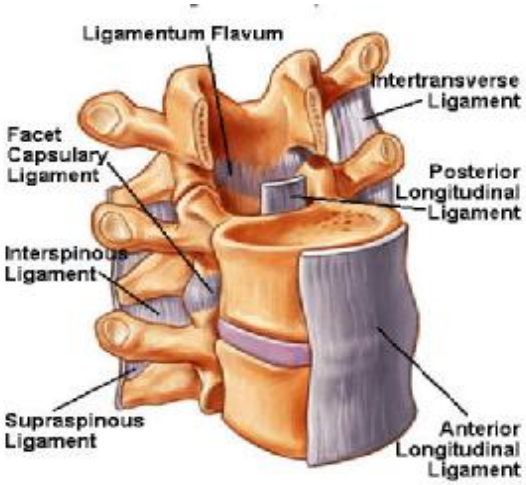
Is a Simple Spinal Sprain From a Whiplash Injury Really That Simple?

The answer of course is a resounding NO, and that is what this section of our site is all about. We want to educate you on what a spinal sprain is and WHY is it critical that you get under the care of a doctor who understands how to test for, document, and effectively treat the spinal ligament injuries. Unless you think a life or chronic pain, or poor health is ideal for you, a loved one or anyone else that you may know, we really hope you take this section to heart!

First we need to you to understand that a spinal sprain is an injury to the ligaments which are the tough straps that hold the spinal motion units (2 or more vertebra) together. This is what they look like:



Each spinal motion unit (two vertebrae working together as a unit) has ten of these ligaments that hold it in alignment while it performs its intricate movement patterns under high pressure or "load". Understand that running between and through these vertebra are your spinal cord and all of your spinal nerves. This is tissue that has to be protected, since once nerves are damaged the damage is permanent, and the effects can be anything from nagging chronic pain, to organ dysfunction, to actual paralysis.

To accomplish the job of keeping the spine aligned during all of its various tasks the spinal ligaments for the most part have two type of sensors imbedded within them. One sensor is called a nociceptor. A nociceptor is a sensory receptor that responds to potentially damaging stimuli by sending nerve signals to the spinal cord and brain. This process, called nociception, usually causes the perception of pain. (1) The other sensor is called a mechanoreceptor. A mechanoreceptor is a sensory receptor that responds to mechanical pressure or distortion. (2) These pressure receptors called mechanoreceptors are how your spinal muscles are immediately coordinated to both move and stabilize your spine depending on the precise needs of what you are asking that body part to do. Your ligament mechanoreceptors sense the needs of the individual spinal motion units and your spinal muscles make adjustments based on what these mechanoreceptors are saying the need is!

Unfortunately when your spinal ligaments are damaged they are generally damaged permanently and the receptors that coordinate this muscular activity are permanently altered. This can result in a mild, moderate, or severe muscle dis-coordination at that level. This is what causes a spinal instability, a spinal weakness, a weak link in the chain of vertebra if you will; this is what causes that to occur. This ligament dysfunction can occur with one trauma called a "Macro-Traumatic Event" or it can occur with a number of "Micro-Traumatic Events" built up over time. There comes a time, "Macro" or "Micro" when these vertebrae are now able to shift out of alignment and either cause a problem to your spinal cord, the spinal nerve, or the instability and spinal misalignment now just causes chronic spinal pain. This all of course can cause permanent pain and impairment for the person who has this type of injury. This condition now has a couple of different names by which it goes by, Spinal Subluxation and/or Spinal instability. That being said let simply define both.

Spinal Subluxation is defined as: "*A vertebra in the spine that is out of alignment with the rest of the vertebrae. The vertebrae are bones that makeup the spine. Spinal subluxation is usually caused by an injury to the ligaments that hold the vertebrae together.*" (52)

A spinal instability is defined as : "*the inability of the spine under physiologic loads to maintain an association between vertebral segments in such a way that there is neither damage nor subsequent irritation of the spinal cord or nerve roots and, in addition, there is no development of incapacitating deformity or pain due to structural changes."* (53)

The spinal sprain then, is a ligament injury that causes misalignments to the spine called spinal subluxations, which can also be spinal instabilities when these misalignments cause a problem to the cord, nerve or cause pain. All originally caused by an injury to the spinal ligaments called a spinal sprain injury.

