

FOR FLORIDA PERSONAL INJURY ATTORNEYS

Why a Normal CT Doesn't Rule Out Concussion

What personal injury attorneys should know about imaging, mild traumatic brain injury, and timely clinical documentation after a crash.

PREPARED BY

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Mobile concussion and mild TBI diagnostic testing across
Florida
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MEDICAL CONTENT REVIEW

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— EXECUTIVE SUMMARY

"CT negative" answers an emergency question. It does not answer the concussion question.

A normal head CT is one of the most common entries in the emergency department record of a crash patient who later reports headaches, dizziness, memory lapses, or poor sleep. It is also one of the most frequently misread findings in a personal injury file.

Head CT is designed to find structural emergencies: bleeding, skull fracture, swelling, and other injuries that may need urgent intervention. Concussion is different. Current international consensus describes concussion as an injury that sets off a neurotransmitter and metabolic cascade in the brain, and states that no abnormality is seen on standard structural neuroimaging.¹ In other words, a normal CT is the expected finding in a typical concussion, not evidence against one.

Large prospective research supports the clinical significance of this gap. In the TRACK-TBI study, most patients with a fully normal Glasgow Coma Scale score and a negative head CT reported incomplete recovery at two weeks, and more than half still reported incomplete recovery at six months.⁴

Five points for case evaluation

- **CT is a triage tool.** Emergency CT decision rules were built to identify patients who may need neurosurgical intervention or have clinically important injury visible on CT.⁸
- **Consensus definitions expect normal structural imaging.** The Amsterdam 2022 statement and the 2023 ACRM diagnostic criteria both recognize concussion when CT or MRI is normal.^{1,2}
- **CT-negative does not mean recovered.** TRACK-TBI found persistent functional limitations in many CT-negative patients up to 12 months after injury.^{4,5}
- **Symptoms can surface late.** CDC notes that some symptoms appear hours or days after injury and may be overlooked by the patient, family, or provider.³
- **Timing matters.** Structured, physician-reviewed documentation close to the injury captures the presentation while it is still evolving.

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SECTION 1

What CT is designed to detect, and what concussion actually affects

In the emergency department, the clinical priority after a head injury is to find anything that could deteriorate quickly or need surgery. CT is fast, widely available, and very good at that job. The widely used Canadian CT Head Rule, for example, was developed and validated against two outcomes: the need for neurological intervention and clinically important brain injury on CT.⁸ Neither outcome is "concussion."

HEAD CT IS BUILT TO DETECT	CONCUSSION COMMONLY AFFECTS
Bleeding inside or around the brain (epidural, subdural, subarachnoid)	Brain chemistry and energy use: a neurotransmitter and metabolic cascade after impact ¹
Skull fractures , including signs of basal skull fracture	Microscopic structure: possible axonal injury, blood flow change, and inflammation ¹
Contusions large enough to be visible on CT	Thinking: attention, processing speed, memory ³
Swelling and mass effect that may compress brain tissue	Balance, vision, and eye movement , including dizziness and light sensitivity ³
Injuries that may need urgent neurosurgical care ⁸	Sleep, mood, and headache , which often change over the first weeks ³

"The diagnostic label 'concussion' may be used interchangeably with 'mild TBI' when neuroimaging is normal or not clinically indicated."

Expert panel consensus, American Congress of Rehabilitation Medicine Diagnostic Criteria for Mild TBI (2023)²

Even MRI tells only part of the story

MRI is more sensitive than CT for small structural injuries. In the TRACK-TBI pilot, 27% of mild TBI patients with a normal admission CT had abnormal findings on early brain MRI.⁶ Yet the Amsterdam consensus definition notes that concussion typically shows no abnormality on standard CT or conventional MRI sequences, with changes seen mainly on specialized functional, blood flow, or metabolic imaging in research settings.¹ For most patients, the diagnosis rests on history, symptoms, and clinical assessment, which is why guidelines from CDC and VA/DoD advise against relying on neuroimaging to establish the diagnosis of mild TBI.^{7,9}

SECTION 2

The evidence: CT-negative patients often do not fully recover on schedule

TRACK-TBI (Transforming Research and Clinical Knowledge in Traumatic Brain Injury) is a federally funded, prospective study of patients seen at U.S. Level I trauma centers. Several of its analyses focus on exactly the patient attorneys see most often: alert on arrival, scanned, and discharged with a normal CT.

