

POST WHIPLASH SYNDROME

A *post whiplash* syndrome begins as an acute strain of the musculature associated with the cervical spine. It results from a sudden and unexpected force that whips the head and neck first in one direction and then back with a similar degree of force. It is most often associated with an auto versus auto collision with one vehicle striking another from the rear. Less frequent, but nonetheless common, is the injury that occurs when a person is suddenly, without warning, pushed from the rear (usually above the waist) causing the requisite violent head and neck "whiplash".

Characteristically, the *post whiplash* incident is followed by a brief period that is pain free, lasting from a few minutes to as long as two or three days. Ultimately, this pain free period ends when discomfort begins to develop in the patient's posterior neck or upper trapezius areas. The patient may initially complain of a stiff neck, feelings of pressure building at the juncture of the head and neck, or a sharp pain in the neck. In some cases, the pain never gets beyond this point, but generally, the pain gradually (without therapeutic intervention) becomes increasingly severe over the next 48 hours. The degree of pain may vary from continuing neck "stiffness" to a sharp persistent pain exacerbated by any movement of the upper extremities or neck. It is common for the neck pain to be accompanied by headache, agitation, and apprehension. In some cases, nausea, vomiting, radiating pain across the shoulders and into the arms, and numbness of the upper extremities may be accompanying symptoms. Extensive loss of neck ranges of motion may occur as well as palpable extrafusal muscle spasms. Untreated or mistreated, headaches and/or neck stiffness may persist for several weeks or months, sometimes years. There may be a straightening or reversal of the normal cervical lordotic curve (demonstrated by x-ray or optical inspection), which will not normally affect cervical ranges of motion.

Infrequently, acute whiplash may produce chronic intervertebral disc compression and protrusion that may impinge on cervical nerve roots, producing a combination of pain, numbness, tingling and weakness throughout the distribution of the compressed nerve. If the first four cervical roots are involved, the symptoms may involve the anterior

aspect of the shoulder, the head, neck, or ears. Lower cervical root impingement may produce symptoms that may involve the scapula, posterior shoulder, lateral chest wall, arm, or hand. Patients so afflicted may exhibit a poor, slumped posture, a jutting chin, and loss of cervical lordosis. In severe cases, secondary deleterious effects on the circulatory system may result in the development of a unilateral or bilateral *shoulder-hand syndrome*.

A DSR survey may be performed to determine which muscles have been injured and how extensively.

Treatment

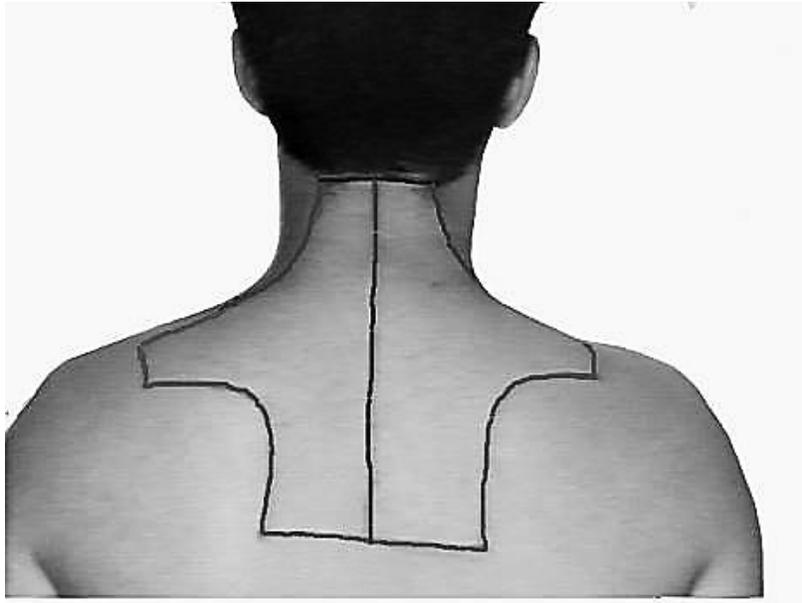
Caution the patient against the use of heat packs or heating pads to avoid muscle damage resulting from the physiological *rebound effect*. Instead, instruct the patient in the making and use of ice packing (refer to Cryotherapy, Inflammation Control).

Caution the patient against the general use of the cervical collar, which promotes cervical muscle weakness. The cervical collar may only be worn continually if disc herniation or nerve impingement is present. Normally the cervical collar may only be worn when *riding* in a vehicle or while sleeping (a towel roll may be used as a substitute for industrial types of collars).

Treatment of the *post whiplash syndrome* must be directed at relieving any residual inflammation, eliminating any existing adhesions, and improving circulation in the involved musculature.