Okay now let's look at the big picture from above, and then go down from there. First let's look at the long term picture and an interesting study that shows the long term effects that are possibly connected as a result of these types of spinal injuries. Then let's look at the long term recovery rates, which according to current medical research are dismal at best. We bring up these points for two specific reasons:

1. To bring awareness to the significance of this condition, because it causes way too much trouble and gets too little attention.
2. And again to show just how important it is to your health to get a doctor who really understands this condition. You want to have a doctor who can minimize and resolve your current situation, as well as minimize the potential future risks.

Lastly we will look at what current conditions are commonly associated with this condition.

So first let's look a bigger or a more long term picture when looking at this condition. In a recent study performed in Canada 2,184 residents were surveyed for their response to Whiplash Injuries which they call a Cervical Acceleration-Deceleration Injury or CAD for short. This study showed that those with Whiplash injuries showed almost TWICE the amount of problems listed below. Another way to say this is those without whiplash injury seemed to have 50% less of the listed conditions below (3):

- 2,184 residents of Saskatchewan were surveyed
- 15.9% had a history of CAD injury
- The post-CAD group had nearly twice the rates of the following (compared to those with no CAD history):
    - Neck pain
    - HA
    - Breathing disorders
    - Low back pain
    - Cardiac problems
    - Digestive disorders

Is there a connection, well anyone who really studies this condition will say obviously yes. What do we say, better safe than sorry; and it really continues to display just how important it is to find a doctor who specializes in this condition. There is too much to lose here to just let any provider treat this.

Not convinced? Look at the long term outcome studies regarding this condition and see what important information that they tells us. Look at what this statistics say. They are self explanatory, and after words realize again why it is so important to find someone who understands what to do for this condition (4):

> **1 in every 100 (1%) people on our planet suffer from chronic neck pain caused by whiplash injury**. (Pain, 1994) (4)
>
> In the longest study ever performed on whiplash-injured patients (a study looking at the health status 17 years after injury), **55% of the patients still suffered from pain caused by the original trauma**. (Accident Analysis and Prevention, 2002) (4)
>
> It is estimated that 15-40% of those who are injured in a motor vehicle collision will suffer from **ongoing chronic pain**. (Journal of the American Academy of Orthopedic Surgeons, 2007) (4)
>
> That essentially **100% of those who are suffering from chronic pain caused by a whiplash injury will have an abnormal psychological profile with standard assessments**, and the only way to resolve the abnormal psychological profile was to successfully treat the chronic spinal pain. Psychotherapy was not able to improve the abnormal psychological profile, nor was it able to improve the patient's chronic pain complaint. (Pain, 1997) (4)
>
> Whiplash injuries not only increase the incidence of chronic neck and shoulder pain, it also significantly increases the incidence of other systemic ill health effects. In other words, **whiplash injuries cause more than neck pain and headache, it hurts the health of the entire body**. (Journal of Clinical Epidemiology, 2001) (4)

And of course this last research quote aligns perfectly with the study above of those that had history of whiplash injury and showed twice the amount of neck pain, low back pain, headaches, breathing problems, digestive problems and cardiac problems. ***"Whiplash injuries cause more than neck pain and headaches, it hurts the health of the entire body."***

Below in the references there are an additional 40 studies that show the long term dismal effects that can come from these types of injuries. They show just how poorly so many people do with a supposedly simple spinal sprain injury. Please take the time to review them, (9-49). For ease of understanding we have put the chronicity (chronic pain) statistics from these types of injuries in red and we think you will be very surprised at these numbers!

Here is another quote that you should find interesting. This is directly from Medical Guidelines that are published on the subject and therefore, doctors who treat spinal injuries read these Guides, so they can better understand what they are doing. Note that they state that chronic pain develops for injuries to the ligament of the spinal facets called capsular ligaments, the spinal disc (a large spinal ligament) and to the upper cervical ligaments. Look how they also say that there is no direct correlation between the magnitude of impact and the degree of possible injury. This is also why you need a doctor who knows how to examine your actual injury, regardless whether there was a lot of damage to the care, or the fall was from a short distance, etc.

