

Legg-Calve-Perthes Disease

OVERVIEW

Legg-Calve-Perthes disease is a term used to describe avascular necrosis of the hip in children under the age of 10. The condition occurs when a disruption to the hip's blood supply causes the bone of the femoral head to die and in some cases collapse. Early stage and mild cases of Perthes disease are often treated with a combination of non-surgical methods while surgery is usually reserved for more severe cases and older children.

DESCRIPTION

In Legg-Calve-Perthes, the hip's blood supply is interrupted which causes the bone of the femoral head to become weak as the condition worsens leading to its collapse. The collapse of the femoral head results in a flattened shape that fits and/or moves incorrectly in the socket causing pain in the hip, a decrease in range of motion, and possibly osteoarthritis in severe cases.

SYMPTOMS

Symptoms of Legg-Calve-Perthes typically include pain in the hip, groin, thigh, and/or knee on the affected side that becomes worse over time. As the condition progresses, the child may develop a limp and the hip's range of motion may decrease. A proper diagnosis is required as these symptoms may also be indicators of an injury or other condition/disease.

CAUSE

The cause of Legg-Calve-Perthes is unknown but exposure to second hand cigarette smoke, blood clotting disorders, some steroidal medications, and hip/leg trauma are believed to put children at increased risk.

DIAGNOSIS METHODS

The first step of diagnosis is a physical examination. If signs of Legg-Calve-Perthes are present, x-rays, MRI scans, ultrasounds, and in rare cases bone scans would be ordered to exclude other possible causes, confirm the presence of Perthes disease, and assess the condition of the hip joint.

TREATMENT

Children with Legg-Calve-Perthes who are diagnosed and treated in the early stages can often make a full recovery. All possible cases of Perthes should be evaluated by a medical professional who is very familiar with Perthes disease. Most early stage and mild cases can resolve themselves with rest, limited activity, physical therapy exercises, and medication for pain and inflammation. There are also a variety of non-surgical and surgical options available for the treatment of more advanced and severe cases of Legg-Calve-Perthes. Each case should be evaluated and treated on an individual basis with the age of the patient, stage of the disease, and severity of the case taken into account.

Non-surgical Treatment

Often, placing children with Legg-Calve-Perthes disease in a specialized brace or cast combined with physical therapy is all that is needed to resolve the condition. Using crutches or a walker to limit the amount of weight bearing on the affected hip/lower extremity can also help with recovery.

Surgical Treatment

Advanced and severe cases of Legg-Calve-Perthes typically require a multi-faceted course of treatment that combines physical therapy and medication with surgery.

- **Adductor Percutaneous Tendon Lengthening**

A tendon is a type of tissue which connects muscles to bones, keeps limbs in position, and plays an important role in the movement of body parts. Tendon contractures are caused by shortened or abnormally tight soft tissue which prevents limbs from moving as they should. Contractures can be relaxed by making an incision into the tendon to release tension. In cases of Perthes disease, a minimally invasive (percutaneous) procedure is performed to release the adductor muscle. The procedure is often combined with bracing, casting, and/or the surgical procedures listed below.

- **Core Decompression**

Core decompression is a surgical procedure that stimulates healing of the femoral head by removing the hardened dead bone to accelerate new bone formation. Dead (necrotic) or fibrous tissue found during the procedure is removed and at times bone morphogenic protein may be used to stimulate healing. The procedure is typically only performed in the early stages of the disease. In some cases, core decompression may be the only treatment required but in my practice it is often used as part of a multi-faceted treatment regimen.

- **Femoral or Pelvic Osteotomy**

An osteotomy is a surgical procedure where a deformed bone is broken and reset. Medical devices, (usually a plate and screws) are used to hold the bone in the correct position and proper alignment allowing the femoral head to reshape in the hip socket (acetabulum). In severe cases, the socket is deepened alone or in conjunction with a femoral osteotomy to ensure the soft femoral head is deep in the socket as it reshapes. This procedure is often used for children ages 6-7 in the early stages of a severe case of Legg-Calve-Perthes.

- **Distraction of the Hip (Arthrodiastasis)**

Arthrodiastasis involves separating or distracting the hip's ball from the socket to reduce pressure on the soft femoral head while allowing it to regain its normal shape as it heals. This is often combined with femoral head core decompression and Zoledronate, a drug that slows the collapse of the bone. I have designed an external fixator for this purpose that is placed on the patient to distract the joint while allowing for motion and weight bearing.

CONCLUSION

Early diagnosis and vigilant management of Legg-Calve-Perthes disease increases the possibility of a full recovery. The longer the hip remains untreated or treated inadequately, the greater the likelihood of developing arthritis and the subsequent need for a hip replacement in adulthood. It's especially important that each patient is evaluated and treated individually as no one treatment is right for all.