Subaxial cervical spine injury

- Letter: Traumatic Vertebral Artery Injury After Subaxial Cervical Spine Injuries: Incidence, Risk Factors, and Long-Term Outcomes: A Population-Based Cohort Study
- Comprehensive Review of Multidetector Computed Tomography (MDCT) in the Assessment of Blunt Cervical Spine Trauma in Adults
- In Reply: Traumatic Vertebral Artery Injury After Subaxial Cervical Spine Injuries: Incidence, Risk Factors, and Long-Term Outcomes: A Population-Based Cohort Study
- Letter: Traumatic Vertebral Artery Injury After Subaxial Cervical Spine Injuries: Incidence, Risk Factors, and Long-Term Outcomes: A Population-Based Cohort Study
- Subaxial Cervical Lateral Mass Screw and Rod Fixation: Surgical Experience and Outcome Analysis
- Spinal fractures associated with aquatic accidents
- The Impact of Atlantoaxial Intra-Articular Fusion on Cervical Spine Curvature and Sagittal Balance
- Management of Subaxial Cervical Spine Injury with Unilateral Locked Facet: An Institutional Experience

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Subaxial cervical spine injury refers to damage or trauma that occurs in the lower portion of the cervical spine, which is the part of the vertebral column located in the neck region. The subaxial cervical spine includes the vertebrae from C3 (the third cervical vertebra) to C7 (the seventh cervical vertebra). Injuries to this region can involve the vertebrae, spinal cord, spinal nerves, ligaments, and surrounding soft tissues.

Epidemiology

Subaxial cervical spine injury epidemiology.

Classification

Subaxial Cervical Spine Injury Classification.

Etiology

These injuries can result from various causes, such as motor vehicle accidents, falls, sports injuries, and violence.

Clinical features

The clinical features of subaxial cervical spine injuries can vary depending on the severity and type of injury. Here are some common clinical features associated with these injuries:

Neck Pain: Pain in the neck is a hallmark symptom of subaxial cervical spine injuries. The intensity and location of the pain can vary based on the specific injured area and the extent of damage.

Limited Range of Motion: Patients with subaxial cervical spine injuries often experience a decreased range of motion in their neck. They might have difficulty turning their head or tilting it in different directions.

Neurological Symptoms: Depending on the severity of the injury and whether the spinal cord or nerve roots are affected, patients may exhibit a range of neurological symptoms, including:

Weakness: Muscle weakness in the arms, hands, or legs.

Numbness or Tingling: Sensations of numbness, tingling, or “pins and needles” in the extremities.

Paralysis: In severe cases, patients might experience partial or complete paralysis below the level of the injury.

Loss of Sensation: Decreased or lost sensation in various body parts, depending on the affected nerve roots or spinal cord segments.

Muscle Spasms: Muscle spasms in the neck and upper back are common after subaxial cervical spine injuries. These spasms can contribute to pain and limited range of motion.

Swelling and Tenderness: Swelling, bruising, and tenderness around the injured area of the neck are common due to tissue damage and inflammation.

Abnormal Posture: Some patients may adopt an abnormal posture to alleviate pain. For example, they might hold their neck in a certain position to reduce discomfort.

Difficulty Breathing or Swallowing: In more severe cases, injuries affecting the cervical spine can lead to difficulty breathing or swallowing due to potential compression of the airway or esophagus.

Unstable Fractures: Unstable fractures can result in visible deformities or unnatural movements of the spine. These are often indicative of a more severe injury.

Neurogenic Shock: In cases of severe spinal cord injury, patients may develop neurogenic shock, characterized by low blood pressure, bradycardia (slow heart rate), and a lack of normal sympathetic nervous system response.

It's important to note that the clinical presentation of subaxial cervical spine injuries can vary widely based on individual factors, including the type of injury, the patient's overall health, age, and other medical conditions.

Scales

American Spinal Injury Association Impairment Scale

Diagnosis

Subaxial cervical spine injury diagnosis.

