CONDITION

Skull fracture

A skull fracture is a break in one or more bones that protect the brain.

WHAT IT IS
Break in one or more skull bones

BODY SYSTEM
Bones and nervous system

MAIN SYMPTOMS
Head pain, swelling, bruising, clear fluid leakage

WHAT CAUSES IT
Head trauma from impact or force

HOW IT IS DIAGNOSED
Head CT scan and clinical examination

MAIN TREATMENT
Observation, injury care, and sometimes surgery

CAN IT BE CURED?
Sometimes - bone heals, but complications may persist

IS IT AN EMERGENCY?
Yes - after a recent head injury

LONG-TERM OUTLOOK
Most heal, but brain injury may cause lasting problems

Overview

A skull fracture is a break in one or more of the bones surrounding the brain. It usually happens when the head is struck with enough force to damage the bone.

The fracture itself may be a thin crack, a break that pushes bone inward, or an injury involving the base of the skull. The skin may remain closed, or there may be an open wound over the fracture.

The main concern is not only the broken bone. The same impact can injure the brain, tear blood vessels, or cause bleeding inside the skull. Some complications develop gradually, so symptoms may change during the hours after an injury.

A skull fracture does not always mean that the brain has been damaged. Many simple fractures heal without surgery. However, a suspected fracture after a recent injury needs urgent medical

assessment.

Symptoms

Symptoms may come from the skull fracture, a scalp injury, or an associated brain injury. A person can sometimes have a fracture without an obvious dent or open wound.

Possible symptoms include:

Bruising around the eyes or behind the ear can suggest a fracture at the base of the skull. These signs may not appear immediately.

Babies and young children may be unable to describe their symptoms. Warning signs can include unusual irritability, repeated vomiting, poor feeding, increasing sleepiness, a seizure, or swelling of the scalp.

Do not press on a dent, open wound, or object lodged in the head.

- Pain, tenderness, swelling, or a lump on the head
- A cut, bleeding, or visible change in the skull's shape
- Headache, dizziness, nausea, or vomiting
- Confusion, memory loss, unusual sleepiness, or loss of consciousness
- Bruising around both eyes or behind an ear
- Blood or clear, watery fluid leaking from the nose or ear
- Hearing changes, facial weakness, or problems with vision or balance

Causes and risk factors

Skull fractures are caused by physical force to the head. Common situations include falls, road collisions, sports injuries, assaults, workplace incidents, and being struck by a heavy object.

The amount of force needed is not the same in every situation. The location and direction of the impact matter, as does whether the head struck a hard or sharp surface.

Falls are an important cause in young children and older adults. Contact sports, cycling, riding motorcycles, and work at height can also increase exposure to head injury. Alcohol or drugs may raise risk by affecting balance, judgment, or reaction time.

Some medicines and medical conditions increase the chance of bleeding after a head injury, even if they do not make a fracture more likely. These include blood-thinning medicines and

disorders that affect normal blood clotting.

Diagnosis

Medical assessment begins with checking breathing, circulation, alertness, and possible neck injury. The clinician will ask what happened, whether there was loss of consciousness, and whether symptoms have changed.

A nervous system examination checks memory, speech, pupil reactions, strength, sensation, balance, and level of alertness. The scalp, ears, nose, face, and neck are also examined.

A computed tomography, or CT, scan is the main imaging test when a skull fracture or serious brain injury is suspected. It uses X-rays to create detailed images. CT can show most skull fractures and can also identify bleeding, swelling, or air inside the skull.

Plain skull X-rays are not usually the main test after a significant head injury because they do not show the brain well. Other scans may be used for specific concerns. For example, blood-vessel imaging may be needed if the injury could have damaged an artery or vein.

Not every minor bump requires a scan. Clinical assessment and established head-injury criteria help determine when imaging or hospital observation is needed. Symptoms can evolve, so discharge instructions remain important even when an initial examination or scan is reassuring.

Treatment and management

Treatment depends on the fracture's location and shape, whether the skin is open, and whether there is brain injury or bleeding.

A simple, closed fracture without complications often needs observation rather than an operation. Care may include pain relief, treatment of nausea, rest, and monitoring for new symptoms. If it is safe to leave hospital, a responsible adult may be asked to stay nearby during the early recovery period.

A scalp wound may need cleaning, closure, and treatment to reduce infection risk. Antibiotics like amoxicillin or doxycycline may be used for an infected or contaminated open injury, but they are not automatically required for every skull fracture.

Surgery may be considered when bone has been pushed inward, a wound is open or contaminated, bleeding is placing pressure on the brain, or damaged tissue needs repair. The operation used depends on the injury rather than the fracture name alone.

A fracture at the base of the skull can cause cerebrospinal fluid to leak from the nose or ear.

This is the clear fluid that cushions the brain and spinal cord. Many leaks stop with observation, but persistent leaks may need specialist treatment or surgery.

Associated injuries are treated separately. These may include concussion, bleeding around the brain, seizures, facial injuries, or damage to nerves and blood vessels.

