

Concussion (mild traumatic brain injury)

Overview

A concussion is a mild traumatic brain injury caused by a blow or "ding" to the head. Common in falls, sports, and car crashes, concussions can temporarily affect the brain, causing confusion and problems with memory, speech, vision, or balance. The person may appear fine at first but may show symptoms hours or days later. If left undiagnosed, a concussion may place a person at risk of developing second-impact syndrome, a potentially fatal injury that occurs when an athlete sustains a second head injury before a previous head injury has healed. The best treatment is time to allow the brain to heal.

What is a concussion?

During the impact of an accident, the brain bounces back and forth inside the skull. This can cause bruising, bleeding, and tearing (Fig. 1). Immediately after the accident, the person may be confused, not remember what happened or have nausea, blurry vision, or dizziness. The person may appear fine at first but show symptoms hours or days later. One does not have to lose consciousness to suffer a concussion.

Go to an emergency room if you or someone with you has suffered a head injury and has lost consciousness, is vomiting, having seizures, or having obvious difficulty with mental function or physical coordination.

What are the symptoms?

The symptoms of a brain injury can be subtle or may not be noticed until you return to normal activities. Symptoms can last up to 4 weeks, can fluctuate in intensity, but overall should improve with time. They include:

- Headaches
- Sleep
 - Trouble falling asleep
 - Sleeping too much or too little
 - Feelings of fatigue or exhaustion
- Memory
 - Trouble remembering new information

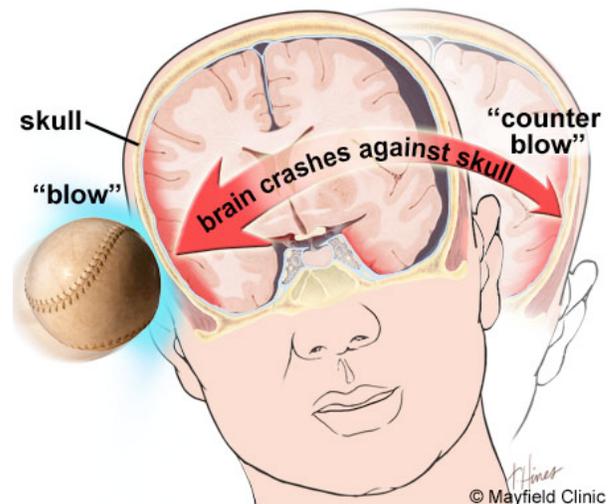


Figure 1. During impact to the head, the soft brain crashes back and forth against the inside of the hard skull, causing bruising, bleeding, and tearing of nerve fibers. Concussions are graded by severity:

- Grade I: no loss of consciousness; amnesia is absent or present for less than 30 minutes.
- Grade II: loss of consciousness for less than five minutes or amnesia for between 30 minutes and 24 hours.
- Grade III: loss of consciousness for more than five minutes or amnesia for more than 24 hours.
 - Trouble concentrating or thinking
 - Feelings of confusion
- Mood
 - Irritability
 - Feelings of sadness
 - Feelings of nervousness or anxiety
- Other physical symptoms
 - Blurry vision
 - Dizziness
 - Nausea and vomiting
 - Sensitivity to light or noise

Most people make a full recovery. Call your primary care doctor if your symptoms worsen or you see no improvement in 2 to 3 weeks.

What are the causes?

Common causes include falls, car or motorcycle crashes, sports injuries, and rapid back-and-forth forces such as shaken baby syndrome or nearby battlefield explosions.

How is a diagnosis made?

When a concussion is suspected during a sporting event, a coach, athletic trainer, or team physician should immediately perform a "sideline" evaluation. These tests including alertness, short-term memory recall (such as opponent, score), long-term recall (such as name, birth date), and athlete's ability to stay attentive to a complex task (such as reciting the months backwards).

When a person is brought to the emergency room with a head injury, doctors will do an exam, ask about his or her symptoms, and ask how the injury occurred. A CT scan of the head may be done if needed. Patients with moderate or severe brain injury are admitted to the hospital for treatment.