Treatment

Subaxial cervical spine injury treatment.

Outcome

A very low level of evidence showed that in-hospital mortality in patients with traumatic subaxial cervical SCI did not decrease over the last four decades despite diagnostic and therapeutic advancements. The overall acute mortality rate following subaxial cervical SCI is 17.88%. Sadeghi-Naini et al. recommend reporting a stratified mortality rate according to key factors such as treatment paradigms, age, and severity of injury in future studies [1].

Case reports

A 26-year-old male patient presented to emergency department with history of road traffic accident with injury to his neck having complain of severe neck and shoulder pain and weakness in the right upper limb. On clinical and radiological evaluation, it was diagnosed a case of high-grade anterolisthesis C5 over C6 (spondyloptosis) with neurological compromise. Surgical intervention was done within 48 h with complete neurological recovery.

Satisfactory clinical and good long-term outcome can be obtained in fracture dislocation of subaxial cervical spine by anterior cervical discectomy, and anterior cervical plate [2]

Case report from the HGUA

59-year-old woman, after waking up, presented dizziness, and nausea followed by a second-long syncope with cervical trauma on the kitchen bench.

Immediate and complete recovery. She had paresthesias in his arms that subsided.

Episodes of palpitations, during his admission in sinus rhythm with a tendency to bradycardia.

CT cervical spine

Findings are compatible with C4-C5 bilateral cervical facet dislocation with possible teardrop fracture of the anterior and upper edge of C5.

Cervical MRI

Alteration of the alignment with anterolisthesis of vertebrae C1 to C4 on the alignment axis of C5-6 due to bilateral facet dislocation between C4 and C5 with the cervical unilateral locked facet on the left side.

Increased signal is observed due to edema in the interspinous area with increased space of the c4/5 spinous processes in relation to interspinous ligament rupture while a break in the continuity of the ligamentum flavum is noted at that level and possibly also at C5/ 6 due to injury to the posterior ligamentous complex with resulting instability that causes pseudoherniation of the C4/5 disc and is responsible for vertebral displacement that causes stenosis of the central diameter of the spinal canal. The spinal cord shows normal thickness and signals intensity. It is associated with the existence of a small soft tissue hematoma in front of the C5 and C6 bodies. The vertebral spaces show a reduced height and the discs show a loss of their signal intensity indicating dehydration and degenerative changes of the same. In C5/6 and C6/7 spaces, there are degenerative changes with marginal osteophytes that cause central stenosis of the bilateral spinal and foraminal canal. Subchondral bone edema in the anterior margin of the subchondral bone adjacent to the upper endplates of T1, T2, and especially T3 in relation to a flexion-extension lesion mechanism.

In conclusion, anterolisthesis due to left C4/5 facet block, injury to the posterior ligamentous complex, and severe spinal canal stenosis without injury to the spinal cord. Subchondral bone edema in bodies T1 to T3.

1)
Sadeghi-Naini M, Yousefifard M, Ghodsi Z, Azarhomayoun A, Kermanian F, Golpayegani M, Alizadeh SD, Hosseini M, Shokraneh F, Komlakh K, Vaccaro AR, Jiang F, Fehlings MG, Rahimi-Movaghar V. In-hospital mortality rate in subaxial cervical spinal cord injury patients: a systematic review and meta-analysis. Acta Neurochir (Wien). 2023 Jul 22. doi: 10.1007/s00701-023-05720-5. Epub ahead of print. PMID: 37480505.
2)
Barbar N, Kumar N, Kumar R, Sharma A, Choudhary MC. Spondyloptosis at Subaxial Cervical Spine with Minimal Neurological Compromise and Complete Recovery: A Rare Case Report. J Orthop Case Rep. 2022 Dec;12(12):118-121. doi: 10.13107/jocr.2022.v12.i12.3490. PMID: 37056602; PMCID: PMC10088390.