56%

of patients with a GCS score of 15 and a negative head CT reported incomplete recovery at six months (73% at two weeks).

Madhok et al., JAMA Netw Open, 2022⁴

49%

of CT-negative mild TBI patients reported injury-related functional limitations at 12 months, compared with 38% of orthopedic-injury controls.

Nelson et al., JAMA Neurol, 2019⁵

27%

of mild TBI patients with a normal admission CT had abnormal findings on early brain MRI.

Yuh et al., Ann Neurol, 2013⁶

What the guidelines and consensus statements say

- **Amsterdam 2022 International Consensus on Concussion in Sport:** describes concussion as caused by a direct blow to the head, neck, or body that transmits an impulsive force to the brain, with symptoms that may present immediately or evolve over minutes or hours, and with no abnormality on standard structural neuroimaging.¹
- **ACRM Diagnostic Criteria for Mild TBI (2023):** developed for use across sports, civilian trauma, and military settings; supports using "concussion" and "mild TBI" interchangeably when imaging is normal or not indicated.²
- **CDC Pediatric mTBI Guideline (2018):** advises health care professionals not to routinely obtain head CT to diagnose mild TBI in children, and emphasizes symptom scales and standardized assessment.⁷
- **VA/DoD Clinical Practice Guideline (2021):** suggests against using neuroimaging to establish the diagnosis of mild TBI, and supports a symptom-focused approach to evaluation and care.⁹

Reading the evidence responsibly

These are group-level findings. Concussion symptoms are non-specific and can overlap with neck injury, inner ear problems, pain, sleep disruption, and pre-existing conditions such as migraine or anxiety.¹ Consensus guidance also cautions that test results should be interpreted in the context of broader clinical findings and not used in isolation.¹ That is the argument for careful, multi-domain clinical assessment and documentation, interpreted by a physician in the context of the patient's history.

SECTION 3

Common post-crash symptom patterns

CDC groups mild TBI and concussion symptoms into four domains. Symptoms differ from person to person and can change during recovery.³ In motor vehicle cases, these complaints often appear alongside neck and back pain, which can make them easy to miss or to attribute entirely to the musculoskeletal injury.

PHYSICAL

Headaches
Dizziness or balance problems
Sensitivity to light or noise
Vision problems
Fatigue, low energy
Nausea or vomiting (early on)

THINKING AND REMEMBERING

Attention or concentration problems
Feeling slowed down
Feeling foggy or groggy
Short- or long-term memory problems
Trouble thinking clearly

SOCIAL OR EMOTIONAL

Irritability or being easily angered
Anxiety or nervousness
Feeling more emotional
Sadness

SLEEP

Sleeping more than usual
Sleeping less than usual
Trouble falling asleep

Symptom domains adapted from CDC, "Symptoms of Mild TBI and Concussion."³

How symptoms tend to unfold

HOURS TO DAYS

Some symptoms appear right away; others may not appear for hours or days.³ Headache and nausea are often early complaints.

ONE TO TWO WEEKS

Emotional changes and sleep trouble may become more noticeable a week or two after injury.³

BEYOND FOUR WEEKS

Symptoms lasting longer than four weeks are described as persisting and call for multimodal evaluation.¹

Three patterns worth noticing in a new file

- **No head strike.** Consensus definitions include a blow to the head, neck, or body that transmits force to the brain.¹ A rear-end collision without a documented head impact does not by itself exclude concussion.
- **Under-reporting.** CDC notes that a person may not recognize or admit problems, and that problems may be overlooked by the person, family members, or the health care provider.³
- **Overlap with neck and inner ear injury.** Dizziness, headache, and neck pain can have more than one source.¹ Distinguishing them is a clinical task that benefits from standardized assessment.

SECTION 4

Why timely documentation matters

The emergency record is written to rule out emergencies. The concussion record has to be built afterward, and it is strongest when it is built early.

The clinical case for early assessment

The TRACK-TBI investigators who studied CT-negative patients concluded that emergency clinicians should recommend follow-up visits about two weeks after injury to identify patients with incomplete recovery.⁴

The Amsterdam consensus describes acute assessment tools as most useful in the first 72 hours and up to one week after injury, with structured office assessment from 72 hours onward and serial evaluations in the following weeks.¹ It also notes that delayed access to health care professionals is associated with longer recovery in sport-related concussion.¹

The documentation case for early assessment

When the first structured concussion evaluation happens months after a crash, the record may contain long gaps, and it becomes harder to separate injury-related symptoms from other life events or pre-existing conditions.