> **"A cervical strain occurs when muscles around the neck stretch or tear. A sprain occurs when the ligaments stretch or tear. The terms "cervical acceleration-deceleration injury," "CAD," or "whiplash" may also be used to describe the clinical findings of neck pain, particularly after a motor vehicle collision." (54)**

"Chronic pain develops in some patients who have experienced a cervical strain/sprain injury. It may be associated with injuries to the joints in the back of the cervical spine (facet joints), discs, and upper cervical ligaments. There is no direct correlation between the magnitude of impact and the degree of injury, although immediate onset of neck pain may be a predictor for chronic pain." (54)

We hope you are beginning to understand why it is so important to find a doctor who understands these types of injuries and is not a generalist, but rather a specialist! Perhaps not every provider should be treating these types of injuries! This type of injury may not be for every provider on the block to treat! The long term consequences of delay in proper diagnosis can of course lead to a delay in proper treatment. As a matter of fact your very health may depend on finding a doctor who can properly diagnose the severity of you spinal sprain injury.

Look:
The reported frequency of missed injuries in the cervical spine varies from 4% to 30%. (5, 6) The most common reason cited for missed injuries is an inadequate radiographic examination. (7)When injuries are missed on initial assessment, a delay in diagnosis occurs that puts the patient at risk for progressive instability and neurologic deterioration. (8)

This means that the doctor who specializes in these types of injuries has got to understand how to assess them using x-ray examination. Where do you find this type of doctor? Well to make it even harder for you as a consumer, did you know that in some states it is unlawful for the doctor to tell you he/she specializes in this type of injury care due to marketing regulations set up by their professional boards? This may sound ridiculous, but it is absolutely true. In those states that have these regulations, the doctor can get into serious trouble and even lose their license if they tell you in any form of advertisement that they specialize in these types of injuries. The reason behind these rules defies public interest, but non-the-less these rules are there.

That being said it is not that easy to find a specialist in this type of injury and that is why we are here! THE DOCTORS IN OUR PROGRAMS THAT YOU CAN LOCATE THROUGH OUR SITE ARE TRAINED IN THESE PROCEDURES.

Now there is More; a Lot More!

Let's look now at a simple cervical sprain/strain injury and see what common problems may be associated with it. In other words if you received a "whiplash" injury to the neck tomorrow in an automobile collision, what might you experience that is associated with this type of injury? We are just going to focus on the neck, but bear in mind you may also injure the mid-back, the lower-back, as well as injuries to the upper and lower appendages, the head and in some cases the internal organs. For now though let's just stay with the neck injury and what symptoms you may experience. This information comes directly from one of the top medical websites in the world; the e-medicine medscape site. (50) You can just Google cervical sprain and it will come right up for you in the top searches. Here is what it says you may experience from this type of injury.

The most common symptoms of cervical disorders are sub occipital headache and/or ongoing or motion-induced neck pain. Other symptoms associated with cervical strain include the following:

- Neck pain
    - At the time of accident, neck pain may be minimal, with an onset of symptoms occurring during the subsequent 12-72 hours.
    - Nonspecific neck and shoulder pain (a variety of cervical radiculopathies) may indicate an injury to a disk in the upper cervical spine.

- Headache
    - Headache is a frequent symptom of cervical strain.[
    - Neck structures play a role in the pathophysiology of some headaches, but the clinical patterns have not been defined adequately.
    - Increased muscle hardness (determined by palpation) is significantly increased in patients with chronic tension-type headaches.
    - Facet joints and intervertebral disk damage have been implicated in the pathology of headaches due to neck injury.
    - No specific pathology on imaging or diagnostic studies has been correlated with cervicogenic headaches.
- Shoulder, scapular, and/or arm pain
- Visual disturbances (Ex: blurred vision, diplopia)
- Tinnitus
- Dizziness - This may result from injury to facet joints that are supplied with proprioceptive fibers; when injured, these fibers can cause confused vestibular and visual input to the brain.
- Concussion
- Neurologic symptoms - These may include weakness or heaviness in the arms, numbness, and paresthesia.
- Difficulty sleeping due to pain
- Disturbed concentration and memory
    - Late whiplash syndrome includes symptoms such as headache, vertigo, disturbances in concentration and memory, difficulty swallowing, and impaired vision. These cognitive impairments remain poorly understood.
    - Many patients with these changes have abnormal results on single-photon emission CT (SPECT) scans or P300 event-related potentials.
    - Bladder or bowel dysfunction - These may be symptoms of complication of myelopathy (spinal cord involvement).

