Slipped Capital Femoral Epiphysis

A Case Study

PHYT 798

Spring 2023

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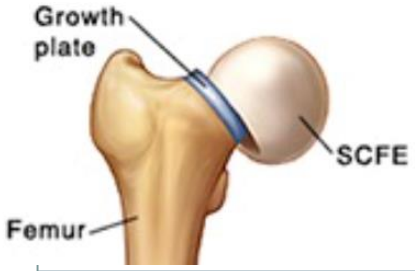
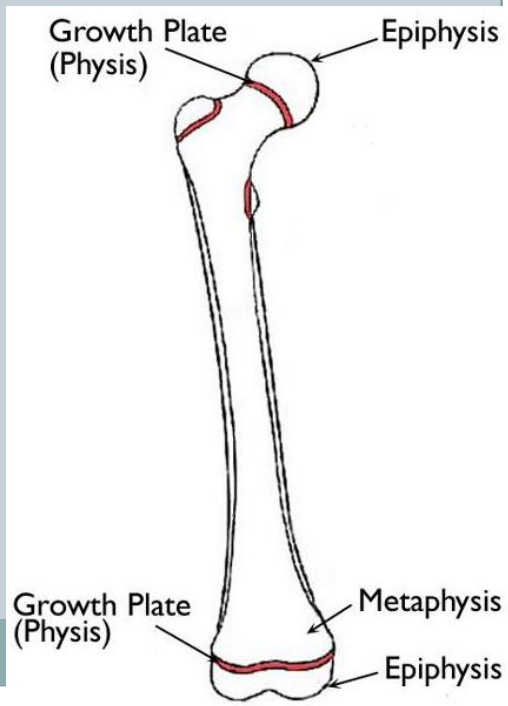


Slipped Capital Femoral Epiphysis (SCFE)[1,2]

- SCFE is an acquired disorder of the hip, typically idiopathic in onset, in adolescent and preadolescent children
  - Most common orthopedic hip condition in adolescents
- SCFE is characterized by a separation of the proximal femoral ephysis from the remainder of the femur
  - Separation occurs through a weakened growth plate (physis) along the hypertrophic zone
  - The femoral head remains in the acetabulum while the neck of the femur rotates externally and slips anteriorly due to the external shearing force on the femoral head being greater than the internal resistance provided by the growth plate's mechanical stability

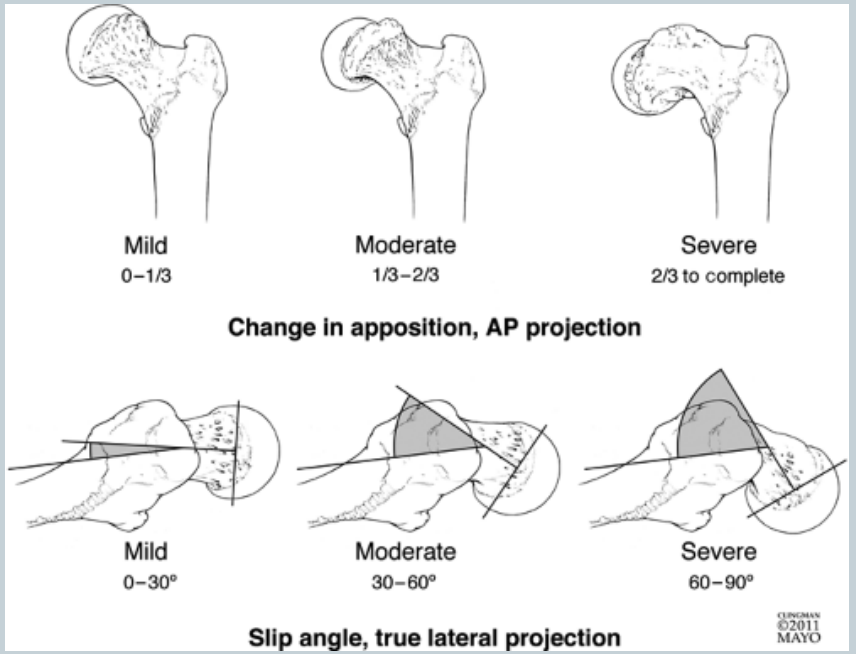


SCFE[1-4]

