



All over the world, when people think “Chiropractic,” they usually think “Back, Neck, or Head.” Although our focus goes far beyond relieving headaches, neck pain, or back pain—or treating symptoms—it is true that research shows Chiropractic is one of the safest and most effective methods in these cases. So this month, we have dedicated our magazine to one of the most common traumas: **Whiplash**. You will learn about the mechanism of the injury as well as its consequences and effects. On the last page, we talk about **junk food** and the role that manufacturers and governments play in this issue.

Enjoy your reading!

Dr. Kinnison

CERVICAL WHIPLASH: MECHANISM AND CONSEQUENCES

The word “*Whiplash*” (or “*Latigazo*” in Spanish) was first used in 1928 to describe the mechanism of an injury caused by a hyperextension followed immediately by a hyperflexion of the neck, resulting in damage to the muscles, ligaments, and tendons—especially those that support the head. Today, we know that whiplash injuries are not only the result of hyperextension or hyperflexion (extension and flexion beyond physiological limits), but rather of **VERY RAPID** extension and flexion movements that cause damage/injury.

Because of its complex nature and its profound impact on people’s quality of life, the treatment of whiplash injuries generates much controversy within the medical community. It is not like the case of a broken bone, where a simple X-ray can confirm the presence of a fracture and define the procedure to follow. In the case of cervical whiplash, the unpredictable combination of injuries to the nervous system, muscles, or surrounding tissues makes diagnosis difficult and treatment more challenging.

To help you understand the nature of a whiplash injury and how it should be treated, you will find below an explanation of the mechanism of such an injury.



THE 4 PHASES OF WHIPLASH INJURY

Cervical whiplash is not limited to car accidents. Roller coasters, scooter falls, rollerblades or skates, or any other trauma that causes a rapid hyperextension or hyperflexion can produce such injuries. But for the sake of simplicity, in the following description of the 4 phases of whiplash, we will use the example of a car accident (a rear-end collision).



During a rear-end car collision, the body is subjected to very rapid and intense acceleration and deceleration. In fact, the 4 phases of whiplash occur in **less than half a second!** In each phase, the force applied is different, and the sudden, powerful movement contributes to damage of the vertebrae, nerves, discs, muscles, and ligaments of the neck, as well as the rest of the spine or body.

PHASE 1

During this first phase, the car is pushed from underneath, and the middle part of the spine (the thoracic vertebrae) is pressed against the backrest of the seat. This results in a vertical, upward force on the cervical spine, compressing the discs and joints. At the same time that the seatback accelerates the torso forward, the head moves backward, creating a very strong force in the neck.

If the headrest is properly adjusted, the backward movement of the head is limited. Otherwise, most of the damage occurs before the head even reaches the headrest. Research shows that the headrest reduces the risk of injury by only 11 to 20%.

PHASE 2

During phase 2, the torso has reached its maximum speed—**1.5 to 2 times the speed of the car!**—but the head has still not begun to move forward and continues moving backward. An abnormal S-shaped curve develops in the cervical spine at the same time that the seatback recoils, adding forward acceleration to the torso.

Unfortunately, it is during this recoil of the seat, opposite to the movement of the head, that the most severe damage occurs. Many of the injuries—whether to the bones, joints, nerves, discs, or the temporomandibular joint (TMJ)—happen in this phase.



PHASE 3

In the third phase, the torso moves downward toward the seat while the head and neck are at their maximum forward acceleration. At the same time, the car itself is moving downward. Quickly slamming on the brakes increases the severity of the flexion injury. During the body's forward motion, it will move as far forward as possible until it is stopped by the seatbelt.

PHASE 4

This phase is most likely when the most serious damage occurs. At this point, the torso is stopped in its movement by the seatbelt, but the head is free to continue its trajectory. The excessive flexion of the neck then causes stretching of the muscles and ligaments, tearing of the fibers of the intervertebral discs. The vertebrae also move out of place, while

the spinal cord and nerve roots become stretched, pinched, or irritated (*subluxations*). And the brain may strike the inside of the skull, causing a mild to moderate brain injury.

