Injury Briefing

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

Can New Seat Designs Prevent Whiplash?

Vehicle crashes may cause injury to multiple structures within the cervical spine, including the facet joint and intervertebral disc. In an attempt to reduce neck injuries during rear-impact collisions, some automakers now incorporate active injury prevention systems into vehicle designs.

Previous studies have shown that active injury prevention systems could reduce whiplash injury claims and complaints of neck pain after rear crashes. A recent study sought to examine whether such systems reduce the risk of injury to the facet joints or intervertebral discs.[1]

In the study, a team of researchers simulated rear-end crashes with three types of seats: the Whiplash Protection System (WHIPS), active head restraint (AHR), and no head restraint (NHR). The tests involved human cervical spine specimens mounted to the torso of a rear-impact dummy.

Facet compression at C6/C7 reached 2.9mm with WHIPS, 1.9mm with AHR, and 3.2mm with NHR. When compared with no head restraint, both WHIPS and AHR generally reduced peak disc separation and ligament strain. While they limited strain below the failure threshold, they did not protect against potential facet joint compression injuries, which could lead to neck pain in some whiplash patients. Future neck injury prevention systems could be designed to reduce facet joint compression, leading to reduced neck pain following rear impact crashes.

WHIPS and AHR seat designs appear to produce mixed results when preventing whiplash. In addition to reducing the strain of a crash below the failure threshold, studies show the new seat designs are associated with a 43-75% reduction in whiplash injury claims. Despite these gains, another recent study by the same author showed that the AHR and WHIPS systems failed to prevent compression of the spinal ganglia nerve roots and facet joints.[2] Clearly more work is needed to create truly "anti-whiplash" seat designs.

1. *Ivancic PC. Facet joint and disc kinematics during simulated rear crashes with active injury prevention systems. Spine 2011; 36(18):E1215-24.*
2. *Ivancic PC. Cervical neural space narrowing during simulated rear crashes with anti-whiplash systems. European Spine Journal 2012;5: 879-86. doi: 10.1007/s00586-012-2159-5.*

Pedestrian and Cyclist Injuries in Auto Collisions

Pedestrians and pedal cyclists face a high number of casualties when compared with vehicle occupants. These vulnerable road users generally fall to the ground or road after impact with a vehicle. This secondary impact poses an additional risk for injuries. However, the relative importance of the road as an injury source

This publication is compliments of:

La Costa Chiropractic
6986 El Camino Rd Ste F
Carlsbad, CA 92009

Dr. Michael D. Berry, D.C.
La Costa Chiropractic

To contact Dr. Berry,
call (760) 438-9548.

Dr. Michael D Berry
La Costa Chiropractic
6986 El Camino Rd Ste F
Carlsbad, CA 92009

For more information about our practice,
visit our website at
www.lacostachiropractic.com

compared to the striking vehicle has not been extensively studied. A recent study sought to determine the source of pedestrians' and cyclists' head injuries during collisions with a vehicle.[1]

The case review involved 205 accidents reported in the UK On-The-Spot database involving pedestrians or cyclists with head injuries. Of these, contact with the road was the cause of injury in 110 cases (54%), while impact with a vehicle was the source of injury in 95 cases (46%). Impact with a vehicle was associated with a majority of the more serious injuries, while head impacts with the road were more numerous but less severe.

Pedestrians and cyclists most often collided with a passenger car (81%); the remaining collisions involved light goods vehicles, buses, heavy goods vehicles, motorcycles, and a trolley car. In cases where head injury resulted from impact with vehicle, the windshield glass was the most common area of impact for both pedestrian and cyclists.

The data also provided insight into the demographics of pedestrians and cyclists injured during collisions. When known, males accounted for 61% of injured pedestrians and 80% of injured cyclists. The median age of pedestrians and cyclists was 23 and 26 years, respectively.

The findings were published just weeks after another new study showed that car crashes are the source of 77% of cycling fatalities.[2] Understanding crashed-related cycling injuries could help in developing appropriate prevention programs.

References

1. *Badea-Romero A, Lenard J. Source of head injury for pedestrians and pedal cyclists: Striking vehicle or road? Accident Analysis & Prevention 2012; S0001-4575(12)00339-9.*
2. *Persaud N, et al. Nonuse of bicycle helmets and risk of fatal head injury: A proportional mortality, case-control study. Canadian Medical Association Journal 2012; 184(17):E921-E923.*