

## Post-Concussion Residuals

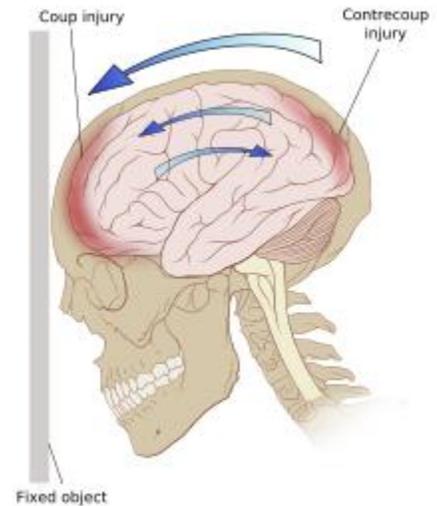
Many of your clients may report persistent symptoms after suffering a concussion but there are no objective signs of brain injury to explain them. Post-concussion symptoms resulting from mild traumatic brain injuries (mTBI) are often not visible on brain imaging, but can there be other sources for the residuals outside the brain? A recent prospective study in the Journal of Orthopedic and Sports Physical Therapy may provide some answers.



The Study titled [“Can the Neck Contribute to Persistent Symptoms Post Concussion? A Prospective Descriptive Case Series”](#) reveals some interesting perspectives. In this study, the authors examined 20 consecutive patients referred for neck assessment to a multidisciplinary concussion service. They collected data on the initial visit and again upon completion of the neck care. They used standardized outcome assessment tools including the Rivermead Post Concussion Symptoms Questionnaire (RPSQ), Neck Disability Index (NDI) and Dizziness Handicap Inventory (HDI). The subjects were evaluated at a mean of 7.5 weeks and 90% were considered to have neck findings contributing to their concussion symptoms. These included a positive flexion-rotation test (45%), muscle tenderness (50-55%), moderate to severe pain in the upper cervical region (85%) and NDI scores demonstrating a moderate-severe rating of about 33.4. The authors conclude that the concussion subjects had multiple findings suggestive of concurrent neck injury. These findings were particularly focused in the upper cervical spine.

This study supports what many physicians have experienced in clinical practice. Specifically, that patients exhibiting post-concussion symptoms may more likely be experiencing symptoms secondary to upper cervical trauma. It’s no surprise that when a patient suffers a whiplash like injury mechanism or any

mechanism that results in a contra coup movement of the brain, the mechanism also results in the skull moving rapidly on top of the cervical spine. With this ball and chain like movement, it's no wonder that the upper cervical spine, especially the cervicocranial junction, is vulnerable and most effected. Those of us that evaluate these concussion patients often identify dysfunction and related muscular findings at the C0, C1, C2 and C3 levels. These findings often are associated with cervicogenic headaches, nausea, dizziness and even balance problems. The interconnectivity between the upper cervical spine and the brain/brainstem and its functions is well established. Therefore, it is not unusual to confuse residual concussion symptoms to those related to upper cervical spine dysfunction. Medically, providers will address these conditions using medications or muscular injections into the rectus capitus or splenius capitus muscles. Others will perform Occipital nerve blocks, and all have been proven somewhat beneficial short term. Long term, the injured areas require a more hands-on approach and rehabilitation. The primary chiropractic approach usually involves manipulative therapy of the segmental dysfunctions in the area. Other treatments performed by chiropractic physicians, physical therapists or other manual therapists may include acupuncture, dry needling, spray and stretch, myofascial release, Active Release and of course home care in the form of range of motion exercises and self-mobilization using active stretching. All of this is designed to restore biomechanical normalcy to the neck articulations and thereby normalizing mechanoreceptor input to the brain. To make that more understandable, the purpose is to remove sources of joint and muscle irritation which results in aberrant sensory feedback to the brain which in turn produces these symptoms that may mimic brain injury.



The practitioner must be aware that while many concussive like symptoms may originate in the upper cervical spine, there can also be a real mTBI that needs to be addressed concomitantly by the proper professionals. Therefore, it is wise to obtain initial neurologic clearance to assure that the initial post concussive symptoms are not the result of injuries such as an intracranial bleed or parenchymal injury, both which have significant complications if not identified quickly. Once cleared for acute trauma, the practitioner should be observant over time for the development of symptoms that may be the result of a mTBI. These symptoms include cognitive, behavioral and emotional symptoms.

Cognitive symptoms may include forgetfulness, memory loss, loss of finding the right words, while conversing, inability to remember names or phone numbers. Confusion, difficulty focusing and being easily



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**A MEDICAL-LEGAL NEWSLETTER FOR PERSONAL INJURY ATTORNEYS BY DR. STEVEN W. SHAW**

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distracted are also common. Behavioral and emotional issues are often best observed and reported by family members and friends. The patients themselves may not be fully aware of the changes. The observers may report increased aggressiveness or being argumentative. They may be less tolerant of their previously normal stressors or disinterested in interacting with others. Common emotional considerations include depression, restlessness, crying jags and hair trigger emotional outbursts. I could go on but that will be a topic for a later newsletter. If these symptoms develop or worsen over time it is appropriate to look further and have the patients seen by subspecialists with diagnostic and treatment acumen to manage these patients. These may include medical specialists such as neurologists, neuro-ophthalmologists and psychiatrists (but not all of them). It also may include psychologists, neuropsychologists and social workers that can assist with the quantification of the injury and with managing the neurocognitive issues as well as the coping complications associated with PTSD. Properly trained chiropractors and physical therapists can assist with vestibular rehabilitation as well as the musculoskeletal concomitants.

As attorneys, you are on the lookout for these injuries that otherwise may not be considered by your clients or even their healthcare providers, particularly if they are not familiar with trauma management. It's helpful for you to ask your clients the questions that may raise red flags and to advise your clients to bring them to the attention of their treating physicians. As treating physicians involved in attending to this trauma population, we need to be aware of the diverse presentations and how to identify and differentiate them. You should know that most physicians are very well trained in their area of specialization, but few have the broader view and training of those of us that manage patients like this every day from onset through rehabilitation and over many months. Nothing compares to focused training and experience when managing post concussive patients over time. Have your clients pick their providers carefully so that important injuries are not overlooked, under documented and therefore not properly treated.