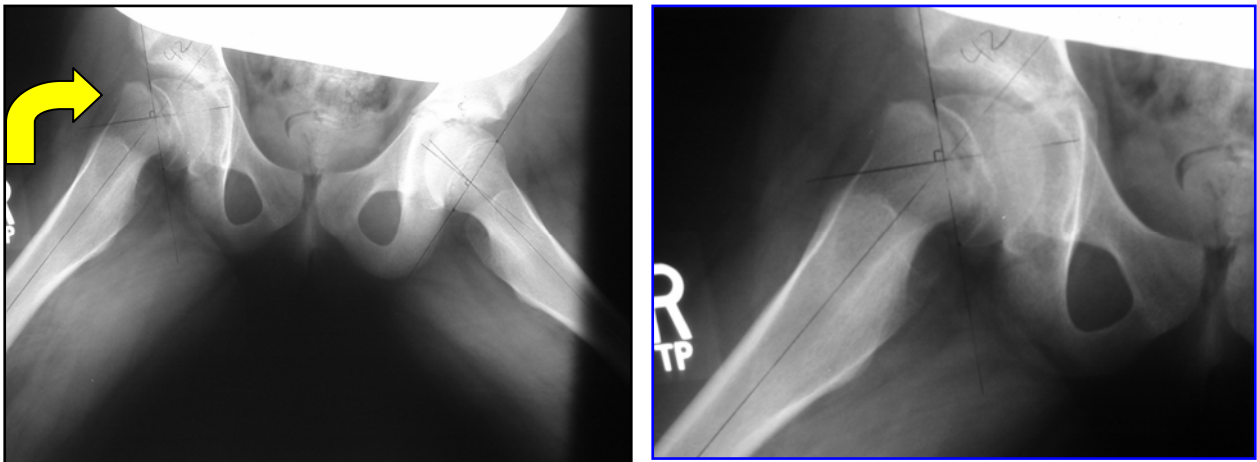


Radiology Case Study: September, 2008
Slipped Capital Femoral Epiphysis (SCFE)
Erin S. Hart, NP

Patient: JG is an 11 year-old obese male who was referred to the orthopaedic clinic by his pediatrician for an altered gait. His mother had noticed a mild limp over the past few weeks that worsened over the past few days. He has had no recent fevers or illness. As he walks into the room, you notice that he walks with an antalgic gait pattern keeping the right leg in external rotation. On exam, VSS, weight is 125kg, he is in NAD. Examination of the hips reveals decreased internal rotation and abduction on the right side. The left hip has external rotation to approx 45 degrees with 20 degrees internal rotation. The right hip has approx 45 degrees external rotation but has 0 degrees internal rotation. He has obligatory external rotation with any attempts at right hip flexion. Radiographs were obtained including AP/LAT x-rays of the pelvis.

Radiographs:



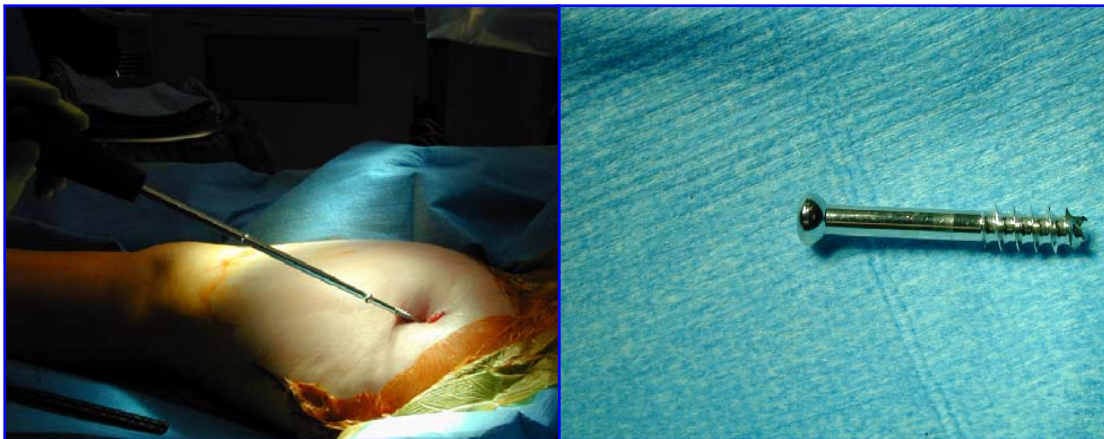
Diagnosis: Right Slipped Capital Femoral Epiphysis (SCFE)

Brief Overview of SCFE: Slipped capital femoral epiphysis is an acquired disorder of the hip in adolescent and preadolescent children. A SCFE represents the separation of the proximal femoral epiphysis (head of femur) through the growth plate from the remainder of the femur. In a patient with a SCFE, the head of the femur remains firmly located in the acetabulum, and the neck of the femur slips anteriorly. This slippage occurs when the shearing stress exerted on the femoral head is greater than the resistance provided by the intrinsic mechanical stability of the growth plate. A SCFE is the most common orthopaedic hip condition affecting adolescents, but the diagnosis is frequently delayed or missed due to its often subtle presentation. This delay can result in a less-favorable long term prognosis. The condition needs to be considered in any child presenting with a limp and/or hip, thigh, or knee pain.

Causes/Risk Factors: A multifactorial etiology is most likely including obesity (resulting in mechanical overload of the maturing growth plate), local trauma, inflammatory factors, and endocrinologic factors. While the majority of cases are idiopathic, SCFE may also be associated with endocrine disorders (hypothyroidism, growth hormone administration), renal osteodystrophy, or previous radiation therapy.

Excessive weight/obesity is thought to be the biggest risk factor for a SCFE. The excessive weight increases mechanical stresses on the growth plate. Most studies have shown that approx 80% of adolescents had a body mass index above the 95th percentile. The increased stress across the growth plate caused by obesity combined with the preadolescent and adolescent growth spurt can cause disruption through the weakest portion. This weak section of the growth plate is known as the hypertrophic zone, and it has been shown to be larger and weaker as the body prepares for its final longitudinal growth spurt. A SCFE will never occur once the growth plate has fused.

Treatment: The goal of treatment is to prevent further slippage and to stabilize the epiphysis. Early diagnosis of SCFE provides the best chance to achieve these treatment goals. The standard treatment for a stable SCFE is commonly referred to as an in situ percutaneous pinning and involves the surgical placement of a single cannulated screw through the femoral neck into the central aspect of the proximal femoral epiphysis. The procedure uses radiographic guidance (fluoroscopy) through a very small incision with minimal risk of blood loss or wound complication.



Recent Literature on SCFE

Hart, ES, Grottkau, BG, & Albright, MA(2008). Slipped capital femoral epiphysis: don't delay. *OR Nurse*. 2(5), 38-42.

Kehl, DK. Slipped Capital Femoral Epiphysis (2001). In: Morrissey RT, Weinstein, SL eds. Lovell & Winter's Pediatric Orthopaedics. 5th ed. Philadelphia, PA: Lippincott Williams and Wilkins, 999-1033.

Loder, RT. (1998). Slipped capital femoral epiphysis. *American Family Physician*, 57 (9), 2135-2146.

Links:

<http://www.massgeneral.org/ortho/SCFE.htm>

<http://www.orthosupersite.com/view.asp?rID=26369>

<http://www.pediatric-orthopedics.com/Treatments/Hips/SCFE/scfe.html>

<http://www.emedicine.com/sports/TOPIC122.HTM>