



Boris Treyzon
ACTS LAW



Joe Finnerty
ACTS LAW

The hidden battle: Understanding Traumatic Brain Injury (TBI)

AN OVERVIEW OF THIS COMPLEX AND EVER-MORE-COMMON, OFTEN LIFE-ALTERING INJURY

What is TBI? The term TBI has become common in the legal industry. We hear those three letters every day. Yet, behind those three letters lies a world of profound human suffering and struggle. The word “traumatic” is the key. In the blink of an eye, the organ that controls your entire being is damaged. What makes you – you, is gone. But each TBI is a unique, often life-altering event. No two injuries are ever the same, and the impact varies dramatically from person to person. Because you cannot see the injury the same way you can see a broken arm or cut to your body, it is paramount that you understand every nuance of the injury. Without that understanding your ability to tell the story of your client’s losses will be greatly jeopardized.

The complexity of TBI

The human brain contains approximately 86 billion neurons. Each neuron makes 1,000 to 10,000 synaptic connections with other neurons. Each neuron, in turn, is “supported” by about 50 glial cells whose job is to feed neurons and to facilitate signal transmission. This means that with approximately 86 billion neurons in the brain, the total number of synaptic connections is estimated to be in the range of 100 trillion to 1 quadrillion. That’s one with 15 zeroes. This almost infinite complexity makes up each and every human being and is the reason why no injury is ever identical or even similar to one another. This complexity is also the reason why comprehending the humanity of each client’s loss is of such a paramount importance.

Every brain injury is distinct, shaped by external force and the individual’s

biology. Common understanding of what causes traumatic brain injury is incorrect. Injury is not caused by direct application of force but is usually caused by rapid acceleration or deceleration of the brain within the skull, often without visible external injuries. The brain, with its Jell-O-like consistency, floats in cerebrospinal fluid inside the cranium. When subjected to force, the brain moves, hitting the bony interior of the skull or stretching and shearing axons, the nerve fibers that transmit signals between neurons. This can happen with absolutely no evidence that is visible to the naked eye. Defense counsel love to point to lack of external injuries when they are disputing the extent or even presence of a traumatic brain injury.

In many cases, the injuries aren’t immediately apparent. For instance, a man may get punched in the head, feel disoriented, but show no immediate signs of severe injury. He might even pass an emergency room check-up with flying colors as emergency room physicians’ job is not to treat, but to stabilize. Yet, days or weeks later, cognitive and psychological symptoms could emerge, turning his life upside down. A great example of this is a blast injury that affects members of military services. Externally, no injuries are shown, but inside, these injuries are profound.

The initial evaluation

When assessing a potential TBI case, it’s crucial to ask your client detailed questions about symptoms and experiences post-injury. Sensitivity to light or noise, changes in vision, taste, or smell, cognitive impairments like

memory loss, and behavioral changes such as irritability or depression are all red flags. But when asking these questions, you do not want to just go through a checklist. If you just ask the client yes or no questions, you will not get the full story. You need to understand who this person is and how the incident has changed this person.

When we evaluate a TBI case, we like to speak to other potential witnesses. Is the client married? Does the client live with anyone else? What have the co-workers noticed? All of these witnesses may have key information that can either show the extent or non-extent of the injury. But again, it is imperative to get the full picture. If the client’s spouse tells you that the client has been distant and forgetful, it is important to ask follow-up questions. If the follow-up questions show that the client is an avid college basketball fan and the spouse was asking him to do things during March Madness, maybe it was not the injury that caused him to be withdrawn and forgetful. With TBI, witnesses that know your client are key.

However, the symptoms alone don’t confirm a TBI; they need to be correlated with clinical findings.

Diagnostic tools

Neurologists utilize a variety of tests to diagnose TBI, starting with rapid cognitive assessments like the Mini-Mental State Examination (MMSE) and the Montreal Cognitive Assessment (MoCA). Each of these tests takes about 10-15 minutes and provides an initial screening for cognitive impairments. Given the microscopic nature of the injury, it is imperative that the scanner

utilized has sufficient power. Magnetic resonance imaging (MRI) emits powerful magnetic fields that measure and scan brain tissue. Magnetic field is measured in units called tesla (T). Some of the older equipment generates 1.5T magnetic field. By and large that is insufficient for an in-depth diagnosis of traumatic brain injury. Scanning should be done utilizing calibrated 3T magnet. A 1.5T scanner is fine for scanning the whole body and is less susceptible to distortions called artifacts, but, given the small field of vision involved in study of the brain, a 3T MRI should be utilized.

