CONDITION

Epidural hematoma

An epidural hematoma is bleeding between the skull and the brain's protective outer covering.

WHAT IT IS
Blood trapped between the skull and brain covering

BODY SYSTEM
Nervous system

MAIN SYMPTOMS
Severe headache, vomiting, drowsiness, one-sided weakness

WHAT CAUSES IT
Head trauma tearing blood vessels

HOW IT IS DIAGNOSED
Neurological examination and urgent CT scan

MAIN TREATMENT
Emergency monitoring or surgery to remove blood

CAN IT BE CURED?
Sometimes - blood removed or reabsorbed

IS IT AN EMERGENCY?
Yes - suspected bleeding needs immediate assessment

LONG-TERM OUTLOOK
Often good with prompt treatment; severe injury can cause disability

Overview

An epidural hematoma is a collection of blood inside the skull. The blood builds up between the skull and the dura, the tough outer layer covering the brain. It is also called an extradural hematoma.

Most epidural hematomas happen after a head injury. A damaged artery or vein bleeds into the enclosed space inside the skull. As the collection grows, it can press on the brain and interfere with blood flow.

This pressure can rise quickly, so a suspected epidural hematoma is a medical emergency. Early assessment and treatment can limit pressure on the brain and improve the chance of recovery.

Some people remain awake after the injury and may initially seem well. Others lose consciousness immediately. The well-known "lucid interval," in which someone briefly recovers before becoming worse, can occur but is not always present. Its absence does not rule out serious bleeding.

A similar type of bleeding can happen around the spinal cord. That is called a spinal epidural hematoma and has different symptoms and treatment. This article focuses on bleeding inside the skull.

Symptoms

Symptoms may begin immediately after an injury or develop over the following hours. How quickly they appear is affected by the location of the bleeding, the injured blood vessel and whether there are other brain injuries.

Possible symptoms include:

Babies and young children may not be able to describe a headache. Warning signs can include unusual irritability, repeated vomiting, poor feeding, increasing sleepiness, seizures or a bulging soft spot on a baby's head.

Symptoms do not always match the size of the injury at first. A person who can talk and walk after a head impact may still have bleeding that later becomes dangerous.

- A severe or worsening headache
- Nausea or repeated vomiting
- Increasing sleepiness, confusion or unusual behaviour
- Loss of consciousness, even if brief
- Weakness or reduced movement on one side
- Trouble speaking, walking or coordinating movements
- A seizure
- One pupil becoming larger than the other
- Clear fluid or blood coming from the nose or ear after an injury

Causes and risk factors

The usual cause is a forceful head injury, such as a fall, road crash, sports impact or physical

assault. The impact may fracture the skull and tear a nearby blood vessel. The middle meningeal artery, which runs beneath the side of the skull, is commonly involved.

Bleeding can also come from veins or from damaged bone. Less often, an epidural hematoma develops without a clear injury, such as after certain infections, bleeding problems or medical procedures involving the skull.

Factors that can increase the likelihood of serious bleeding after a head injury include:

Not every head injury causes an epidural hematoma. However, symptoms and the type of injury matter more than whether there is a visible cut or bump.

- Taking anticoagulants like warfarin or apixaban , often called blood thinners
- Having a condition that affects normal blood clotting
- A high-force injury or skull fracture
- Alcohol or drug effects that make symptoms harder to recognise
- Being unable to communicate symptoms clearly

Diagnosis

An epidural hematoma is usually confirmed with an urgent CT scan of the head. CT uses X-rays to create detailed images and can show the location and size of the blood collection, pressure on the brain, skull fractures and other injuries.

Assessment also includes a neurological examination. This checks alertness, speech, memory, pupil size and reaction, strength, sensation and movement. These checks may be repeated because changes can show that pressure is increasing.

Blood tests may look for anaemia, clotting problems and other issues that could affect treatment. The care team will also need to know about medicines, especially anticoagulants and antiplatelet medicines.

MRI provides more detailed images of soft tissues but takes longer than CT and is not usually the first test in an emergency. It may be used when the diagnosis remains uncertain or later in recovery.

A normal appearance immediately after an injury does not replace medical assessment when warning signs are present.

Treatment and management

Treatment aims to stop bleeding, reduce pressure on the brain and prevent further injury. Emergency care may include support for breathing and circulation, close neurological monitoring and treatment of other injuries.

A large hematoma, worsening symptoms or signs of dangerous pressure usually requires urgent surgery. A neurosurgeon may perform a craniotomy, temporarily removing part of the skull to take out the blood, control the bleeding and relieve pressure. The bone is normally replaced at the end of the procedure.

A small epidural hematoma may sometimes be managed without immediate surgery if the person is neurologically stable and imaging does not show concerning pressure. This requires hospital observation, frequent examinations and repeat scans. Surgery may still become necessary if the collection grows or symptoms change.

Other parts of care may include:

Do not stop a prescribed blood thinner on your own after a minor bump. Urgent medical assessment can determine the safest next step.

- Reversing the effects of anticoagulant medicines when appropriate
- Treating seizures or reducing seizure risk in selected cases
- Managing pain, nausea and other symptoms
- Rehabilitation for difficulties with movement, speech, thinking or daily tasks

Complications

An enlarging hematoma can raise pressure inside the skull and move brain tissue away from its normal position. Severe pressure can damage areas that control consciousness, breathing and other vital functions.

