injury. VAIs were identified and graded following the Modified Denver Criteria for Blunt Cerebrovascular Injury utilizing Magnetic Resonance Angiography and Computed Tomography Angiography (CTA). Brain scans were reviewed for stroke rates and statistically significant variations.

33 patients suffered penetrating trauma while 696 patients experienced blunt trauma. 81 patients met the criteria for analysis with confirmed VAI. VAI was more common in penetrating injury group compared to blunt injury group (64% vs 9%, $P < 0.0005$). However, low-grade VAI (<grade III) was more common in blunt injury group versus penetrating group (37% vs 14%, $P < 0.05$). The frequency of posterior circulation strokes did not vary significantly between groups (26.3% versus 13.8%, $P = 0.21$). Cardiovascular comorbidities were significantly more common in the blunt group (50%, $P = 0.0001$) compared to penetrating group (0%).

VAI occurs with a high incidence in penetrating CST. Although stroke risk following penetrating and blunt CST did not vary significantly, they resulted in serious complications in a group of patients. Further studying of this patient population is required to provide high-level evidence-based preventions for VAI complications [4)].

1)
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4)

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