CONDITION

Sutures - separated

Separated sutures are unusually widened gaps between the flexible skull bones of a baby or young child.

WHAT IT IS
Unusually widened joints between a young child's skull bones

BODY SYSTEM
Skull and nervous system

MAIN SYMPTOMS
Wider skull gaps, rapid head growth, bulging soft spot

WHAT CAUSES IT
Usually increased pressure inside the skull

HOW IT IS DIAGNOSED
Head examination, growth measurements, ultrasound or brain imaging

MAIN TREATMENT
Treatment of the cause and increased skull pressure

CAN IT BE CURED?
Sometimes - the underlying cause can be treated

IS IT AN EMERGENCY?
Sometimes - with fever, seizures, vomiting, or marked drowsiness

LONG-TERM OUTLOOK
Shaped by the cause and response to treatment

Overview

The skull is made of several bones. In babies and young children, these bones are joined by flexible seams called sutures. Sutures allow the skull to change shape during birth and make room for the growing brain.

A separated suture means that the space between two skull bones is wider than expected for the child's age. The medical term is cranial suture diastasis. It is a physical finding rather than a disease in itself.

Sutures are different from fontanelles, often called soft spots. Fontanelles are larger areas where several skull bones meet. Both normally become less noticeable as a child grows, although they do not all close at the same time.

A small line, shallow dip, or slight ridge along a baby's skull can be normal. Head shape may also change temporarily after birth. However, clearly widening sutures can be a sign that pressure is building inside the skull. This pressure may push the skull bones apart while they are still flexible.

The importance of separated sutures therefore depends on why they have widened. A health professional should assess a new or increasing gap, especially if the child's head is growing quickly or there are other symptoms.

Symptoms

Separated sutures may be seen or felt as wider-than-expected gaps between the skull bones. Changes are often easiest to notice over the top or sides of a baby's head.

Other possible signs include:

A fontanelle may briefly look fuller when a baby is crying, coughing, vomiting, or lying flat. It should usually soften again when the baby is calm and upright. A soft spot that remains tense or bulging is more concerning.

Some children have no obvious symptoms apart from changes in head size or skull shape. This is one reason head circumference is measured during routine early-childhood appointments.

- Head size increasing faster than expected
- A tense or bulging fontanelle while the child is calm and upright
- More visible veins across the scalp
- An unusual head shape
- Irritability, poor feeding, or reduced activity
- Repeated vomiting or unusual sleepiness
- Eyes appearing to look downward, sometimes called "sunsetting"
- Delayed development or loss of previously learned skills
- Seizures

Causes and risk factors

The main concern is increased pressure inside the skull. Because a baby's sutures have not fused, pressure may enlarge the head and push the bones apart.

Hydrocephalus is one possible cause. This means there is too much cerebrospinal fluid, the clear fluid that surrounds the brain and spinal cord. Hydrocephalus may result from a blockage in fluid flow, difficulty absorbing the fluid, bleeding, infection, or differences in brain development.

Other possible causes include:

Premature babies have a higher risk of bleeding within the brain, which can sometimes lead to hydrocephalus. Some conditions that affect brain or skull development begin before birth.

Separated sutures after a head injury need prompt assessment. In an older child or adult, separation associated with trauma may indicate a skull fracture rather than normal skull flexibility.

The width of sutures differs with age, growth, and the individual child's skull. Feeling a line between bones does not by itself show that pressure is increased.

- Bleeding in or around the brain
- Meningitis or another serious infection
- A brain cyst, tumour, or other mass
- Significant head injury
- Swelling of brain tissue
- Certain inherited, hormonal, bone, or metabolic conditions
- Severe nutritional deficiencies that affect bone development

Diagnosis

Assessment starts with a history and physical examination. The health professional will ask when the change was noticed, whether it is progressing, and whether there have been symptoms such as fever, vomiting, poor feeding, unusual sleepiness, seizures, or injury.

The child's head circumference is measured and plotted on an age-appropriate growth chart. A single measurement is useful, but the pattern over time is often more important. Rapid movement across the usual growth pattern may require investigation.

The examination may include checking:

A head ultrasound can show the brain's fluid spaces while the fontanelle is open. It does not use radiation and may be the first imaging test in some babies.

Magnetic resonance imaging, or MRI, provides more detailed pictures without using X-rays. It takes longer and young children may need support to remain still. Computed tomography, or

CT, is fast and may be used in an emergency, particularly after injury or when rapid decisions are needed. CT uses ionising radiation, so its benefits and risks are considered.

Blood tests, eye examinations, genetic testing, or tests for infection may be needed in selected cases. A lumbar puncture, which samples fluid from around the spinal cord, is not automatically performed. Clinicians first consider whether increased skull pressure could make the procedure unsafe.

- The sutures, fontanelles, and overall head shape
- Whether the fontanelle is soft, tense, or bulging
- Eye movements, muscle tone, alertness, and reflexes
- Growth and developmental progress
- Signs of infection, injury, or an underlying medical condition

Treatment and management

Treatment is aimed at the underlying cause. The widened suture itself usually is not stitched or pushed closed.

If the skull findings and head growth are normal for the child's age, no treatment may be needed. Follow-up measurements may be used to confirm that the head continues to grow along a steady pattern.

Hydrocephalus sometimes requires an operation to redirect or improve the flow of cerebrospinal fluid. One option is a shunt: a thin tube that drains fluid from the brain to another part of the body, commonly the abdomen. Another option for selected children is endoscopic third ventriculostomy, which creates a new pathway for fluid inside the brain. In some cases, this is combined with treatment of tissue that produces cerebrospinal fluid.