Documentation made close to the injury can record symptom onset, course, and functional impact in real time, together with relevant history such as prior concussions, migraine, or anxiety, which consensus guidance specifically recommends noting.¹

What a well-built concussion record typically includes

- Date, mechanism, and forces involved in the crash
- Any loss of consciousness, confusion, or memory gap around the event
- Symptom onset and how symptoms have changed over time
- Effects on work, driving, household tasks, and sleep
- Relevant prior history and pre-existing conditions
- Results of standardized, multi-domain assessments
- Physician interpretation in the context of the full history
- Stated limitations and recommendations for the treating provider

A note on Florida timelines

Florida motor vehicle claims can involve time-sensitive insurance and procedural requirements. Counsel should confirm the requirements that apply to each matter. From a clinical standpoint, the earlier a suspected concussion is assessed and documented, the more complete the medical picture tends to be.

SECTION 5

How Braintree's physician-reviewed diagnostic reports fit

Braintree Health Partners provides mobile concussion and mild TBI diagnostic testing across Florida. We work alongside treating chiropractors and physicians, and the attorneys who represent their patients. We diagnose. You treat.

01 Referral from the treating provider

The treating provider identifies the clinical concern and initiates the referral. Patients remain with their treating provider throughout.

02 Mobile testing, scheduled close to the injury

Our team brings testing to the patient at locations across Florida, reducing travel and scheduling delays that can leave gaps in the record.

03 Standardized, multi-domain assessment

Testing is selected for the clinical question and looks at functions concussion commonly affects, alongside a structured history and symptom inventory.

04 Physician-reviewed diagnostic report

Results are reviewed by a Braintree physician and organized into a clear report covering history, findings, interpretation, and limitations.

05 Report to the treating provider and the case file

The report supports the treating provider's clinical decisions and gives counsel a documented, dated record of the patient's presentation.

What our reports are designed to do

- Document the presentation close to the injury date
- Connect symptoms to standardized assessment results
- Give the treating provider a clear clinical summary

What our reports do not do

- Replace emergency evaluation or imaging when indicated
- Provide treatment, which remains with the treating provider
- Offer legal conclusions about any claim

Medical necessity for each service is determined and documented by the evaluating or treating clinician. Not every patient requires every test.

SECTION 6

A practical checklist for attorneys

Use these clinical considerations when a client with a normal CT reports symptoms after a crash. They are intended to help identify when a medical evaluation may be appropriate, not to replace the judgment of counsel or clinicians.

AT INTAKE

- ☐ **Ask by symptom domain.** Headache, dizziness, light or noise sensitivity, concentration, memory, mood, and sleep. Clients rarely volunteer all of them.
- ☐ **Ask about the moments around the crash.** Any confusion, gap in memory, feeling dazed, or loss of consciousness, even briefly.
- ☐ **Do not treat "no head strike" as the end of the inquiry.** Note the mechanism and the forces involved.
- ☐ **Ask a family member or coworker** what has changed. Others often notice what the client does not.

RECORDS REVIEW

- ☐ **Request the complete emergency record,** not only the discharge summary or the CT impression.
- ☐ **Note why CT was ordered and what it was looking for.** A negative CT answers the structural question it was ordered to answer.
- ☐ **Look for concussion-related language** in triage and nursing notes, and for discharge instructions about head injury.
- ☐ **Identify relevant prior history** such as earlier concussions, migraine, or anxiety, so it can be addressed clinically.

NEXT STEPS

- ☐ **Encourage prompt follow-up with the treating provider** if symptoms continue. TRACK-TBI investigators recommend follow-up around two weeks after injury.⁴
- ☐ **Ask the treating provider whether concussion testing is indicated** and whether a physician-reviewed diagnostic report would support care.
- ☐ **Keep a dated symptom timeline** from the client, including missed work and limits on daily activities.
- ☐ **Confirm applicable Florida deadlines** and requirements for the matter.

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CONTACT

Talk with our team about a client with a normal CT and ongoing symptoms.

Braintree Health Partners provides mobile concussion and mild TBI diagnostic testing across Florida from our Tampa-area headquarters, working with personal injury attorneys and treating chiropractors and physicians.

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