Application:

- Set an electrical stimulator to provide a medium frequency electrical current to produce a brisk contraction of the stimulated musculature. Place a negative electrode over the most involved area and a positive over less involved areas. Stimulate for a period of 15 minutes to soften any adhesions that are present, increase capillary circulation, and to begin the process-of-muscular-toning.



**The high skin resistance pattern associated with the common whiplash injury
(full blown and moderately severe, with both right and left inflamed zones)**

- Manipulate the tissues in and around the inflamed zone(s), to eliminate any adhesions that may be present.
- Preset the ultrasound unit to deliver a 1 MHz pulsed waveform, at 1.5 W/cm^2 . Ultrasound the inflamed zone(s) utilizing an effective non-steroidal anti-inflammatory as a coupling agent for six minutes. This is performed to “cool off” the manipulated zone by effectively halting the production of prostaglandins by the stressed tissues.
- Perform horizontal cervical with electrical stimulation and vibration enhancement, or with vibration enhancement alone.

The following treatment forms have also proven to be effective.

Variation:

- Preset the ultrasound unit to deliver a 1 MHz pulsed waveform, at 1.8 W/cm^2 . Ultrasound the inflamed zone(s), utilizing an effective non-steroidal anti-inflammatory as a coupling agent, for six minutes. This procedure is designed to soften the adhesions that may be present.
- Manipulate the tissues in and around the inflamed zone(s) to eliminate any adhesions that may be present.
- Twenty minutes after the first ultrasound, preset the ultrasound unit to deliver a 1 MHz, pulsed waveform, at 1.5 W/cm^2 . Ultrasound the inflamed zone(s) utilizing an effective non-steroidal anti-inflammatory as a coupling agent, for six minutes. This is performed to “cool off” the manipulated zone by effectively halting the production of prostaglandins by the stressed tissues.

- Apply mechanical vibration, delivered at 60 to 120 Hz, to the origin or insertion of the muscle(s) associated with the inflamed zone, for two minutes. Apply the vibration at a relatively high but tolerably comfortable level for the patient. This is performed to increase capillary circulation in the involved tissues.

Variation:

- Preset the ultrasound unit to deliver a 1 MHz pulsed waveform, at 1.8 W/cm². Ultrasound the inflamed zone(s), utilizing an effective non-steroidal anti-inflammatory as a coupling agent, for six minutes. This procedure is designed to soften the adhesions that may be present.
- Manipulate the tissues in and around the inflamed zone(s) to eliminate any adhesions that may be present.
- Apply cold laser (with or without simultaneous electrical stimulation provided by the laser applicator) to the inflamed zone(s) for approximately 6 minutes. This is performed to “cool off” the manipulated zone by effectively halting the production of prostaglandins (or facilitating enzyme destruction of all of the inflammatory being produced) by the stressed tissues.
- Apply mechanical vibration, delivered at 60 to 120 Hz, to the origin or insertion of the muscle(s) associated with the inflamed zone, for two minutes. Apply the vibration at a relatively high but tolerably comfortable level for the patient. This is performed to increase capillary circulation in the involved tissues.

After evidence of inflammation has disappeared, the patient should be encouraged to begin a program of isometric or isotonic exercise to recondition and strengthen weakened and atrophied muscles (refer to Muscle Strengthening).

Trigger Points

The following is a list of trigger point formations which may, singly or in combination, imitate or contribute to the pain accompanying a *post whiplash syndrome* (without mid to low thoracic or lumbosacral components): Masseter (deep), Masseter (superficial B), Temporalis (anterior), Temporalis (middle A), Temporalis (middle B), Temporalis (posterior), Medial pterygoid, Posterior digastric, Suboccipital, Occipitalis, Semispinalis capitis, Semispinalis cervicis, Upper trapezius [A], Posterior cervical group, Splenius capitis [A], Sternocleidomastoideus (superficial fibers), Sternocleidomastoideus (deep fibers), Orbicularis oculi, Zygomaticus (major), Platysma, Levator scapulae, Scalenus, Infraspinatus (abnormal), Lower splenius cervicis, Upper trapezius [B], Middle trapezius [A], Middle trapezius [B], Lower trapezius [A], Lower trapezius [B], Cervical multifidus (C4-C5), Supraspinatus (muscle), Serratus posterior superior (under the scapula), Subscapularis, Splenius capitis [B], Pectoralis major (sternal portion), Rhomboids, triceps (long head), Biceps brachii, Multifidus (T4-T5), Iliocostalis thoracis (T6), and Upper rectus abdominis.

Immediately following the *post whiplash* injury, trigger point formations may be found in the splenius capitis, posterior cervical, and upper trapezius muscles. As the patient's condition improves through proper therapy, trigger point formations may become apparent in the upper and lower trapezius muscles. In the final stages of recovery, trigger points may generally be located only in the upper trapezius muscles.