Patients with mild brain injury are usually released home after a few hours of observation in the ER. A family member or caregiver must closely monitor and watch for changes in the patient's behavior for the next 24 to 48 hours.

Return to the ER if any of these existing symptoms get worse or new ones occur:

- Excessive sleepiness; can't stay awake or can't be woken from sleep
- Headache that gets worse and is not relieved with typical medications
- Increased nausea and vomiting
- More confusion, agitation, or restlessness
- Trouble talking, walking, or changes in vision
- Seizure or convulsion

What treatments are available?

No person should return to sports or vigorous activity while signs or symptoms of a concussion are present. Treatment for a mild brain injury is usually rest and medication. The best treatment is time to allow the brain to heal.

Get plenty of sleep. Avoid physical exertion and activities that require mental concentration, such as playing video games, watching TV, texting or using a computer. School workloads should also be temporarily reduced.

Common questions & answers

Q: When can I restart my blood thinners, such as aspirin, Plavix, or Coumadin?

A: You should consult your neurosurgeon, neurologist, or cardiologist to see when it is safe to resume taking these medications.

Q: Will my work and/or school schedule need to be adjusted? For how long?

A: Yes, you will need to rest while recovering from your injury. You can return to work when your symptoms are controlled or when a healthcare provider clears you. Recovery time varies.

Q: Can I drive?

A: You should not drive while taking narcotic pain medication or drugs that can make you sleepy. Please check with your healthcare provider when it is safe to resume driving.

Q: When can I resume normal activity?

A: Gradually over 1 to 2 weeks you can increase your physical activity level, but listen to your body and rest when needed.

Q: When is it okay to resume sports?

A: It is important not to resume sports until you are symptom free or cleared by a healthcare provider. A second concussion that happens before the first one is healed can have dangerous long-term effects.

For headaches, use acetaminophen (Tylenol). Avoid other pain relievers such as ibuprofen (Advil, Motrin) and aspirin, as there is a possibility these medications may increase the risk of bleeding.

Recovery & prevention

You can expect the symptoms of a head injury to gradually improve over 1 to 4 weeks. During that time, your symptoms can fluctuate in intensity:

- **Headaches** are common and can be relieved with acetaminophen (Tylenol). Patients with migraines may notice worsening.
- **Fatigue** and sleep problems go hand-in-hand and tend to worsen each other. Fatigue tends to be worse in the evening and makes symptoms more noticeable. Listen to your body and rest when needed.
- **Memory** problems, such as organizing tasks or remembering names or the grocery list, may occur.
- **Concentration** and difficulty learning new information may occur.
- **Mood swings** and irritability are common.
- **Blurry vision or loss of smell** may occur.
- **Seizures** are rare, but may occur in the first week after a brain injury. Medication may be taken for 3 to 7 days to prevent seizures.

Prevention of a second injury during recovery is important because having a concussion increases the risk of a second concussion by 5 times, and a second concussion soon after the first increases the risk of dangerous brain swelling. In more severe cases of post-concussion syndrome, cognitive behavioral therapy may be helpful.

Tips to reduce the risk for a head injury:

- Wear your helmet when riding a bicycle, motorcycle, skateboard, or ATV.
- Do not drive under the influence of alcohol or drugs.
- Wear your seat belt and ensure that children are secured in child safety seats.
- Avoid falls in the home by keeping loose items off the floor and installing safety features such as non-slip mats in the bathtub and handrails on stairways.
- Avoid falls by exercising to increase strength, balance, and coordination.
- Store firearms in a locked cabinet with bullets in a separate location.
- Wear protective headgear during sports.

Glossary

concussion: a mild brain injury that can cause a brief loss of consciousness, confusion or memory loss of the event.

contusion: a 'bruise' in the brain.

hematoma: a blood clot in the brain.

subarachnoid hemorrhage: bleeding into the space around the brain.

Sources & links

If you have more questions or would like to schedule an appointment with one of our neurosurgeons, please call (515) 241-5760. Our offices are located on the Iowa Methodist Campus.

Links

www.biausa.org

www.stopsportsinjuries.org

www.thinkfirst.org



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