- Unknown cause → likely a combination of mechanical and constitutional factors:
  - Local Trauma
  - Mechanical Overload of Maturing Growth Plate
    - Obesity: 81% of adolescents with a SCFE have a BMI above the 95th percentile
    - Growth Spurt: increases stress across physis
  - Inflammatory Factors
  - Endocrine Disorders, Renal Osteodystrophy, Previous Radiation Therapy
  - Down Syndrome

SCFE Classifications[1,2]

- Symptom Duration
  - Acute: < 3 weeks
  - Chronic: > 3 weeks
  - Acute on Chronic: Recent exacerbation of symptoms previously present for more than 3 weeks
- Magnitude of Slippage
  - Mild: < 33% slippage of epiphysis
  - Moderate: 33-50% slippage of epiphysis
  - Severe: > 50% slippage of epiphysis
- Stability
  - Stable: Able to ambulate (with or without crutches)
  - Unstable: Unable to bear weight
    - Symptoms of an unstable SCFE are a medical emergency



SCFE[1-4]

- Epidemiology
  - 2-10 per 100,000 adolescents (U.S.)
    - 0.7/100,000 in New Mexico
    - 3.41/100,000 in Connecticut
    - More common in Summer months
  - Male-to-Female Ratio of 2.5:1
  - Higher incidence in Pacific Islander and African-American children
  - Higher incidence in relatives of patients
  - 25-40% of cases have bilateral occurrence
- Risk Factors
  - Early adolescence
    - F: age 10-13
    - M: age 12-16
  - Rapid growth spurt
  - Male
  - **Obesity**
  - Femoral retroversion
  - Endocrine abnormalities
  - Family history

Signs & Symptoms[1-3]

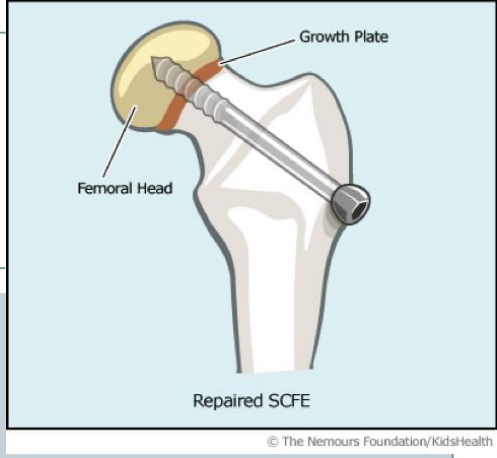
- Antalgic Gait
  - ER of affected limb
  - Limping, shuffling, or Trendelenburg
  - Inability to bear weight if unstable
- LE Pain
  - 52% Hip
  - 13.9% Groin
  - 25% Thigh
  - 26% Knee
- Decreased hip ROM
  - Limitations in flexion, abduction, and internal rotation
  - Pain with passive IR
- Drehmann Sign
  - Obligatory ER with passive hip flexion to 90°
- Hip muscle Weakness
  - Mild atrophy of thigh and gluteal muscles if chronic slip

SCFE tends to have a very subtle presentation. So, it should be considered in any child who presents to the clinic with complaint of atraumatic hip, thigh, or knee pain (especially if they present with a limp or the inability to bear weight).

Diagnosis[1,2]

- PT will suspect diagnosis based on symptoms and physical examination
  - SCFE requires **prompt referral** to pediatric orthopedic surgeon or ED for radiographic confirmation of diagnosis and definitive management
    - Early diagnosis is linked to better prognosis and limits complications
  - Ensure patient is **NWB immediately** with either wheelchair or crutches
- Radiographic studies are required to diagnose SCFE
  - X-ray: AP and Frog-Leg Lateral Pelvis Images
  - MRI

Treatment[1]