Following clinical evaluation, radiological studies help us understand the damage caused by a brain injury. Here are some commonly used imaging techniques:

- 1) **Brain MRI:** This imaging technique uses radio waves, a large magnet, and a computer to produce detailed images of the brain and surrounding tissues. *It is particularly useful for detecting scarring and lesions.*
 - (a) **Volumetric Analysis.** Frequently, parts of the brain that experienced trauma will undergo injury-induced shrinkage. That process is called atrophy. Neuroradiologists can compare the actual value of the affected part, such as a frontal lobe and can opine whether shrinkage has occurred. That opinion will be stated in the form of statistical standard deviations from the expected readings. As an example, in a normal distribution, 87% of values are within 1.5 standard deviations of the mean. While sounding confusing, this analysis may serve as powerful evidence of the occurrence and effect of TBI.
- 2) **Functional MRI (fMRI):** This non-invasive technique measures brain activity by detecting changes in blood flow. In this test a patient is provided with various visual triggers while in the scanner. *It is used to see which parts*

of the brain are active during specific tasks, helping detect functional impairments.

- 3) **Diffusion Tensor Imaging (DTI):** A specialized MRI technique that uses water molecule diffusion to create images of brain tissues. Useful for evaluating white matter tracks, microstructure, and connectivity that cannot be seen with standard MRI. *It is excellent for diagnosing axonal shear injuries.* Caution: A lot of defense experts will argue that DTI is only used for research and not diagnosis. That is an outdated position as over the last 10 years the use of DTI to diagnose axonal shear injuries has become the test of choice upon practicing neurologists. The only absolute way to determine axonal shear is by a pathologist that requires death of a patient – makes for a wonderful topic during cross-examination.
- 4) **Electroencephalogram (EEG):** Measures the electrical activity of the brain. Unlike fMRI and DTI, does not look for trace elements (iron or water). As a result, it demonstrated changes in real time. Maybe used in conjunction with another test to solve for temporal lag.
- 5) **CT scan:** Commonly used in emergency settings, a CT scan is effective at detecting acute bleeding, fractures, and large contusions. However, it's less useful for detecting subtle brain injuries. It is important to note that a negative CT scan in the ER does not mean there is not a brain injury!
- 6) **Vestibular Function Testing (VFT):** Measures the function of the inner ear's balance organ. Common tests are Videonystagmography (VNG) and Vestibular/Ocular-motor (VOM) screening. These tests investigate how the brain interacts with senses such as sight and sounds. Usually it's recommended when injury results in dizziness and loss of balance. It reveals how the brain interprets movement of

the body and head relative to space and its surroundings.

The role of cognitive and psychological assessments

Cognitive and psychological assessments are also helpful in evaluating the impact of TBI on a person's life. Tests like the Wechsler Adult Intelligence Scale (WAIS) and the Wechsler Memory Scale (WMS) provide a comprehensive profile of cognitive strengths and weaknesses, typically taking 60-90 minutes each. Shorter tests like the Trail Making Test (TMT) and symptom inventories like the Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI) also play important roles.

- **MMSE and MoCA:** These quick screening tools assess cognitive function, including orientation, attention, memory, language, and visuospatial skills. Takes about 10 minutes and is frequently administered by neurologists.
- **WAIS:** Measures various aspects of intelligence, including verbal comprehension, perceptual reasoning, working memory, and processing speed.
- **WMS:** Assesses different aspects of memory function, including immediate and delayed recall, and working memory.
- **TMT:** Tests visual attention and task switching, assessing processing speed and executive function.
- **CVLT:** Evaluates verbal learning and memory over multiple trials.

It is important to note that these tests are not a "one size fits all." The tests are designed to assess specific abilities or deficiencies. If your client is not exhibiting symptoms that are covered by the specific test, that test will not help identify whether there is a TBI. For example, if your client's symptoms are sensitivity to light or difficulty in managing emotions, the CVLT will not help evaluate a brain injury. It is important to know which tests the doctors are performing and what symptoms those tests are designed for in order to evaluate

whether the findings in those tests are of significance to your specific case.

The human cost

Traumatic brain injury is more than just a medical condition; it's a personal tragedy. The injury's invisible nature makes it difficult to communicate its severity to others. A jury cannot see a TBI in the way that a jury can see an amputation or a broken bone. It is up to the lawyer to understand the human aspect of the injury to effectively communicate the loss and come up with a narrative for the case. For example, explaining the significance of frontal lobe atrophy involves more than citing statistics; it requires telling the story of how this atrophy affects the client's daily life – like forgetting a child's birthday or losing the taste for a favorite meal. This requires a tremendous amount of interaction with the client and the client's family so that you show the significance of the client's loss.

mTBI is not minor, it can be very serious

A significant number of TBI patients fall into what is commonly referred to as mTBI or mild traumatic brain injury. By utilizing the word mild, an average listener may be lulled into believing that the effect of such a diagnosis is minimal. Nothing could be further from the truth. By all accounts, mTBI is a serious neurological disorder with a whole gamut of possibly severe outcomes. A delay in treatment may lead to exacerbation in symptoms and make recovery longer and more difficult.

Common defense tactics

Defense attorneys often challenge TBI claims by questioning the baseline – arguing that prior activities or conditions are responsible for current symptoms. For example, they might attribute glial scars to childhood soccer or poor cognitive performance to pre-existing conditions. Therefore, obtaining early MRIs to establish a pre-injury baseline is crucial. An early MRI may detect an axonal-shear

injury, but other injuries take longer to develop. A “clean” early MRI does not rule out the fact that the brain injury may still be developing, but it will help show that the cause of the later findings in the later MRI was not pre-existing at the time of the injury.

