CONDITION

Legg-calve-perthes disease

A childhood hip condition in which temporary loss of blood flow weakens and reshapes the top of the thigh bone.

WHAT IT IS
Childhood blood-flow loss affecting the femoral head

BODY SYSTEM
Bones, joints and muscles

MAIN SYMPTOMS
Limp, hip or knee pain, stiffness, reduced movement

WHAT CAUSES IT
Temporary blood-flow loss; underlying reason unknown

HOW IT IS DIAGNOSED
Hip examination and X-rays, sometimes MRI

MAIN TREATMENT
Movement therapy, activity changes, containment, sometimes surgery

CAN IT BE CURED?
Sometimes - hip heals without major deformity

IS IT AN EMERGENCY?
Sometimes - fever, severe pain, or inability to walk

LONG-TERM OUTLOOK
Often active lives; arthritis risk rises with hip deformity

Overview

Legg-Calve-Perthes is a childhood hip condition. It happens when blood flow to the rounded top of the thigh bone is temporarily interrupted. This rounded area, called the femoral head, fits into the hip socket.

Without enough blood, part of the femoral head weakens and may flatten or break into small areas. Blood flow later returns, and the body gradually replaces the damaged bone. During this healing process, the femoral head can regain a rounded shape or remain enlarged, flattened, or uneven.

The condition usually affects one hip, although both hips can be involved. It develops most often in younger school-age children and is more common in boys. It is not cancer, and it is not caused by an infection.

The final shape of the hip matters because a round femoral head moves more smoothly inside the socket. A hip that heals with substantial deformity may become stiff or painful and can develop osteoarthritis earlier in adult life. Osteoarthritis is the gradual wearing down of joint cartilage.

Early assessment and continued follow-up help protect movement while the bone heals. They also allow the care team to watch how the hip is reshaping.

Symptoms

Symptoms often begin gradually. A limp may be noticed before a child complains of pain.

Common symptoms include:

Knee pain can be misleading because the problem is in the hip. This is called referred pain: pain felt in a different place from its source.

Symptoms may come and go. Some children have mild discomfort, while others have enough pain and stiffness to limit walking or play. Fever, a hot or red joint, or a child who appears seriously unwell is not typical of this condition and needs prompt medical assessment.

- Limping, especially after activity
- Pain in the groin, hip, thigh, or knee
- Stiffness or reduced hip movement
- Pain that improves with rest and returns with activity
- Thinning or weakness of the thigh muscles
- A slightly shorter leg if the hip becomes deformed

Causes and risk factors

The immediate cause is a temporary interruption of blood flow to the femoral head. Why that interruption happens is not known.

Legg-Calve-Perthes is not caused by ordinary running, jumping, falls, diet, or anything a parent has done. A minor injury may draw attention to symptoms that were already developing, but it does not usually explain the underlying condition.

Factors linked with a higher chance of developing it include:

Researchers have studied blood-clotting differences, blood-vessel development, genetics, and environmental influences. None provides a single explanation for most children. The condition

is not usually considered directly inherited, although genetics may contribute in a small number of families.

- Being in early or middle childhood
- Being male
- Having delayed bone development or being small for age
- Exposure to tobacco smoke
- Rarely, having another affected family member

Diagnosis

A clinician will ask when the limp or pain began, whether symptoms change with activity, and whether there has been an injury or illness. They will watch the child walk and check movement in both hips.

Legg-Calve-Perthes commonly reduces the ability to turn the thigh inward or move it out to the side. The clinician may also examine the knee because hip problems can cause knee pain.

X-rays are the main tests used to confirm the condition and follow its progress. Images are usually taken of both hips so their shape and development can be compared. Early X-rays can sometimes appear normal because bone changes take time to become visible.

An MRI scan may be used when symptoms and examination findings suggest the condition but X-rays do not yet show clear changes. MRI uses a magnetic field rather than X-rays and can show early changes in the bone and blood supply.

Blood tests do not confirm Legg-Calve-Perthes. They may be ordered when another cause is possible, such as joint infection or inflammatory arthritis. Other childhood hip conditions, including temporary hip inflammation and a slipped growth plate, can cause similar symptoms.

Treatment and management

Treatment aims to reduce pain, preserve hip movement, and keep the femoral head sitting as well as possible inside the socket while it heals. Keeping the head within the socket is called containment. The socket can act like a mould as new bone develops.

The treatment plan is based on the child's age, hip movement, amount of bone involvement, degree of collapse, and stage of healing. It may change as new X-rays show how the hip is reshaping.

Non-surgical management may include:

Rest alone does not reshape the hip, but activity changes can help control pain and avoid repeated stress during vulnerable stages. Complete inactivity for long periods can contribute to stiffness and muscle weakness, so movement advice should be tailored to the hip's condition.

Surgery may be considered if the femoral head is moving out of the socket, hip movement is limited, or there is a higher risk of significant deformity. It is more commonly considered in older children or when more of the femoral head is involved.