- Surgical Intervention to prevent further slippage, stabilize epiphysis, and avoid potential complications
  - Stable
    - In situ percutaneous pinning with single screw through the femoral neck into the epiphysis
  - Unstable
    - Corrective osteotomy
- Complications
  - Early Arthritis
  - Avascular Necrosis
  - Chondrolysis
- Post-op Care
  - Stable Pinning
    - **6-8 weeks: PWB/NWB**
    - 1-2 weeks: routine wound care
    - Post-op visits and radiographs
      - 6 weeks, 3 months, 6 months, 1 year
    - **3-6 months: restrict sports**
  - Unstable Osteotomy
    - Longer recovery time before introducing sports/activities
      - Follow surgical guidelines
  - Both
    - Running and contact sports can be resumed after physeal closure

Case[4]

Journal of Orthopaedic & Sports Physical Therapy: authored by 2 PT's and 1 MD

- Background:
  - 14 year old male presenting to Outpatient PT Clinic with L lateral thigh pain on January 27th, 1994
- Subjective:
  - CC:
    - Intermittent L lateral thigh pain
  - MOI:
    - Started 3 weeks earlier when playing basketball
      - Has played basketball 2x since and had to limp after both sessions
  - Hx of pain:
    - One day of similar pain a year ago
    - Rest: 0/10; Running: 2-3/10; Basketball: 5/10
  - Aggs:
    - Running, playing sports, climbing stairs, WB through LLE
  - Eases:
    - Rest

Case4

- Objective
  - Gait
    - Antalgic gait pattern w/ LLE in ER
  - ROM
    - Lumbar extension, side bending, and flexion: WNL; no pain
    - Hip passive SLR: no pain
    - Hip PROM: limited in capsular pattern
  - Special Tests
    - FABER: (+)
  - MMT
    - Hip Flexion: strong and painful
    - Hip abduction, adduction: no pain; slight weakness in abduction
- Assessment
  - Based on history, observation, and physical exam → the PT determined the left hip joint to be the source of the patient's lateral thigh pain
    - Based on this information, the PT determined that treatment of the condition was beyond physical therapy scope of practice
  - PT suspected the patient's condition was serious and required immediate medical attention
- Referral
  - Referred to Orthopaedic Surgeon for consultation
- Radiographs
  - Mild SCFE L hip
- Surgery
  - February 1st, 1994: in situ pinning of L capital femoral epiphysis

Case Reflections

- Strengths
  - PT was very prompt in suspecting a condition out of PT scope of practice
  - Good referral relationship
    - Eval 1/27, surgery 2/1
- Weaknesses
  - Were any other special tests performed?
  - Was any other subjective information taken? Screen for red flags?
  - I would have liked to have seen more clinical reasoning explained in the case study
    - The differential diagnosis list was included in the SCFE information section of the article as potential diagnoses for thigh pain – it did not specify if these were all considered for this specific case
    - (+) FABER → hip pathology causing pain → out of PT Scope of Practice

Case Reflections

- How is this important for PTs?
  - With direct access in PT, we have an increased responsibility to recognize when a patient's signs and symptoms indicate a condition which is beyond our scope of practice.
  - While SCFE is rare, it is the most common orthopedic hip condition in adolescents.
  - SCFE is a medical emergency which requires surgical intervention. Delaying (or missing) diagnosis worsens prognosis and increases likelihood of complications.
    - Early detection is key! Be able to recognize the signs and symptoms of SCFE.
    - Always consider SCFE in a child who presents to the clinic with complaint of atraumatic hip, thigh, or knee pain (especially if they present with a limp or the inability to bear weight).

Resources

1. Hart ES, Grottkau BE, Albright MB. Slipped capital femoral epiphysis: don't miss this pediatric hip disorder. *Nurse Pract*. 2007;32(3):14, 16-18, 21. doi:10.1097/01.NPR.0000263076.88826.fa
2. Guide | Physical Therapy Guide to Slipped Capital Femoral Epiphysis | Choose PT. Accessed January 30, 2023. https://www.choosept.com/guide/physical-therapy-guide-slipped-capital-femoral-epiphysis
3. Johns K, Mabrouk A, Tavarez MM. Slipped capital femoral epiphysis. In: *StatPearls*. StatPearls Publishing; 2022.
4. Pellecchia GL, Lugo-Larcheveque N, Deluca PA. Differential diagnosis in physical therapy evaluation of thigh pain in an adolescent boy. *J Orthop Sports Phys Ther*. 1996;23(1):51-55. doi:10.2519/jospt.1996.23.1.51