

# Pediatric Patients With Slipped Capital Femoral Epiphysis With Knee Pain

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## ABSTRACT

The nurse practitioner has a pivotal role in identifying/diagnosing slipped capital femoral epiphysis (SCFE) in adolescents. Specific risk factors contribute to the development of SCFE. It is important that the nurse practitioner complete a thorough orthopedic assessment when patients present with a limp, groin, thigh, knee, or hip pain. Patients need to be urgently sent to a pediatric emergency department for surgical intervention. Overlooked symptoms of SCFE can cause significant morbidity. It is imperative that practitioners learn to recognize patients at risk for this common orthopedic condition. Herein we address the epidemiology, symptoms, testing, and treatments for this condition.

**Keywords:** knee pain in adolescents, pediatrics, slipped capital femoral epiphysis

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## CASE STUDY A

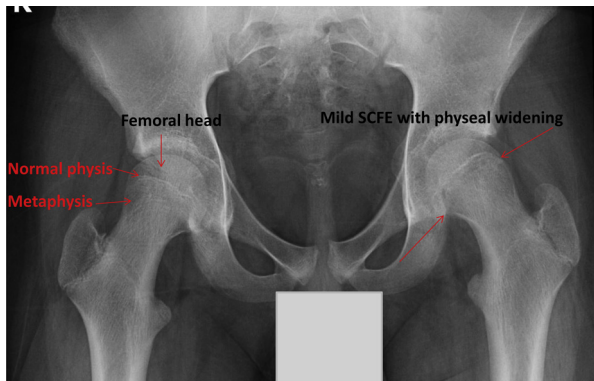
**M**.C. is a 13-year-old Caucasian male who complained of generalized left knee pain for 3 days. He denied trauma, injuries, or falls, and stated he had never experienced this pain previously. The pain did not radiate to any other location. There were no recent illnesses, fevers, or chills and he stated he was not sexually active. His mother reports that the pain was slow in onset and he had started to limp in the previous 24 hours. The patient was seen by his primary care practitioner who felt the knee assessment was benign. On exam, there was no effusion, erythema, or warmth about the joint, as noted by the practitioner. Knee radiographs were obtained and read as negative by the radiologist. The primary care practitioner informed the patient and mother that he must have twisted or sprained his knee and perhaps did not remember the mechanism. A bandage wrap was applied with instructions to apply ice off and on, elevate the leg, and decrease activities. Anti-inflammatory medication was suggested.

M.C.'s pain worsened over the next 4 days and his limping became more pronounced, which affected his daily functions. His mother elected to take him to the emergency department (ED). Given recent negative knee radiographs, laboratory tests were

obtained as the next diagnostic step. Complete blood count was normal with a white blood cell of 11.4 and neutrophil count of 48%. The patient's erythrocyte sedimentation rate was 5 mm/h and C-reactive protein was 0.4 mg/L. Radiographs of the anteroposterior (AP) pelvis and bilateral frog-leg hip views were obtained. Given the findings, an orthopedic consult was initiated. The orthopedic nurse practitioner (NP) examined the patient. There was no edema, warmth, ecchymosis, abrasion, or erythema about the left hip or knee. No pain was felt during his left knee exam, which was normal, and he could not localize the pain. The right leg exam was unremarkable with full range of motion in all joints, both passively and actively. There were no other joint complaints, edema, or erythema, and sensation and distal motor function were intact. Examination of his left lower extremity was positive for left hip pain during axial loading and gentle passive internal rotation. He held his leg in external rotation at rest with his knee in flexion for maximum comfort.

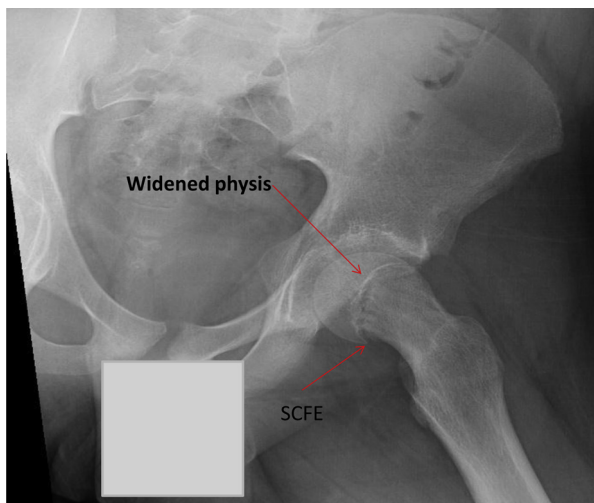
Review of the patient's X-rays showed a mild, acute slipped capital femoral epiphysis (SCFE) on the left side with epiphyseal widening and medial slippage of the left femoral head, best noted on the frog-leg view (Figures 1 and 2). The femoral head was unremarkable in appearance without signs of

**Figure 1.** Anteroposterior (AP) pelvis radiograph. Mild left slipped capital femoral epiphysis without evidence of avascular necrosis. Note the subtle lateral/superior change.



avascular necrosis and was well seated within a normal acetabulum. There was no joint effusion present. Given his age, lack of elevated temperature, absence of recent illnesses, negative sexual history, and normal laboratory and radiograph findings (with the exception of a left SCFE), multiple other differential diagnoses could be excluded, such as septic hip from infectious causes like gonorrhea, toxic synovitis, Legg-Calve-Perthes disease, or developmental dysplasia of the hip. Rheumatologic illness could most likely be ruled out as well, as this was the

**Figure 2.** Left frog-leg hip view showing mild left acute slipped capital femoral epiphysis (SCFE). It is easier to see the downward movement of the epiphysis on the metaphysis.



first occurrence and no other joints were involved. M.C. was admitted to the hospital and underwent surgical intervention, which included a reduction of the SCFE and in-situ pin placement (Figure 3). Stable, acute SCFE is easily treated if the appropriate diagnosis is completed in a timely manner.

**CASE STUDY B**

M.J. is a 13-year-old, obese, black male who presented to the ED for concerns of left knee and hip pain and inability to bear weight on his left leg for 5 days. There was no known injury or trauma to the left leg. Per the patient’s and mother’s reports, he complained of bilateral hip and knee pain for approximately 2 years with increasing left hip pain beginning about 2–3 weeks earlier. He was evaluated by his pediatrician for the pain. Per the mother’s report they obtained lab work, which was normal, but imaging was not obtained for either leg. She stated she limited his physical activities, which did his improve pain. M.J. reported that he was never instructed to not bear weight on either leg and was not provided with crutches. He denied numbness or tingling to either lower extremity. There was no other pain or musculoskeletal concerns. He had no recent illnesses. An AP pelvis radiograph was

**Figure 3.** Anteroposterior (AP) pelvis radiograph. Left slipped capital femoral epiphysis status after in-situ pinning, 6 weeks postoperatively. There are normal acetabular angles and normal coverage of the femoral heads. The patient has a normal hip range of motion with frog-leg positioning without pain.



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