Legg-Calvé-Perthes Disease

Boston Children's Hospital
Child and Young Adult
Hip Preservation Program

bostonchildrens.org/hip | 617-355-6021

What is Legg-Calvé-Perthes disease?

Legg-Calvé-Perthes disease — also known as Perthes disease — is a condition in which the blood supply to the top of the thigh bone (femur) is temporarily disrupted, causing the ball-shaped head of the thigh bone (femoral head) to collapse, which results in pain and inflammation in the hip joint.

Eventually, the blood supply returns and the bone heals. But the shape of the femoral head is no longer normal, so it cannot move smoothly in the hip socket.

Signs and symptoms

- Walking with a limp (can be a "painless" limp)
- Limited range of motion and stiffness in the hip, groin, thigh, or knee
- Pain aggravated by activity in the hip, groin, thigh, or knee

How is it diagnosed?

A diagnosis of Perthes disease should be confirmed by a pediatric orthopedic specialist. This diagnosis is based on a child's medical history, a physical examination that assesses range of motion, and imaging — which includes x-ray and MRI.

Through x-rays, the specialist will gather information about the bone structure of the femoral head. MRI is performed in order to provide more information about the bone and the extent of the disease. A blood test may also be done to rule out other conditions.

What is it caused by?

There is no known cause of Legg-Calvé-Perthes disease. However, what is known is that disruption of blood flow to the femoral head is what causes the hip injury. At this point, it remains unknown why this blood flow becomes disrupted.

How is it treated?

Treatment is based on your child's age, range of motion, and the complexity and severity of the condition. Although there are non-surgical treatment options, in some cases surgical intervention may be necessary.

For non-surgical treatment, activity restrictions along with anti-inflammatory medication may be prescribed to help decrease inflammation and pain. Casting and/or bracing can be used to preserve range of motion of the hip and help the femoral head maintain its round shape. Physical therapy may also be needed to keep hip muscles strong and promote hip movement.

For surgical treatment, a pediatric orthopedic hip specialist can perform a procedure known as a femoral osteotomy, which reorients the way the femoral head fits inside the hip socket. In this procedure, the femur is cut and rotated for better alignment of the femoral head in the hip socket. The bone is then secured with a metal plate and screws.

Further down the road, femoroacetabular impingement (FAI) may occur as a result of a change in the shape of the ball and hip socket, which causes the ball and socket to rub against each other during movement. Ultimately, this can cause pain and damage to the joint, and may require surgical intervention.

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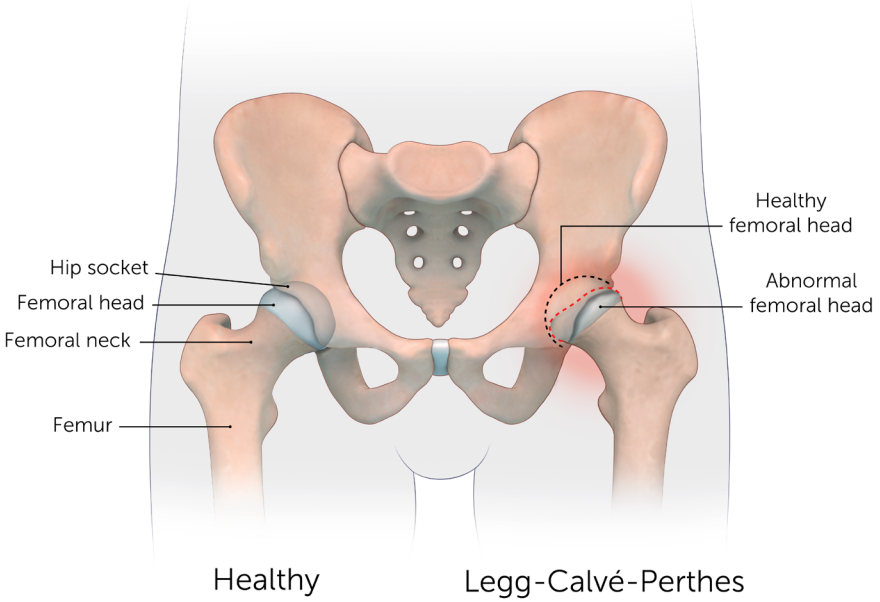
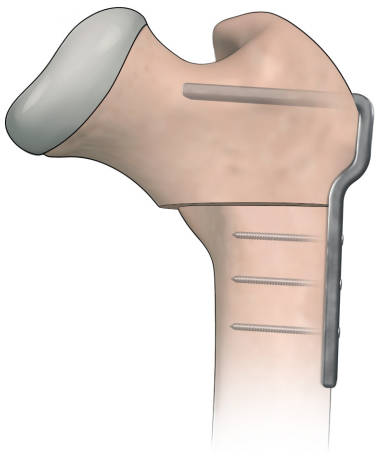