If the seatbelt is not properly fastened, one may suffer a contusion from hitting the steering wheel or the windshield.

As we mentioned in the introduction, whiplash can manifest in a variety of symptoms such as neck pain, headaches/migraines, fatigue, shoulder or lower back pain, and behavioral changes. However, it is impossible to predict the symptoms in advance, since they depend on many factors such as the direction of the impact, the speed of the vehicle, the person's sex, age, and physical condition. In addition, symptoms often appear later—many times weeks or even months after the accident.

Next, you will find the most common conditions observed.

NECK PAIN

It is the most common complaint in whiplash injuries, observed in **90% of cases**. The pain often radiates into the shoulders, arms, and head. This type of injury affects all the surrounding tissues: joints, intervertebral discs, muscles, ligaments, and nerves.

Injuries to the muscles and ligaments of the neck and upper back are the main cause of pain in the weeks following the accident. This is also why one feels very stiff and has reduced mobility. Ligament injuries result in abnormal movement and instability. In addition, disc injuries can add to the pain. Tears in the disc fibers can lead to degeneration or herniation, resulting in irritation or compression of the nerves.

HEADACHE / MIGRAINE

After neck pain, headaches or migraines are the most prevalent complaint, affecting up to **80% of people**. Some of these headaches may be the direct result of brain trauma. But for most, they are due to damage of the muscles, ligaments, and joints that refer the pain to the head.

DIZZINESS / VERTIGO

Dizziness and vertigo after a cervical whiplash most commonly result from injury to the joints of the cervical vertebrae. Direct trauma to the brain can

also be a source of vertigo. But typically, dizziness is temporary and improves considerably with chiropractic care.

LOW BACK PAIN

Most people think that a whiplash injury only affects the cervical spine, but in reality, it is very common to have a lumbar injury during the impact. In fact, low back pain is present in **more than 1/2** who have suffered whiplash from a rear-end collision and in **3/4 of the people** involved in a side-impact collision! During the impact, the lumbar spine is subjected to significant compression (during the first two phases), and although it does not have the same degree of flexion and extension as the cervical spine, the damage can still be profound.

Also, much less common but still very serious and troublesome are problems of the temporomandibular joint (TMJ) and brain injuries.

investigation showed that 26 out of 28 patients—or **93%** of patients—with chronic whiplash symptoms improved with chiropractic care.

In addition, they studied 100 patients referred with chronic whiplash; the results showed that of the 93 patients who remained in the study, 69 of them—or **74%**—experienced considerable improvement. This supported their earlier statement:

“The results of this research provide further evidence that Chiropractic is a very effective treatment for cervical whiplash.”

CHIROPRACTIC: THE SAFEST AND MOST EFFECTIVE METHOD

Any kind of accident or trauma can cause subluxations of the spinal column (and generally does). In other words, the vertebrae are out of their proper alignment and are “pressing on”—or more precisely, “obstructing” and “interfering with”—the nerves. Frequently this is a painless condition, but in whiplash injuries of the neck, the misaligned vertebrae are often very painful because of the neck’s anatomy.

No amount of painkillers, muscle relaxants, sedatives, or physical therapy can realign the vertebrae and relieve the pressure on the nervous and skeletal systems. What is needed is the chiropractic art: spinal adjustment that safely and easily restores alignment.

Therefore, anyone who has suffered an accident or trauma should consult a chiropractor to have their spine examined to determine if there is nerve pressure caused by vertebral subluxations or spinal tension. Although a fractured bone may seem more dramatic, constant pressure on a nerve can, over time, cause greater pain and suffering because it can affect the functioning of the entire body for many years.

INVESTIGATION

An article published in the *Journal of Orthopedic Medicine* in 1999 highlights the superiority of chiropractic care for patients who have suffered whiplash. A previous