There is EVEN More to Know:

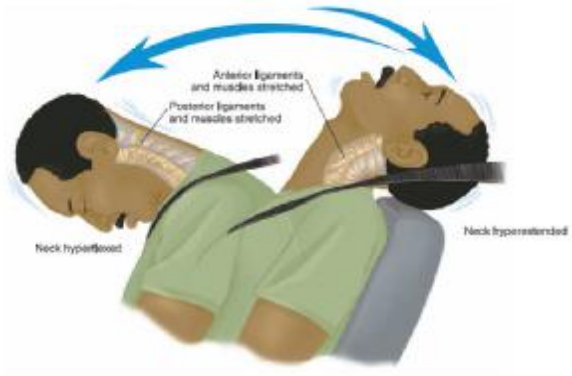
Why in the world would you go to a doctor that does not even know how to assess and document the severity of your injury using x-ray and other forms of imaging if needed?

Okay to drive this home we need to teach you a little bit about what a “mechanism of injury” is and why your understanding of it may be so important to your health. Trust me; after we are done here, you are going to know more about “mechanism of injury” than many of doctors out there treating these injuries. This is exactly what this site is all about, as with this information you can make better, more informative decisions about the doctor you may want to handle this type of injury for you, your kids, your family members or anyone that you may know.
A “mechanism of injury” is nothing more that the “force delivery system that caused an injury”. Here is an example of both a force (hot grease) that can cause the injury (mechanism) and how the actual injury is consistent with what we would expect to see with that mechanism.

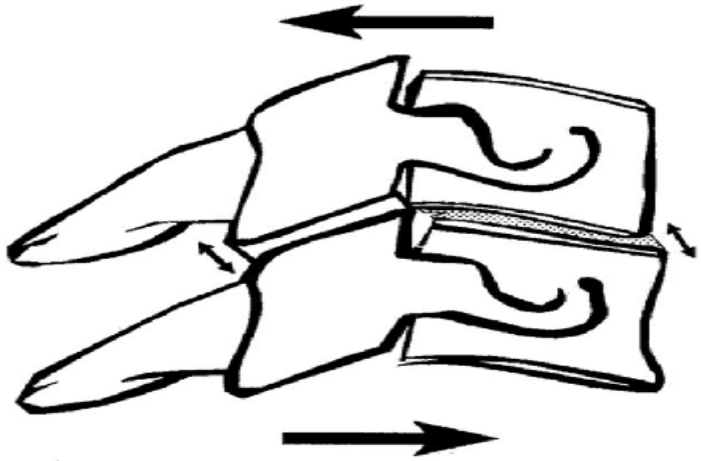
Now what you really need to know about this, is that all “mechanisms of injury” leave a tell tale clinical sign behind called a “lesion”. The lesion is the actual injury! It is important to treat with a provider who knows what “lesion” your “mechanism of injury” left behind!

A lesion is any abnormality in the tissue of an organism (in layman's terms, "damage"), usually caused by disease or trauma. *Lesion* is derived from the Latin word *laesio* which means *injury*. (51)

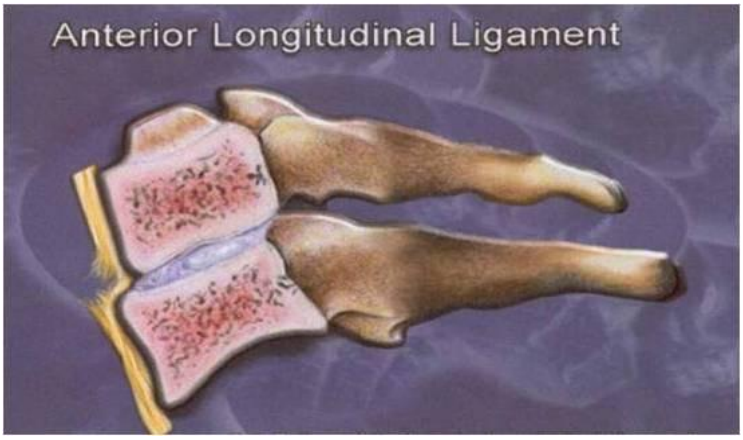
When a person is in an “Auto Collision” the spinal ligaments get sheared and there is a lesion left behind that should be assessed for location and severity!



