

## Pediatric Radiology Teaching File

### Case 5

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**CLINICAL PRESENTATION:** An 11-year-old male presented to the ED with history of right hip pain. No history of trauma.

**IMAGING FINDINGS:** AP (**Fig. 1**) and frog lateral (**Fig. 2**) views of the pelvis show the right femoral head in the acetabulum with superolateral displacement of the right femoral metaphyses.



Figure 1



Figure 2



**Figure 3**

**Differential Diagnosis:** Traumatic injury, if history of trauma

**DIAGNOSIS: Right slipped capital femoral epiphysis (SCFE)**

**DISCUSSION:** SCFE represents a Salter Harris I fracture through the physis with relative slip of the capital femoral epiphysis. It commonly affects early adolescents (10-16 years), males greater than females. Obesity predisposes to chronic stress at the unfused physes. Some intrinsic weakness in the physeal cartilage is usually present. Other risk factors include delayed sexual maturation, sexual precocity and growth hormone therapy. It may be bilateral in 20-30% but is usually asynchronous.

Undiagnosed and untreated patients usually have AVN of the femoral head due to disruption of the nutrient vessels, if the femoral head is manipulated. Other complications include further slippage, gait abnormalities due to limb shortening, coxa vara or degenerative arthritis. Treatment is usually surgical reduction (**Fig. 3**).

On plain films, early SCFE should be considered as a differential (given the right history) with widened physes or blanching (increased opacity in the metaphysis). The frog lateral view is crucial as the slippage begins with posterior displacement and progresses with medial rotation. Normally, the capital femoral epiphysis should be located centrally on the metaphysis with smooth continuity of the epiphyseal and metaphyseal margins.

A line drawn tangential to the lateral border of the femoral metaphysis (Klein's line) should normally intersect approximately one-sixth the capital femoral epiphysis. Widened physes (compared to the contra lateral hip) and relatively shortened femoral head height may point towards the diagnosis.

The Southwick method for determining tilt is a line perpendicular to the epiphyseal axis and another along the axis of the femoral neck to demonstrate the degree of tilt.

SCFE is first visible on MRI, with findings of early marrow edema and slippage. This is evident by increased signal on T2.

There should be a high suspicion of SCFE in a patient with the appropriate clinical setting and history.

**REFERENCES:**

1. Donnelly LF. Fundamentals of Pediatric Radiology. WB Saunders; 2001: 207-8.
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3. <http://www.learningradiology.com/>
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