Other possible complications include seizures, weakness, speech or memory problems, changes in behaviour, difficulties with balance and persistent headaches. Some problems come from the accompanying brain injury rather than the blood collection itself.

Surgery can have complications such as infection, further bleeding or blood clots, although it may be necessary to prevent more serious harm.

A severe epidural hematoma can cause permanent disability or death. The risk is influenced by the speed of treatment, the amount and location of bleeding, the person's level of consciousness and any additional injuries.

Prevention

Not every epidural hematoma can be prevented. Accidents still occur even when sensible precautions are taken.

Steps that can reduce the risk of a serious head injury include wearing an appropriate helmet for cycling, motorcycling and contact or high-impact sports. Use seat belts, suitable child car seats and protective equipment at work.

Reducing fall hazards is especially important for people with balance problems. Helpful measures may include good lighting, secure handrails, clear walkways and review of medicines that cause dizziness or drowsiness.

If you take an anticoagulant, take it only as prescribed and attend recommended monitoring. Do not change or stop it simply to reduce head-injury risk, because doing so may increase the risk of a stroke or blood clot.

Living with it and what to expect

An epidural hematoma is usually a sudden event rather than a long-term condition. Once the bleeding has been removed or has resolved, it does not normally continue indefinitely. Recovery, however, can take weeks or months.

Some people recover fully, particularly when the bleeding is recognised and treated before major brain damage occurs. Others have ongoing effects from pressure on the brain or from injuries that happened at the same time.

Early recovery may involve tiredness, headaches, dizziness, poor concentration or sensitivity to noise and light. These symptoms can affect school, work, driving and exercise. Rehabilitation may involve physical therapy, occupational therapy, speech and language therapy or support with memory and thinking.

Follow-up may include a neurological examination, review of symptoms and further brain imaging. After surgery, wound checks are also important. Return to driving, work, sport and other activities should follow the advice given by the treating team because timing is affected by seizures, symptoms, scan results and local rules.

Routine follow-up is the right setting for improving but persistent headaches, tiredness, concentration problems or questions about activity. New or rapidly worsening neurological symptoms need emergency help instead.

Recovery cannot be predicted from the scan alone. Age, other injuries, complications and how unwell the person was before treatment all influence the longer-term course.

When to get medical help

Call emergency services after a head injury if someone:

Keep the person still if a neck injury is possible. Do not give food or drink, and do not leave them alone while waiting for help.

Prompt assessment is also important after a head injury for someone taking an anticoagulant or who has a bleeding disorder, even when symptoms seem mild. A healthcare service can advise whether emergency assessment is needed.

After treatment, seek emergency help for a new seizure, loss of consciousness, increasing confusion, new weakness, repeated vomiting or a rapidly worsening headache. Contact the follow-up team routinely about symptoms that are stable but not improving, wound concerns or difficulties returning to everyday activities.

- Cannot be woken or becomes increasingly difficult to wake
- Has a seizure
- Develops weakness, numbness or poor coordination
- Has trouble speaking or becomes confused
- Has one pupil larger than the other
- Has a worsening severe headache or repeated vomiting
- Loses consciousness or has worsening symptoms after seeming well
- Has clear fluid or significant bleeding from the nose or ear

Common questions

Can you have an epidural hematoma and still feel fine?

Yes. Symptoms may be mild or temporarily absent soon after an injury. Some people have a lucid interval before becoming worse. Feeling well does not make warning signs or a high-risk injury safe to ignore.

Is an epidural hematoma the same as a subdural hematoma?

No. An epidural hematoma forms between the skull and the dura. A subdural hematoma forms beneath the dura, usually because veins tear. Both can be serious, but they differ in their usual bleeding source, scan appearance and clinical course.

Does every epidural hematoma need surgery?

No. Small, stable collections may sometimes be monitored closely in hospital with repeated examinations and scans. Surgery is more likely when the hematoma is large, causes pressure or is linked to worsening neurological symptoms.

Can an epidural hematoma heal on its own?

A small collection may gradually be reabsorbed by the body. This is only considered safe when scans and repeated examinations show that close observation is appropriate. It should not be watched at home without medical assessment.

How long does recovery take?

Recovery may take weeks to months. A person with a quickly treated hematoma and little additional injury may recover sooner than someone with severe pressure, seizures or other brain injuries. Tiredness and concentration problems can continue after the immediate danger has passed.

Can an epidural hematoma come back?

Further bleeding can occur during the early treatment period, which is why monitoring and repeat imaging may be needed. Later risk is usually linked to another head injury, a clotting problem or medicines that affect clotting rather than the original blood collection returning without a cause.

Sources

- National Institute for Health and Care Excellence. Head injury: assessment and early management (NG232)
- Brain Trauma Foundation. Surgical Management of Acute Epidural Hematomas
- American College of Surgeons. Best Practices Guidelines: The Management of Traumatic Brain Injury
- MSD Manual Professional Edition. Epidural Hematomas
- National Library of Medicine, StatPearls. Epidural Hematoma