The individual spinal motion units shear and the spinal ligaments are injured. The spine is now able to misalign, both in position and in motion.



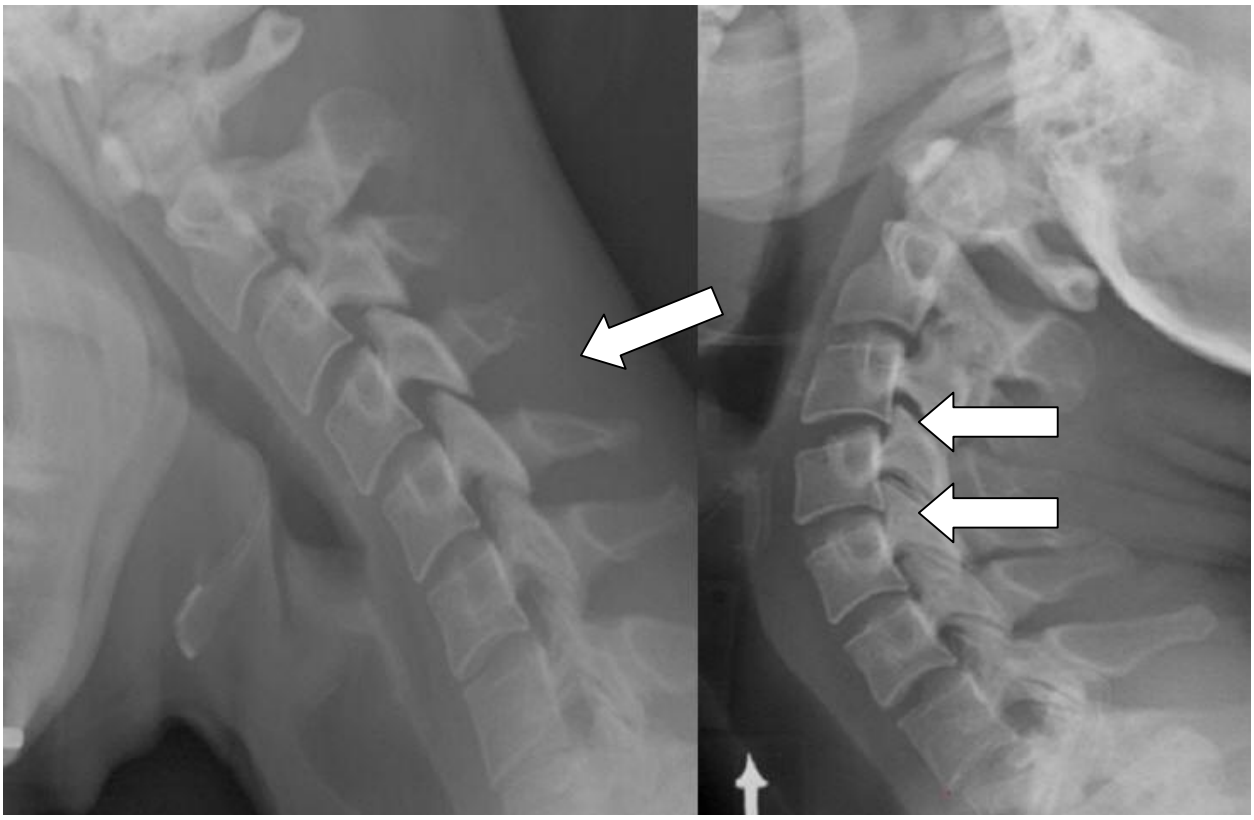
And the lesions left behind look like this:



