International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2024: 7.101

Perthes Disease, or Legg-Calvé-Perthes Disease: A Case Study

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Abstract: ***Perthes disease represents a childhood hip disorder in which the temporary loss of blood flow to the femoral head leads to avascular necrosis, gradual weakening of the bone, and a prolonged cycle of collapse and regrowth. In my view, the condition unfolds through distinct phases that shape the eventual outcome, beginning with necrosis and moving through fragmentation, reossification, and final healing. It is evident that children in the early school years, particularly boys, face the highest risk, and the slow progression often creates uncertainty for families as symptoms fluctuate before a diagnosis is made. This raises another point about how subtle signs, such as limping or referred pain to the thigh or knee, can be overlooked until functional limitations become more noticeable. Taking this further, clinical assessment relies heavily on imaging, since structural changes determine both the severity and the course of management. The case description of a young child with pain, restricted movement, and early radiographic changes reflects the way such presentations often unfold in real-world practice, where parents seek care only after symptoms persist. In my view, treatment often blends medication, controlled activity, casting, and targeted physical therapy to support joint preservation, although the risk of lasting deformity remains a meaningful concern. Nursing care focuses on pain relief, mobility support, education, and vigilant monitoring to guide families through a lengthy healing process. The overall narrative underscores how early recognition and consistent care can influence long term hip shape and function, even when the disease follows an unpredictable path.***

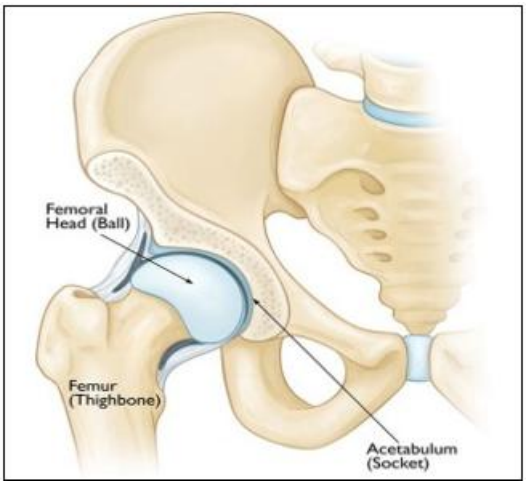
Keywords: Perthes disease, femoral head necrosis, childhood hip disorder, clinical features, management

1. Introduction

Perthes disease is a rare childhood condition that affects the hip. It occurs when the blood supply to the rounded head of the femur (thighbone) is temporarily disrupted. Without an adequate blood supply, the bone cells die, a process called avascular necrosis

Although the term "disease" is still used, Perthes is really a complex process of stages that can last several years. As the condition progresses, the weakened bone of the head of the femur (the ball of the ball-and-socket joint of the hip) gradually begins to collapse. Over time, the blood supply to the head of the femur returns and the bone begins to grow back.

- It typically occurs in children aged 4 to 10 years.
- It is five times more common in boys than in girls.
- In 10% to 15% of all cases, both hips are affected.



2. Definition

Legg-Calve-Perthes disease is a childhood condition that occurs when blood supply to the ball part (femoral head) of the hip joint is temporarily interrupted and the bone begins to die.

This weakened bone gradually breaks apart and can lose its round shape. The body eventually restores blood supply to the ball, and the ball heals. But if the ball is no longer round after it heals, it can cause pain and stiffness. The complete process of bone death, fracture and renewal can take several years.

Stages of Perthes disease

There are four stages in Perthes disease:

1) **Initial / necrosis:** In this stage of the disease, the blood supply to the femoral head is disrupted and bone cells die. The area becomes intensely inflamed and irritated, and your child may begin to show signs of the disease, such as a limp or different way of walking. This initial stage may last for several months.
2) **Fragmentation:** Over a period of 1 to 2 years, the body removes the dead bone beneath the articular cartilage and quickly replaces it with an initial, softer bone. It is during this phase that the bone is in a weaker state and the head of the femur is more likely to collapse into a flatter position. The femoral head in this stage looks like it is in pieces.
3) **Reossification**: In this stage, new, stronger bone develops and begins to take shape in the head of the femur. The reossification stage is often the longest stage of the disease and can last a few years.
4) **Healed:** In this stage, the bone regrowth is complete, and the femoral head has reached its final shape. How close the shape is to round will depend on several factors, including:

- The extent of damage that took place during the fragmentation phase
- The child's age at the onset of disease, which affects the potential for bone regrowth?

