Brace Yourself: Legg Calvè Perthes and the Benefit of Bracing

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Abstract
This case illustrates an 8 year old Hispanic boy living in rural Mexico, brought in by his mother to a free clinic, presenting with right-sided hip pain and antalgic gait. At presentation, his right leg was in a meager brace previously obtained from a local physician that prevented adduction of the right leg. He had previously obtained x-ray imaging of his hip 8 months earlier which revealed osteonecrosis of the right femoral head and a diagnosis of Legg Calvé Perthes disease was made.

Legg Calvè Perthes disease is a rare osteonecrotic disease of the femoral head typically affecting young boys ages 2-12. The incidence ranges from 0.4/100,000 to 0.9/100,000 children <15 years of age depending on race and socioeconomic class (1). It is idiopathic by nature and the common pathologies associated with this disease is a lack of blood supply to the femoral head due to a constriction or occlusion of the artery of ligamentum teres femoris. Ischemia in the area causes osteonecrosis of the femoral head leading to arthralgia of the hip and abnormal gait.

Treatment of Legg Calvè Perthes disease is still a somewhat controversial subject due mainly to the lack of scientific data and statistics regarding the long term effects of treatment. Some treatment options follow a more conservative approach such as bed rest or bracing, whereas some follow a more invasive approach such as botulinum injections or surgical osteotomies (2).

With the limited resources available to our patient in rural Mexico, a brace of the upper thigh was placed on the patient with instruction to be worn daily. A follow-up x-ray taken 6 months after the first one revealed improvement in bone density and structural organization. Our purpose in presenting this case is to show the benefits of leg bracing as an effective, inexpensive, non-invasive form of treatment, especially in third world economies with limited resources.

Introduction
Legg Calvè Perthes disease is a rare osteonecrotic disease of the femoral head typically affecting young boys ages 2-12. The incidence ranges from 0.4/100,000 to 0.9/100,000 children <15 years of age. The incidence varies with race and is frequently higher in lower socioeconomic classes (1). Patients commonly present with 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. Legg Calvè Perthes disease is idiopathic by nature and the common pathologies associated with the disease is a lack of blood supply to the femoral head due to a constriction or occlusion of the artery of ligamentum teres femoris. Normally, the artery of ligamentum teres femoris promotes development of the femoral head, but if disrupted, ischemia in the area causes osteonecrosis leading to arthritis of the hip and abnormal gait.

As a result of degeneration of the femoral head, the femur has a tendency to dislocate more easily leading to displacement of the ball and socket joint between the femoral head and acetabulum. The dislocation leads to improper development with potential for permanent deformity. General consensus agrees that both an increased age of onset and longer duration without treatment increases the risk that the patient will develop arthritis in life and ultimately require total hip replacement.

Some various forms of treatment are: conservative stretching and increasing range of motion, abduction casts, and surgical intervention. However, there are no specific guidelines about which method is preferred. Some doctors feel that abduction braces provide no benefit to the individual while some feel they are an important step of physical therapy (2,4). Although surgical measures tend to provide the greatest long term relief, our patient’s case is important because it shows that conservative treatment can be beneficial for those who have limited access to more invasive measures.

Case Description
An 8 year old Hispanic boy living in rural Mexico was brought by his mother to the free clinic. He presented with right-sided hip pain and an antalgic gait. At presentation, his right leg was in a meager brace obtained from a local physician that prevented adduction of the right leg. He had previously obtained x-ray imaging of his hip 8 months earlier which revealed osteonecrosis of the right femoral head and a diagnosis of Legg Calvé Perthes disease was made.

After being diagnosed with Legg Calvé Perthes disease in March 2015, a brace of the upper thigh was placed on the patient with instruction to be worn daily. By bracing the upper thigh into abduction the femoral head is positioned properly into the acetabulum allowing for proper development. A follow-up x-ray taken 6 months later in September 2015 revealed improvement in bone density and structural organization. Due to these encouraging results, we informed the boy and his mother that the simple brace appeared to be effective at treating his condition and encouraged them to continue the use of the brace.

Conclusion
It is important that each patient be evaluated and treated on a case by case basis because no one treatment is right for everyone. Variables such as age and severity of disease should play a role in determining method of treatment. The results of our patient’s treatment showed that leg bracing can be an effective, inexpensive, non-invasive form of treatment for some incidences of Legg Calvé Perthes disease, especially for those in third world economies with limited available resources.

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References