

Avascular Necrosis of the Hip

(Legg-Calve-Perthes Disease)

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OVERVIEW

Avascular necrosis (AVN) or Aseptic Necrosis of the hip is caused by a disruption to the hip's blood supply which results in the deterioration and often collapse of the ball of the thigh bone (femoral head).

Early identification and treatment of the condition increases the likelihood that a patient's hip will recover. Surgery may be required in severe cases to repair or revascularize (restore circulation) the hip or to replace the hip in neglected/end stage cases.

DESCRIPTION

Avascular necrosis of the hip is a fairly common medical condition that causes pain and discomfort in the hips of adults and children. In children under the age of ten, avascular necrosis of the hip is referred to as “Legg-Calve-Perthes disease”.

SYMPTOMS

The most common symptoms are limping, discomfort, and/or pain in the hip, knee or pelvic area. However, proper medical diagnosis is required as these symptoms may also be caused by less severe conditions / diseases.

CAUSES

The cause of avascular necrosis of the hip is idiopathic, meaning that we do not know the reason. However, we do know that the loss of blood circulation to the femoral head (ball of the hip joint) causes cartilage deterioration, femoral head fracture, and collapse of the hip in severe cases.

People most at risk for avascular necrosis include children who have been exposed to second hand cigarette smoke, those who drink excessively, and individuals who have blood clotting disorders (ex: factor V Leiden, protein C and protein S deficiency, etc). Medications such as Prednisone may increase the risk of avascular necrosis.

Trauma such as a femoral neck fracture has also been associated with avascular necrosis.

DIAGNOSIS METHODS

The first step of diagnosis is a physical examination of the pelvis and hip. X-rays, MRI scans, ultrasounds, and bone scans may also be required to eliminate other possible causes of pain in the hip and to assess the condition of the pelvic bones and joints.

TREATMENT

Some physicians treat avascular necrosis nihilistically, meaning they believe that regardless of the type of avascular necrosis or the age of the patient, treatment will not help.

I cannot emphasize enough how much I disagree with this belief. The evolution and advancement in the treatment of avascular necrosis in all age groups has been astounding. There are now more options and interventions available to save and preserve the hip than ever before. Patients can often make a full recovery with non-surgical and/or surgical treatments.

Child, adolescent, or adult, the earlier I can intervene and treat avascular necrosis, the better the possibility of a great outcome.

Management of the disease by adjusting treatment based on x-rays and the hip's range of motion is essential.

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 achieve a good outcome.

Older patients with mild forms of avascular necrosis may also simply benefit from crutches, physical therapy, and/or medication such as bisphosphonate.

Surgical Treatment

While there are many options, the best course of treatment should be determined on an individual basis and depend on the type of avascular necrosis and stage of the disease.

In most cases, a multi-faceted approach to treatment is required to preserve and save the hip.

Core Decompression

Core decompression is a surgical procedure that prevents or raises a collapsed hip and stimulates healing of the femoral head by transplanting bone and / or vein (vascular) grafts into the hip. Dead (necrotic) or fibrous tissue found during surgery is removed and bone morphogenic protein may be used to stimulate healing.

This 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 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 and frames called “fixators” are used to hold/guide the bone into the correct position and proper alignment. The procedure is most often used for children but can also be used for adolescents and adults to reposition the hip.

Distraction of the Hip (Arthrodiastasis)

Arthrodiastasis involves spacing out the parts of the hip joint while keeping ligaments and tendons intact. The procedure allows the components of the hip to be properly spaced and aligned. Few surgeons perform this surgery but when prudently prescribed for the right patient and used in conjunction with other treatments it can preserve a hip that might otherwise be unsalvageable.

Tendon Lengthening

A tendon is a tough 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. If contractures are found they can be relaxed by making an incision into the tight tendon.

Femoral Head Reduction Surgery

A femoral head that is misshapen may require surgery if the deformity causes pain or impacts a patient's ability to walk. The surgical procedure involves using screws and bone grafts to reshape the femoral head into a more "normal" round shape.

Hip Replacement

Hip preservation should be the main goal of treatment, especially in patients under 40 years of age. Hip replacement should only be a last resort reserved for after all other treatments have been thoroughly considered and found to be inadequate. Hip replacement involves replacing the hip's damaged bone and cartilage with prosthetics.

Note that I do not perform hip replacement surgeries.

CONCLUSION

Early diagnosis and vigilant management of avascular necrosis of the hip increases the possibility of a full or at least partial recovery.

There are many treatment options and a surgeon should have experience with all of them to ensure that each patient and hip receives thorough treatment based on their individual condition.

The longer the hip remains untreated or treated inadequately, the greater the likelihood of developing arthritis and the subsequent need for a hip replacement.

CASE STUDIES

Bernard: Legg-Calve Perthes

<http://www.davidsfeldmanmd.com/patient-education/case-studies/bernard-legg-calve-perthes>

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