Follow the discharge instructions provided after assessment. Use pain medicines only as advised, and do not return to driving, work at height, contact sport, or other high-risk activity until it is considered safe.

Complications

Many skull fractures heal without a long-term complication. The risk is higher when the impact has also injured the brain or blood vessels.

Possible complications include:

Rarely, a fracture in a young child gradually widens as the child grows. Follow-up helps identify this uncommon complication.

- Bleeding or swelling inside the skull
- Brain injury, including concussion
- Infection in an open fracture
- Leakage of cerebrospinal fluid
- Meningitis, an infection around the brain and spinal cord
- Hearing, balance, vision, smell, or facial movement problems
- Seizures
- Lasting problems with memory, mood, concentration, or movement

Prevention

Not every skull fracture can be prevented, especially when an unexpected fall or collision occurs. Practical safety measures can reduce the chance or severity of head injury.

Wear an appropriate, correctly fitted helmet for cycling, motorcycling, contact sports, and hazardous work. A helmet cannot prevent every head or brain injury.

Use seat belts and age-appropriate child car seats. Follow workplace fall-protection rules, and use suitable protective equipment.

At home, reduce fall hazards by improving lighting, securing loose rugs, using stair gates where appropriate, and installing handrails. If you have repeated falls, problems with balance, or medicines that make you dizzy, a routine medical review may help address those risks.

Living with it and what to expect

An uncomplicated skull fracture usually heals over weeks to months. The bone may heal without an operation, but headache, tiredness, dizziness, or poor concentration can last longer if there was also a concussion.

Recovery is not identical for everyone. It is influenced more by associated brain, nerve, or blood-vessel injury than by the bone crack alone. A severe brain injury may require rehabilitation and can cause long-term changes in movement, communication, memory, behavior, or independence.

Activity is usually increased gradually. Returning too quickly to contact sports, heavy work, driving, or activities with a risk of another head impact can interrupt recovery or cause another injury. Follow the individual return-to-activity advice given after assessment.

Routine follow-up may be needed for a complex fracture, persistent symptoms, hearing or balance changes, a fluid leak, or an associated brain injury. Repeat scans are not required for every uncomplicated fracture; they are used when symptoms or the original injury make them necessary.

Most people with a simple fracture return to their usual lives. Persistent symptoms do not always mean the skull has failed to heal, but they should be reviewed because concussion and other effects of head injury may need further support.

When to get medical help

A suspected skull fracture after a recent head injury needs urgent assessment. Call emergency services rather than driving if the injured person is unconscious, difficult to wake, having a seizure, or becoming less responsive. Avoid unnecessary movement of the head and neck.

Seek emergency help for:

Emergency assessment is also important after a significant head injury if the person takes blood-thinning medicine or has a bleeding disorder.

After discharge, arrange routine follow-up if headache, dizziness, sleep problems, memory changes, low mood, hearing changes, or difficulty returning to normal activities continue.

Return for urgent reassessment if symptoms worsen rather than improve.

- Worsening confusion, agitation, or unusual behavior
- Increasing sleepiness or difficulty waking
- Repeated vomiting or a severe, worsening headache
- Weakness, numbness, poor coordination, or trouble speaking
- Unequal pupils or new vision problems
- Blood or clear fluid leaking from an ear or the nose
- Bruising behind an ear or around both eyes
- A visible dent, open skull wound, or object in the wound
- A seizure, collapse, or breathing difficulty

Common questions

Can a skull fracture heal on its own?

Many simple, closed fractures heal without surgery. Observation is still important because the impact may also have caused bleeding or brain injury. Open, depressed, leaking, or otherwise complicated fractures may need specialist treatment.

Can you have a skull fracture and not know it?

Yes. A thin fracture may not cause a visible dent, and symptoms may initially seem mild. A CT scan may identify the fracture during assessment of a head injury. New or worsening symptoms after a significant impact should not be ignored.

How long does a skull fracture take to heal?

Bone healing generally takes weeks to months. Headache, fatigue, dizziness, or concentration problems may follow a different timeline if concussion or another brain injury occurred. The severity of the associated injuries often matters more than the fracture alone.

Does a skull fracture always cause brain damage?

No. The skull can fracture without direct damage to the brain. However, enough force to break the skull can also cause concussion, bleeding, swelling, or bruising of brain tissue, which is why medical assessment is needed.

Is it safe to sleep after a head injury?

After proper assessment, sleep is often part of recovery. A person should not simply be left to "sleep off" increasing drowsiness, confusion, repeated vomiting, or other emergency signs.

Follow the monitoring and waking instructions given at discharge.

When can I exercise or play sport again?

Return should be gradual and based on the full injury, including any concussion. Avoid contact sport and activities that could cause another head impact until medically cleared. A second injury before recovery can be more serious.

Sources

- National Institute for Health and Care Excellence. Head injury: assessment and early management . NICE guideline NG232
- Centers for Disease Control and Prevention. Signs and symptoms of concussion
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