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Side Airbags: Helpful or Harmful?

Motor vehicle collisions are the leading cause of trauma deaths in the United States. Side-impact collisions have a high risk for serious injury and fatality due to vehicles' limited ability to crumple or absorb energy when hit from the side. With new technology, simulations can now be used to evaluate occupant safety in various collision conditions, enabling researchers to determine the effectiveness of side-curtain airbags in protecting occupants during a side-impact crash.

Previous studies have confirmed that occupant interaction with airbags and other safety devices significantly affect occupant injury in a variety of collision scenarios. However, little research has focused on the interaction of occupants with side-curtain airbags, particularly when the occupant is out of position (i.e., seated too close to the airbag or with body turned to the side).

The objective of one recent study was to determine the effect of side-curtain airbag deployment on occupant injuries and safety. The researchers carried out side impact vehicle collision simulations using a 1996 Dodge Neon equipped with a side-curtain airbag, a seatbelt, and a crash-test dummy. Simulations were performed with the occupant both in-position and out-of-position.

The researchers concluded that safety devices such as seatbelts and side-curtain airbags have an appreciable effect on occupant safety and injury prevention when the occupant is both in-position and out-of-position. In all cases, the use of seatbelts resulted in improvement of occupant safety during a side-impact collision. When the occupant is positioned correctly, use of the side-curtain airbag results in significant improvement of occupant safety.

However, in some cases, simulation results show that the side-curtain airbag may not make out-of-position occupants any safer. If the occupant is situated too close to the airbag, impact with the airbag could cause injury rather than provide protection. The researchers found significantly increased neck flexion forces when compared with simulations involving no airbag, indicating increased potential for neck injuries.

Potula SR, Solanki KN, et al. Investigating occupant safety through simulating the interaction between side curtain airbag deployment and an out-of-position occupant. Accident Analysis and Prevention 2012; 49: 392-403.



Injury Briefing

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

A Year After the Crash, Auto Injuries Leave Their Mark

A new study confirms that auto injuries can have lasting consequences for crash victims. Researchers from France evaluated 886 patients initially after an auto collision, and followed up with patients on self-reported symptoms a year later.

Less than half of patients with mild to moderate injuries had fully recovered after one year, and only 20% of severely-injured patients had recovered. Over half of patients with severe injuries and 22% of mild to moderate-injury patients said that the crash impacted their daily life. For many patients, injuries and psychological trauma from the crash significantly affected their sex life, relationships, and family.

Patients with mild to moderate injuries were forced to take off an average of 75 days from work, but that number jumped significantly for severe-injury patients who had an average of 245 sick days. In fact, 32% said they had stopped work completely. The study also demonstrated that patients frequently suffer from prolonged post-traumatic stress, particularly those recovering from head trauma. Among severe-injury patients, 46% reported that they suffered from PTSD.

“One year after a road accident, the consequences for victims remain significant,” researchers concluded. Previous studies have pointed to the long-term consequences of auto injuries. A 2010 study published in the journal *Spine* examined the effects of whiplash injuries a decade after the initial accident.² In the ten-year follow-up, people with a history of whiplash suffered from a number of health problems not experienced by healthy controls. Participants with a history of whiplash were twice as likely to have shoulder stiffness and neck pain and three times as likely to experience headaches, numbness, and arm pain.

While crash victims may be focused on their immediate medical costs, this research highlights the importance of considering the lasting effects of auto injuries when seeking compensation. Doctors of chiropractic can determine the severity and potential prognosis of an auto injury with careful medical evaluations.

1. *Hours M, et al. Outcomes one year after a road accident: Results from ESPARR. Accident Analysis & Prevention 2013; 50: 92-102.*
2. *Matsumoto M, Okada E, Ichihara D, Chiba K, Toyama Y, Fujiwara H, Momoshima S, Nishiwaki Y, Hashimoto T, Inoue T, Watanabe M, Takahata T. Prospective ten-year follow-up study comparing patients with whiplash-associated disorders and asymptomatic subjects using magnetic resonance imaging. Spine. 2010. 34:18. pp. 1684-1690.*