Operations usually reposition the thigh bone or hip socket to improve containment. Cutting and realigning a bone is called an osteotomy. Surgery does not immediately restore blood flow or remove the entire healing process; it aims to give the femoral head a better position while healing occurs.

Regular appointments and repeat X-rays are important whether treatment is surgical or non-surgical. Pain alone does not always show how much the bone has changed.

- Temporarily reducing running, jumping, and other high-impact activities
- Physiotherapy or home exercises to maintain hip movement
- Swimming or cycling when approved as lower-impact exercise
- Crutches during painful periods to reduce weight through the hip
- Pain-relieving or anti-inflammatory medicine
- Short-term casting or bracing in selected cases

Complications

The main concern is that the femoral head may heal in a flattened, enlarged, or uneven shape. This can prevent it from moving smoothly inside the socket.

Possible long-term effects include:

Not every child develops these problems. The outlook is generally better when the condition begins at a younger age, hip movement remains good, and the femoral head stays well contained. More extensive collapse or deformity increases the chance of later symptoms.

Some adults who had the condition as children eventually need further hip surgery, including joint-preserving surgery or hip replacement. This is not inevitable, and it may not be needed for many years, if at all.

- Reduced hip movement
- A difference in leg length
- Ongoing limping
- Hip impingement, where bones pinch during movement
- Damage to cartilage around the socket
- Pain during sport or prolonged activity
- Osteoarthritis in adulthood

Prevention

Legg-Calve-Perthes cannot currently be prevented because the underlying cause of the blood-flow interruption is unknown.

Ordinary childhood activity does not cause the condition. Preventing all falls or stopping healthy exercise will not prevent it. Avoiding tobacco smoke is good for a child's overall health, but it cannot guarantee that this particular condition will not develop.

Once the condition has started, following activity, exercise, and appointment recommendations may help protect movement and identify changes early. This is management rather than prevention.

Living with it and what to expect

The condition changes slowly and usually unfolds over several years. At first, blood flow is reduced and the affected bone weakens. The body then removes damaged bone, a stage when the femoral head may be especially vulnerable to flattening. New bone gradually forms, strengthens, and reaches its healed shape.

Symptoms do not always match the stage seen on X-rays. Pain may settle while the bone is still healing, so follow-up is usually needed even when a child feels well.

Most children continue attending school. Temporary adjustments may include extra time between classes, avoiding contact sports, using lifts instead of stairs, or taking part in modified physical education. Crutches, braces, or casts may affect transport and daily routines for a period.

The care team will advise when higher-impact sport can restart. This decision is usually based on pain, movement, strength, and the appearance of the hip-not simply how much time has

passed.

Some children finish healing with a nearly round hip and few lasting limits. Others have reduced movement, a leg-length difference, or activity-related discomfort. Follow-up may continue until growth is complete when there is concern about the hip's shape.

An adult who had Legg-Calve-Perthes in childhood may remain active for decades. New groin pain, increasing stiffness, or loss of function later in life can be assessed for impingement, cartilage damage, or osteoarthritis.

When to get medical help

Arrange a routine medical appointment if your child has a limp that persists or keeps returning, unexplained hip or knee pain, reduced hip movement, or difficulty keeping up with usual activities. A limp without pain still deserves assessment.

Contact the child's orthopaedic team sooner than planned if known symptoms are worsening, prescribed exercises can no longer be completed, a cast or brace is causing skin problems, or pain is no longer controlled by the agreed plan.

Seek urgent same-day care if a child:

These features are not typical of uncomplicated Legg-Calve-Perthes and may indicate an infection, fracture, or another urgent hip problem.

Call emergency services after a major injury if the leg appears deformed, or if the foot becomes cold, pale, numb, or weak.

- Suddenly cannot stand or put weight on the leg
- Has severe or rapidly worsening hip pain
- Has hip pain with fever or appears seriously unwell
- Develops a hot, swollen, or red joint

Common questions

Does Legg-Calve-Perthes go away?

The loss of blood flow is temporary, and the body eventually replaces the damaged bone. However, the hip does not always return to its original shape. Some children heal with little lasting effect, while others keep a flattened or enlarged femoral head.

Can my child still walk and go to school?

Most children can continue walking and attending school, although painful periods may require crutches or reduced activity. Running, jumping, contact sport, and long walks may be limited during certain stages. School adjustments can help a child participate safely.

Will my child need surgery?

Not every child needs surgery. Observation, activity changes, physiotherapy, and other non-surgical measures may be enough, especially when the child is younger and the hip remains well positioned. Surgery is considered when improving containment may help the hip heal in a better shape.

Can it affect both hips?

Yes, although one hip is more commonly affected. The hips may not develop symptoms at the same time. Imaging both sides helps identify changes and compare hip development.

Is it inherited?

Most cases are not directly inherited, and it is uncommon for several close relatives to be affected. Rare genetic or skeletal conditions can produce similar hip changes, so an unusual family pattern may need further assessment.

Will my child need a hip replacement later?

Many people do not. The chance is higher if the femoral head heals with substantial deformity and causes early osteoarthritis. Hip-preserving treatments may sometimes be considered before replacement becomes necessary.

Sources

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