The defense will also wait as long as possible to examine your client. That is done to allow the brain to “rewire” itself, at least to some extent, through its inherent self-healing function called brain plasticity or neuroplasticity. They will ask for multiple DMEs. In a brain-injury case, they will ask for separate neurology and neurocognitive testing. Your decision whether to voluntarily agree to multiple examinations is fact determinative. You want to allow a fair assessment of your client. Without a fair assessment, the defense cannot properly value your case. However, there are rules, especially when it comes to neurocognitive testing.

A mental examination?

A defendant can only obtain a mental examination via stipulation or court order. (Code Civ. Proc., § 2032.310.) A court order granting a mental examination “shall specify...the time, place, manner, diagnostic tests and procedures, conditions, scope and nature of the examination.” (Code Civ. Proc., § 2032.320.) This requires the order to “list by name” the tests that are to be administered in the examination. (*Carpenter v. Superior Court* (2006) 141 Cal.App.4th 249, 269.)

Additionally, the “examiner and examinee shall have the right to record a mental examination by audio technology.” (Code Civ. Proc., § 2032.530.) It is imperative to audio-record a mental examination because the mental examination is the only procedure in civil litigation where the defendant's representative (expert) has the ability to interact with the client without counsel or a representative present. This is because the attorney is not allowed to be in the room with a client during a mental examination.

Randy's Trucking

One of the other big fights with mental examinations is whether plaintiff's counsel will get access to the raw data and testing materials. Fortunately, this issue was recently addressed in the matter of *Randy's Trucking v. Superior Court* (2023) 91 Cal.App.5th 818, 834. In *Randy's Trucking*, the defendants sought to compel a neuropsychological examination after “plaintiffs refused to allow the examination to proceed unless their attorney received all raw data and test information from the examination.” (*Id.* at 824.) The defendants asked the court to “prohibit the provision of raw test data, test materials, copyrighted publications, or documents containing proprietary information to anyone other than a licensed psychologist or neuropsychologist.” (*Ibid.*) The trial court denied the defendants' request. The defendant filed a petition for writ of mandate.

The Court of Appeal found that the trial court did not abuse its discretion. The Court reasoned that while the defendant's expert had concerns about copyright laws and “compromising the validity of future neuropsychological tests results...[and] potential conflicts with the APA Ethical Standards...,” the expert failed to “explain why a protective order would not ameliorate those dangers.” (*Id.* at 837-38.)

The Court weighed the defendants' concerns against “plaintiffs' right to take discovery and cross-examine defendants' expert witnesses, which includes being able to examine the expert on the matter upon which the expert's opinion is based and reasons for that opinion.” (*Id.* at 838.) “Without the raw data and audio recording, plaintiffs cannot effectively scrutinize the way the data was collected, determine if there are discrepancies, and cross-examine the neuropsychologist on the basis and reasons for the neuropsychologist's opinion.” (*Ibid.*) This case highlights the plaintiff's bar's need for the raw data to evaluate the defendant's expert's conclusions and adequately cross-examine the defense expert.

How to educate yourself

I have these four textbooks on my desk and refer to them regularly. When the new update comes out, I get it immediately and read it completely. Changes from edition to edition are profound and make ripe ground for expert examination.

- Diagnostic and Statistical Manual of Mental Disorders, Dsm-5-TR 5th Edition
- Neuropsychological Assessment by Muriel D. Lezak, Diane B. Howieson, David W. Loring: Fourth (4th) Edition
- Concussion and Traumatic Encephalopathy: Causes, Diagnosis and Management 1st Edition by Jeff Victoroff, Erin D. Bigler
- Textbook of Traumatic Brain Injury 3rd Edition by Jonathan M., M.D.

Silver (Author), Thomas W. (Author)
<https://www.ncbi.nlm.nih.gov/books/NBK542595/>

These books have been invaluable in preparing cases for deposition, trial and settlement and are routinely accepted as authoritative texts by all experts on both sides.

Conclusion

Understanding TBI requires a holistic approach that combines clinical assessments, radiological imaging, and personal narratives. Each TBI case is unique, demanding a tailored approach to diagnosis, treatment, and legal representation. By appreciating the complexity and individuality of TBI, professionals can better support those

affected, advocating for the care and compensation they deserve.

Boris Treyzon is a founding partner and lead trial attorney at ACTS Law. He was named CAALA's Trial Lawyer of the Year for 2021. Boris is an active member of CAALA, CAOC, AAJ and ABOTA. He tries approximately 8-12 cases per year, focusing on catastrophic injuries, insurance bad faith and complex business disputes.

Joe Finnerty is a senior litigation and trial attorney with ACTS Law, practicing in the areas of plaintiff's personal injury, wrongful death, civil rights, product liability, and environmental and toxic torts.

