



Injury Briefing

A review of the latest studies from Dr. Michael D. Berry.

Neural Canal Narrowing During Whiplash

The human spine is exposed to tremendous forces during a rear-end auto collision, even at speeds of under ten miles per hour. Research shows that the ligaments can be stretched or torn, the muscles can be strained, and a new study from Yale University finds that the nerves that travel through the spinal canal may be at risk from such injuries.

In this study, the author studied the biomechanics of a human cadaver cervical spine during simulated whiplash motion. The spine was subjected to a crash of 7 mph with no head restraint, an active head restraint, and the more modern whiplash protection system (WHIPS). The cervical canal and foraminal space was computed during each of the impacts, as the researcher was looking for evidence of spinal canal narrowing during impact.

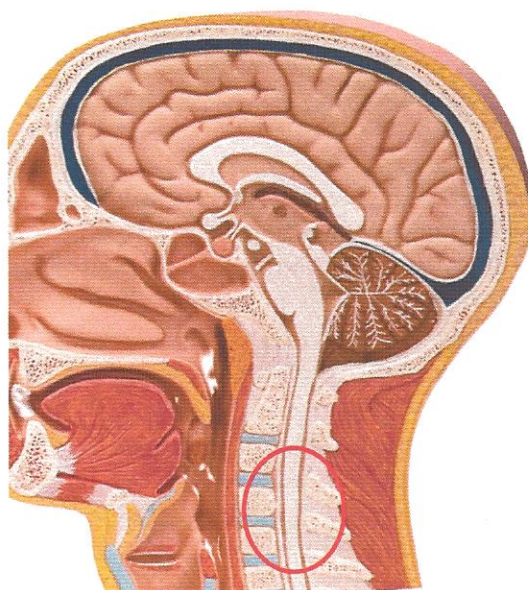
The study found that "Average peak canal and foramen narrowing could not be statistically differentiated" between the three types of tests.

The study concludes:

"While lower cervical spine cord compression during a rear crash is unlikely in those with normal canal diameters, our results demonstrated foraminal kinematics sufficient to compress spinal ganglia and nerve roots. Future anti-whiplash systems designed to reduce cervical neural space narrowing may lead to reduced radicular symptoms in whiplash patients."

This study shows that we seat design needs further development, and that injury from rear-end collisions is still possible, even with the most advanced head restraint technology.

Ivancic PC. Cervical neural space narrowing during simulated rear crashes with anti-whiplash systems. European Spine Journal 2012;January 24;Epub before print.



Shoulder Dysfunction After Auto Injury

A new study finds that auto injuries can cause more problems than just neck pain. In this article, researchers found that patients with whiplash or insidious-onset of neck pain were more likely to have problems with

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shoulder function. This misalignment of the shoulders may create and even sustain neck pain as well as cause other problems, like headache.

In the study, patients with neck pain had more difficulty performing routine shoulder movements, and their head and neck postures were altered. The study also found that what neck disorder a patient had impacted the type of shoulder dysfunction they had: patients with insidious-onset of neck pain could not elevate their shoulders as much, and those with whiplash had shoulders that were slightly tilted forward.

The study shows that altered neck function can quickly lead to altered function in other parts of the body, causing a cascade of symptoms seemingly unrelated to the original injury.

These findings corroborate other studies that indicate that whiplash patients have a higher risk of developing shoulder pain and experiencing a number of other pain conditions. Since a neck injury can alter the function of other parts of the body, it's crucial that patients seek treatment that addresses the multifaceted nature of neck pain and whiplash.

Helgadottir, Harpa, and Eythor Kristjansson, Sarah Mottram, Andrew Karduna, and Halldor Jonsson, Jr. Altered Alignment of the Shoulder Girdle and Cervical Spine in Patients With Insidious Onset Neck Pain and Whiplash-Associated Disorder. Journal of Applied Biomechanics 2011;27:181-191.