

CAR CRASHES AND LOW BACK INJURIES

With increasing motor vehicle population in the United States, there is a rise in car crashes too. Modern cars have advanced safety features, but at times these safety features fail to deliver what is expected of them; though they may succeed in saving lives, chronic injuries and disability become unavoidable by using them. Whiplash is a common feature occurring in such collisions, where the driver or occupant is restrained by a seat belt. While we commonly associate whiplash with cervical injury, facet joint pathology, sprains, strains of the neck etc, we fail to understand the fact that the entire spine may be involved in such collisions.

Lumbar whiplash characterized by back sprain and strains is a second most common feature observed in motor vehicle accidents (1). Again, similar to the cervical whiplash, **the culprit behind lumbar whiplash is the lap shoulder seat belt.** Modern cars have automatic seat belt which retract or tighten during a collision. This puts undue pressure on abdomen compressing it and exposing the anterior aspects of the lumbar vertebrae and sacrum to injury.

During a collision, the head and neck move forward along with the unrestrained half of the body. The unrestrained half of the body undergoes a forward movement combined with rotation of the trunk resulting in torsion of the body. This movement creates a gross anatomical change. **A cadaveric study found that the lumbar spine takes up a biphasic shape, during a collision event. In this study, the cadavers were restrained by a seat belt and were subjected to collision energy of 5g and 8g (2).**

The **pathology of low back injuries** following a car crash is listed below;

- Lumbar fractures with movement of vertebra from the adjacent vertebra.
- Strain and sprain involving the paraspinal muscles.
- Herniation of the nucleus pulposus through the annular fibers.
- Ligament tears
- Nerve root compression
- Spinal cord injury complete or incomplete with partial or complete loss of motor and sensory function.

The extent of lumbar injury depends on various factors like the anatomical makeup of the individual, character of the injured tissue, factors like obesity, velocity of the offending vehicle, velocity of the victim vehicle, front and rear structure of the vehicle, placement of seatbelt (lower placement of seat belt makes the occupant prone to sacroiliac injury), seat back angle and degree of lumbar flexion during the crash.

A low back injury patient should be examined for spinal injury and should be graded accordingly through various physical tests. The required investigation has to be done and mode of treatment and referral has to be decided. Advanced diagnostic techniques like **electromyography, nerve root stimulation, interference pattern, motor unit potentials**, etc can be used to ascertain the exact location of lesion and decide the course of treatment.

REFERENCES

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