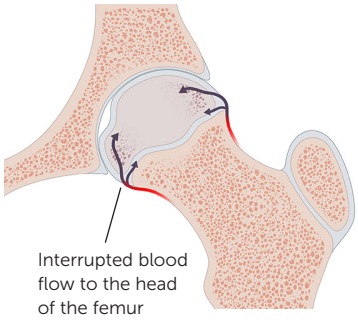
Femoral Osteotomy



Phases of Legg-Calvé-Perthes Disease

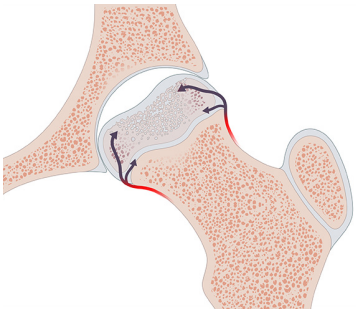
Phase 1: Necrosis

Blood supply to the femoral head is disrupted, causing the hip joint to become inflamed, stiff and painful. Areas of the bone turn into dead tissue (avascular necrosis) and the femoral head becomes less round in appearance on x-rays. This phase can last from several months to one year.



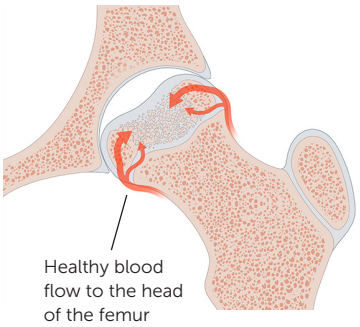
Phase 2: Fragmentation

The body "cleans up" the dead bone cells and replaces them with new, healthy bone cells. The femoral head begins to remodel into a round shape again, but the joint is still inflamed and painful. This phase can last up to two years.



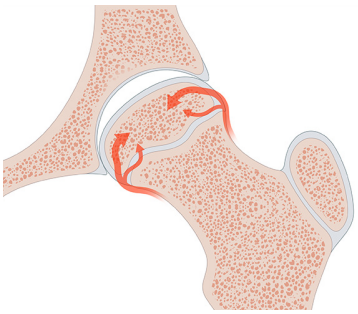
Phase 3: Reossification

The femoral head continues to remodel itself back into a round shape with new bone once blood flow is restored. This phase can last from one to three years.



Phase 4: Remodeling

Normal bone cells replace the new bone cells and the femoral head becomes more of a mushroom shape than a ball. This phase can last a few years as the bone heals.



Why choose Boston Children's Hospital?

The Child and Young Adult Hip Preservation Program at Boston Children's Hospital is at the forefront of research and innovation, which means our care providers offer the most advanced treatments available, personalized for your child and their hip. In fact, Boston Children's Hospital orthopedic surgeon Arthur Thornton Legg, MD, was the one of the first to recognize and describe Legg-Calvé-Perthes disease in 1910. Since then, our specialists have continued to lead the way in pioneering advanced techniques for treating this disease. We are also working to develop a protocol for autologous bone marrow injection for older patients with late-developing Perthes disease, as our treatment spans all ages and complexities.

Our expansive team of pediatric orthopedic hip specialists provide world-class care throughout each patient's journey, collaborating over both common and complex hip disorders to provide you with comprehensive care. Our goal is the same as yours: to help your child get better so they can return to being healthy and pain-free.

Notes

Produced by the Child and Young Adult Hip Preservation Program in the Orthopedic Center at Boston Children's Hospital.

For more information or to request an appointment visit **bostonchildrens.org/hip**.

Reviewed by Eduardo Novais, MD, Orthopedic Surgeon, Boston Children's Hospital

Boston Children's Hospital
Until every child is well™
Child and Young Adult Hip Preservation Program