These lesions are found on flexion extension x-rays and Board Certified Medical Radiologist's can utilize specialized computer technology so they can accurately and reliably measure them! This is actually "spinal lesion analysis" as it assesses for the abnormal movement patterns of the spine. This procedure for locating these lesions on x-rays has been called Computerized Radiographic Mensuration Analysis or CRMA for short. The procedure itself is performing a "Radiographic Intersegmental Motion Analysis" or RISMA for short. Remember the spinal ligaments hold the vertebrae in "alignment" (un-Subluxated) under load. When they fail they cause abnormal intersegmental motion to occur. They wobble out of alignment and are now to a lesser or greater degrees are unstable! If they interfere with the cord, the nerve or cause pain they are also now called a spinal instability.

This injury then is then best assessed and captured (imaged) by assessing the inter-segmental motion with Board Certified Medical Radiologist's utilizing CRMA procedure. The process is simple; your doctor takes or orders x-rays of the injured area, including the flexion extension x-rays. The x-rays are then sent out to special Board Certified Radiologists to get this specialized CRMA.

The radiologist's sends the doctor a report that tells the doctor just how much ligament damage that there may be and where! All the doctor has to do is be able to read the report; again, your choice of a doctor is KEY!



Indecently, here are what these lesions can look like on flexion extension x-rays. These finding are very subtle, which is why they are so often missed! Make no mistake though as these findings can be incredibly significant, so significant that the American Medical Association set up a criteria to measure them and interpret the results, through their Guides to the Evaluation of Permanent Impairment. Here are some specific quotes on what they say regarding these findings, and by the way when a measured pattern here crosses over into a ratable level, these AMA Guidelines call it "alteration of motion segment integrity" which makes sense. The ligament damage has now permanently "altered the motion segment (two vertebras form a motion unit). This is what the AMA says:

"Motion of individual spine segments cannot be determined by physical examination but is evaluated with flexion extension roentgenograms" pg. 379 AMA Guides

This of course means that according to authority ,the AMA, intersegmental motion cannot be accurately determined any other way than by x-ray examination.

"*When routine x-rays are normal and severe trauma is absent, motion segment alteration is rare; thus, flexion and extension x-rays are indicated only when the physician suspects motion segment alteration from history or findings on routine x-rays." pg. 379 AMA Guides*

This of course means that when the AMA ratable level of ligament damage is found, it is rare in the absence severe trauma. This means that even if your care was not severely damaged, if YOU have this finding, you suffered severe trauma.

"The primary purpose of the Guides is to rate impairment to assist adjudicators and others in determining the financial compensation to be awarded to individuals who, as a result of injury or illness, have suffered measurable physical and/or psychological loss." Pg 20 6th Editions

This means that testing for things such as spinal ligament damage found in these books, helps everyone to solve the medical legal situation which is often related to accidental injury, and compensation.

Here are the Final Points:

The spinal ligaments are one of the most important tissues in the spine. When you injure them they can cause pain and muscle dysfunction which further destabilizes the spine. They allow the vertebra to misalign so as to cause pressure on the spinal cord, spinal nerve or just simply cause pain that may never go completely away!

Most doctors who treat these types of injuries do not know what the actual lesion is that is consistent with this type of injury! They do not know what it looks like! They do not know how to properly image it through diagnostic imaging and hence do not know how to properly determine the location and the severity of this lesion and they do not know how to document it properly in case you are in a medical-legal situation.

We do not want you to believe this only because we say it. We want you to experience the truth for yourself. If you are treating currently for this kind of injury, whether hurt in a car collision, work accident etc… has the doctor you're treating with assessed your spinal ligaments for damage? What was the severity and location of the spinal ligament damage? You are probably saying my doctor never did any kind of assessment for ligament damage with my x-rays? That would be so common. Now to take this a step further ask anyone that you know of that has had a spine injury and ask them if they have had their ligaments tested and you probably will come up with the same answer, which is no. If they or you have some form of chronic spinal pain, the most common source is the ligament damage itself. Make sure you treat with a doctor that understands how to test for spinal ligament damage utilizing CRMA procedure, as your current and future health may entirely depend upon it.

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