Cause

The cause of Perthes disease is not known. Some recent studies indicate that there may be a genetic link to the development of Perthes, but more research needs to be conducted**.**

Clinical Features

- Pain in the hip or groin, or in other parts of the leg, such as the thigh or knee (this is known as referred pain)
- Pain that worsens with activity and is relieved with rest
- Painful muscle spasms that may be caused by irritation around the hip

Depending on child's activity level, symptoms may come and go over a period of weeks or even months before a visit to the doctor is considered.

Diagnostic evaluation

- History collection
- Physical examination
- Special investigation like X-Ray, CET scan

3. Case study of Master. X

Master. X 5 years old male baby brought by his mother to government hospital whose reliability is poor with chief complaints of pain in the hip region for 1 days, limited movement, no history of edema or injury. After the detailed history collection, physical examination, blood analysis and urine analysis he was diagnosed as Perthes disease. The child was conscious and oriented. His vitals are temperature: 99 F, heart rate: 82 beats/ min, respiration: 24 breaths/ min, SpO2: 98%, blood pressure: 98/38mmhg

Investigation

X-Ray: dense structures like bone is seen.

3.1 Signs and symptoms

Book picture	Child picture
Severe pain	Present
Limited movements	Present
Fatigue	Present
Muscle spasm	Present

3.2 Management

- Anti-inflammatory medications. Ibuprofen
- Limiting activity like jumping, running etc
- Physical therapy exercises
- Casting and bracing
- Arthrogram
- Tenotomy

3.3 Complications

Permanent hip deformities like a flattened or mushroom-shaped femoral head (coxa plana), leading to a shorter, broader femoral neck, leg length differences, hip stiffness, and long-term issues like arthritis, Femoroacetabular Impingement (FAI), and labral tears

3.4 Nursing management

- Pain control
- Activity limitation, physical therapy
- Patient/family education, using NSAIDs, crutches/walkers, stretching, bracing/casting, and teaching weight-bearing avoidance (running, jumping) to protect the femoral head, promote healing, and maintain hip function, with ongoing monitoring to support proper bone remodelling

3.5 Nursing process for nephrotic syndrome

Assessment

- Assess for pain
- Assess for muscle spasm
- Assess activity level
- Assess vital signs
- Assess skin integrity

Nursing diagnosis

- Acute Pain related to hip inflammation.
- Impaired Physical Mobility related to pain and activity restrictions.
- Risk for Impaired Skin Integrity related to cast/brace use.
- Deficient Knowledge (child/family) about disease process and management.

Planning

a) **Pain & Inflammation Management:**

- Administer anti-inflammatory medications (like ibuprofen) as prescribed.
- Monitor pain levels and effectiveness of medication.
- Educate parents that spicy foods/certain supplements might affect inflammation.

b) Activity Restriction & Mobility Support:

- Teach parents and child about avoiding high-impact activities (running, jumping).
- Assist with crutches/walker training to limit weight on the affected hip.
- Provide education on using braces or casts to hold the hip in proper alignment.

c) Physical Therapy (PT) Support:

- Reinforce PT exercises (stretching, strengthening) to maintain flexibility and muscle strength.
- Explain the importance of PT for preventing stiffness as the hip heals.

d) Education & Family Support:

- Explain the disease process (femoral head blood supply disruption) and treatment goals (keeping the head round).
- Emphasize adherence to activity limits and cast/brace care.
- Monitor for complications like shortening of the affected leg.

Implementation

- Monitored pain level of the child
- Assessed the muscle strength of the child
- Provided rest for the child

Evaluation

Ensure that the child

- Is free from pain
- Maintain normal vital signs
- Maintain normal intake and output
- Verbalizes his apprehension and feelings

4. Conclusion

Children who have perthes disease can usually do the things that other children their age do. After a hospital stay, they should be able to continue going to school or nursery. They can play with other children and stay active.

References

[1] Legg-Calvé-Perthes Disease: A Comprehensive Clinical Guide by David S. Feldman and Dror Paley (Eds.) (2020)
[2] Nelson Textbook of Pediatrics (The Hip chapter) by Kliegman, et al. (2020)
[3] Surgery of the Hip (Legg-Calve-Perthes disease chapter) by Berry and Lieberman (Eds.) (2020)