Axis fracture classification

- Analysis of effectiveness of Holosight robot navigation-assisted percutaneous cannulated screw fixation in treatment of femoral neck fractures
- Craniocervical Junction and Upper Cervical Spine Fractures: Historical Systems and Advancements with the AO Spine Classification
- Comprehensive Review of Multidetector Computed Tomography (MDCT) in the Assessment of Blunt Cervical Spine Trauma in Adults
- Changes in sagittal spinopelvic alignment are associated with increased pain and impaired function in multiple myeloma patients
- Limitations in rotational correction: 3D displacement analysis of midshaft clavicle fractures with titanium elastic nails
- The AO Spine Upper Cervical Injury Classification System (AO UCIC) - An Umbrella Review of Traumatic Axis Injuries Factors that May Affect Treatment Decision
- Three-Dimensional Mapping of Distal Clavicle Fractures: Displacement Patterns and Clinical Implications for Surgical Management
- The management of odontoid fractures through the lens of evolution in classification schemes: A systematic review with illustrative case examples

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A multitude of classifications were historically proposed for C2 injuries, none of them with universal acceptation. The new UCST incorporated elements of these prior classifications into this new system to improve their limitations.

Methods: Eight classic C2 classification systems- Anderson D'Alonzo classification, Roy-Camille classification, Hadley subclassification of Anderson D'Alonzo Type II Odontoid fracture, Grauer subclassification of Anderson D'Alonzo Type II Odontoid fracture, Levine and Effendi classification, Levine and Edwards classification, Burke and Harris classification, and Benzel et al were evaluated, and their injury types/subtypes were classified according to the new AO UCST.

Results and conclusions: Most of the injuries were classified as type A by the new UCST, suggesting that most of the detailed descriptions of specific bone injury patterns may not be implied in different treatment strategies, being treated non-surgical. Those with ligamentous injury (type B) were attributed to some injuries with ligamentous/disc disruption without clear dislocations (type C when dislocations were present). This correlation between the classic morphologies and the new AO UCST may improve the understanding of injury patterns and help in the decision of the best treatment [1)].

For Axis fracture classification currently, no classification is universally accepted or widely used. The emergence of the AO Spine Upper Cervical Injury Classification system seems promising as it encompasses radiological and clinical elements [2)].

AO Spine Upper Cervical Injury Classification System.

Three general subtypes: axis body fractures (atypical C2 fractures), odontoid fractures, and Hangman's fractures [3)]

Odontoid fracture.

Hangman’s fracture.

Axis body fracture.

Although not as common as Type II odontoid fractures, other C-2 fractures including hangman's, complex, and Type III odontoid fractures accounted for close to half of the injuries. There are few differences between the fracture types with respect to cause of injury, predisposing factors, or mortality rate. However, surgical treatment was more common for Type II odontoid fractures [4].

1)
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2)
McDermott M, Quinteros G, Landriel F, Stastny C, Raskin D, Ricciardi G, Fernandes Joaquim A, Carazzo C, Hussein A, Asghar J, Guiroy A. Management of C2 fractures following multiple classifications, a narrative review. Brain Spine. 2024 Aug 15;4:102928. doi: 10.1016/j.bas.2024.102928. PMID: 39309549; PMCID: PMC11415952.
3)
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4)
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