An infection may require antimicrobial treatment and hospital monitoring. Bleeding, a mass, or an injury is managed according to its location, severity, and effect on the brain. Nutritional or hormonal causes are treated by correcting the specific problem.

Care may involve paediatricians, neurosurgeons, neurologists, eye specialists, or genetic services. Children with developmental, movement, feeding, hearing, or vision difficulties may also benefit from rehabilitation and early-development support.

Do not press repeatedly on a suspected widened suture or try to change the child's head shape. This cannot relieve pressure and may delay proper assessment.

Complications

Complications come mainly from the underlying cause rather than from the gap itself. Persistent increased pressure can affect brain tissue, eyesight, movement, learning, or development. Serious infection or bleeding may also cause lasting effects.

If hydrocephalus is treated with a shunt, the shunt can become blocked, infected, disconnected, or drain too much or too little fluid. These problems can occur soon after surgery or years later. Families are taught which warning signs require urgent assessment.

Some children continue to have a larger head even after pressure has been controlled. Head size alone does not show whether treatment has worked; symptoms, development, examination findings, and imaging may also be considered.

Early recognition and treatment can reduce the risk of harm, but the outcome cannot be predicted from suture width alone.

Prevention

Separated sutures cannot always be prevented. Many causes begin before birth, arise from inherited or developmental differences, or occur without a preventable trigger.

Routine childhood appointments help identify unusual head growth before symptoms become obvious. Keeping recommended vaccinations up to date reduces the risk of some infections that can cause meningitis, although it cannot prevent every infection.

Using an age-appropriate child car seat, reducing fall hazards, and providing suitable protective equipment for activities can lower the risk of head injury. These measures do not prevent hydrocephalus or other developmental causes.

If a child already has hydrocephalus or another condition affecting skull pressure, attending planned follow-up helps identify changes early. This is monitoring rather than prevention of the original condition.

Living with it and what to expect

What happens over months and years is shaped by the cause, how quickly it is found, and whether the brain has been affected. The appearance of the sutures alone does not predict development or quality of life.

When widening is a normal finding or pressure is not increased, the gaps generally become

less noticeable as the skull grows and the sutures gradually mature. No special limits on everyday activity are usually needed unless another condition is present.

After treatment for increased pressure, sutures may narrow over time. The head may remain larger than average or keep a different shape. Treatment is judged by the child's health and brain development, not by appearance alone.

Follow-up may include head measurements, developmental checks, eye examinations, and occasional imaging. Children with a shunt usually need long-term specialist follow-up because shunt problems can develop later. A shunt does not normally prevent a child from learning, playing, or attending school, although individual needs differ.

Some children have no lasting difficulties. Others need ongoing support with movement, vision, seizures, learning, communication, or feeding because of the condition that caused the increased pressure. Support can be adjusted as the child's needs become clearer.

When to get medical help

Arrange a prompt appointment if you notice a new or increasing gap between the skull bones, an unusual head shape, or head growth that seems rapid. This is important even if the child otherwise appears well.

Seek urgent same-day medical assessment for:

Call emergency services or go to an emergency department for a seizure, difficulty waking, loss of consciousness, breathing difficulty, sudden weakness, or rapidly worsening symptoms. Fever with a bulging fontanelle, marked drowsiness, a stiff neck, or a new rash also requires emergency assessment because it may indicate a serious infection.

For a child with a known, stable skull finding and no new symptoms, keep the planned routine follow-up appointments. New symptoms should not wait for the next scheduled visit.

- A soft spot that remains tense or bulging while the child is calm
- Repeated vomiting, poor feeding, or increasing irritability
- Unusual sleepiness, reduced responsiveness, or loss of skills
- Eyes that repeatedly appear fixed downward
- New concerns after a head injury
- A child with a shunt who develops possible pressure symptoms

Common questions

Are separated sutures the same as a bulging soft spot?

No. Sutures are seams between two skull bones. A fontanelle is a soft area where several bones meet. They can widen or bulge together when pressure rises, but either finding can occur without the other.

Can I normally feel the sutures on my baby's head?

Often, yes. Sutures may feel like narrow lines, shallow grooves, or small ridges. What is expected changes with age. A clearly wide or widening gap, especially with rapid head growth, should be assessed.

Does a separated suture always mean hydrocephalus?

No. Hydrocephalus is an important possible cause, but skull shape after birth, normal growth differences, injury, infection, bleeding, and other conditions can also affect the sutures. Examination and, when needed, imaging help identify the cause.

Will the gap close by itself?

It may become less noticeable as the skull grows, particularly if it is a normal finding or the underlying problem is treated. A widening gap caused by increased pressure should not simply be watched without medical assessment.

Can separated sutures affect brain development?

The gap itself does not usually damage the brain. The cause may affect development if it increases pressure, injures brain tissue, or results from an underlying brain condition. Developmental follow-up helps identify support needs early.

Is a large head always a warning sign?

No. Some healthy children have larger heads because this runs in their family. The growth pattern matters more than one measurement. Rapid growth, new suture widening, a bulging fontanelle, or neurological symptoms need assessment.

Sources

- MedlinePlus Medical Encyclopedia. "Sutures - separated." U.S. National Library of Medicine.
- National Institute for Health and Care Excellence. Suspected neurological conditions: recognition and referral . NICE guideline NG127.
- Merck Manual Consumer Version. "Hydrocephalus."

- Kahle KT, Kulkarni AV, Limbrick DD Jr, Warf BC. "Hydrocephalus in children." The Lancet . 2016;387(10020):788-799.
- Tully HM, Dobyns WB. "Infantile hydrocephalus: a review of epidemiology, classification and causes." European Journal of Medical Genetics . 2014;57(8):359-368.