

Introduction to atlanto-axial instability and a few case studies

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Upper cervical instability (UCI) arises from ligamentous injuries, often due to trauma, such as whiplash or concussion. This condition disrupts the stability of the atlantoaxial joint, leading to recurrent localized pain, stiffness, and restricted range of motion, compounded by diffuse neurological symptoms, including dizziness, fatigue, and impaired proprioception. Misdiagnosis or delayed recognition of UCI is common, often attributing symptoms to other conditions.

The anatomy of the upper cervical spine underscores its vulnerability. The bony structures, including the atlas (C1) and axis (C2), rely on ligamentous integrity, particularly the transverse, alar, and apical ligaments, to maintain functional stability. Ligament injuries can lead to functional stenosis, exacerbating neurological compromise. The Fielding and Hawkins classification provides a framework for grading atlantoaxial subluxation, critical in assessing the degree of instability. Advances in diagnostic imaging, particularly motion X-ray (fluoroscopy), offer dynamic assessments of upper cervical biomechanics, identifying subtle instability not captured in static imaging modalities like CT or MRI. Motion X-ray, although not novel, remains underutilized despite its ability to reveal ligament laxity and abnormal joint motion. Complementary CT/MRI imaging highlights structural abnormalities and soft tissue injury.

This paper presents three case studies of patients with post-traumatic whiplash or concussion. In each case, initial diagnostic assessments failed to identify ligamentous injuries, resulting in prolonged symptoms and delayed treatment. A review of these cases emphasizes the need for heightened clinical suspicion, comprehensive imaging, and early intervention.

Improved understanding of upper cervical anatomy, integration of advanced imaging techniques, and attention to subtle clinical presentations can enhance diagnostic accuracy, preventing chronicity and optimizing outcomes for UCI patients. This underscores the critical need for interdisciplinary approaches in managing cervical trauma and its sequelae.

Biography

Sasha Blaskovich is the owner of the Whiplash Clinic in Langley, BC, specializing in the diagnosis and rehabilitation of neck injuries, particularly whiplash. A University of Calgary graduate, he integrates chiropractic care, trigger point therapy, and advanced techniques into personalized treatment plans. Sasha's clinic is renowned for patient-centered care and cutting-edge technology, attracting individuals from across Canada. Passionate about education, he promotes cervical spine health and injury prevention through workshops and seminars. Sasha's dedication makes him a leader in cervical spine injury care.

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