

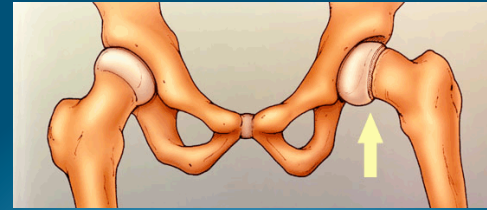
# Pediatric Hip: Slipped Capital Femoral Epiphysis

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2010 Johns Hopkins Orthopaedic Review Course



Slipped Capital Femoral Epiphysis

## SCFE: Demographics

- Incidence 2:100,000
- Males 2x > females
- Age at Dx (range 9-16y)
  - Boys mean 13.5y
  - Girls mean 12.0y
- Avg 5mos of Sx prior to Dx
- Pacific Islanders > African Americans > Native Americans & Hispanics > Caucasians > Asians

## SCFE: Demographics

- Obesity
  - Majority over 95th %ile, earlier onset
- Bilateral
  - 18-63% idiopathic
  - 61-100% w/ endocrinopathy
- >50% bilateral at diagnosis
- Metachronous bilateral w/ in 18mos
- 60% unilateral cases: Left hip affected

## SCFE: Classification

- Stable
  - Able to weight bear +/- crutches
- Unstable
  - Unable to tolerate weight bearing

## SCFE: Pathogenesis

- Stable
  - Widened hypertrophic zone
- Unstable
  - Fracture through hypertrophic zone
    - Accumulation of proteoglycans and glycoproteins adjacent to cleft

## SCFE: Pathogenesis

- Metaphysis (femoral neck) externally rotates & slips proximal to the epiphysis (femoral head)
  - Majority produce varus relationship **CTQ**
  - Occasional Valgus orientation occurs

## SCFE: Etiology

- Idiopathic (Majority of cases)
- Endocrine abnormality (7%)
  - Hypothyroidism
    - Most common endocrinopathy
    - Down's pt
  - Hypogonadism
  - Panhypopituitarism
  - Renal osteodystrophy (hyperparathyroidism)
- Growth Hormone supplementation
- Prior XRT

## SCFE: Clinical Presentation

- Stable/Chronic (85%)
  - Sx > 3wks (avg 5mos)
  - Pain with activity
    - Groin/ hip
    - Knee, medial (only c/o in 15%)
  - Able to bear weight, +/- Limp
  - External rotation gait

## SCFE: Clinical Presentation

- Unstable/Acute or Acute-on-chronic (15%)
  - Abrupt Sx onset or increase
  - Pain at rest
    - Groin/ hip
    - Knee (less common complaint)
  - Unable to bear weight
  - Presents like subcapital femoral neck fx



## SCFE: Hip Exam

- Pain with internal rotation
- Decreased IR, ABD & Flexion
- Obligate ER with flexion

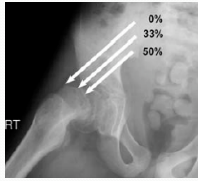
## SCFE: Imaging

- Established
  - AP: decreased epiphyseal height, physis *thin*
  - Mild: Klein's line lateral to epiphysis
  - Severe: Blanche sign of Steel
    - Hyperdense: meta-epiphyseal overlap
  - Lateral: posterior displacement
  - Rounded, eroded anterior neck



Klein's Line

### SCFE: Radiographic Classification (lateral x-ray)



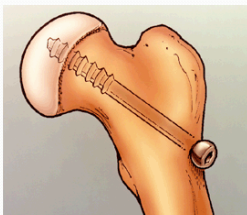
- Slip severity: degree of displacement
  - Mild:  $< 1/3$  Neck width
  - Moderate:  $1/3$  to  $1/2$  Neck width
  - Severe:  $> 1/2$  Neck width

### SCFE: Treatment

- Indications: any slip with open physis
- Urgent fixation
  - Delay risks acute progression & ON
- Manipulation ?
  - **Forceful manipulation increases AVN (Don't Do It!)**
  - Spontaneous incidental reduction with gentle operative positioning
    - No deleterious effect on Bone Scan

### SCFE: Treatment

- In Situ Percutaneous Screw Fixation
  - Current standard
  - 6.5mm or larger cannulated screw



CTQ

### SCFE: Contralateral Fixation?

- Bilateral Disease
  - Symptoms on exam, & nl X-ray
  - +X-ray with asymptomatic exam
- Endocrinopathy
- Osteodystrophy
- Unreliable, young, obese patient?

NO Sx + NORMAL X-ray + NORMAL kid= NO Contralateral Fixation!

### SCFE: Complications

#### Chondrolysis

- Loss of  $>50\%$  joint space or to  $<3\text{mm}$

#### Risk Factors:

- **Persistent hardware penetration**
- Increased slip severity
- Prolonged pre-treatment symptoms
- Cast immobilization

CTQ

### SCFE: Complications

#### Osteonecrosis/ AVN

#### Risk Factors

- **Acute, unstable SCFE (50% risk)**
- Overreduction of acute slip
- Reduction attempts of chronic slip
- Superolateral pin placement
- Femoral Neck osteotomy

CTQ

## SCFE: Summary

CTQ

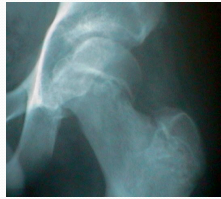
- Obese, adolescent male
- c/o 5mo knee pain
- External rotation gait
- Limited IR +/- pain

What do you do?

- Check **HIP** films!

+SCFE

- Pin in situ
- One central cannulated screw



2. Which of the following studies is commonly used to radiographically classify/grade slipped capital femoral epiphysis?

- 1- CT of the hip
- 2- AP pelvis radiograph
- 3- Lateral hip radiograph
- 4- MRI of the hip
- 5- Hip sonography

164. A 13-year-old patient has a radiographically mild, clinically stable unilateral slipped capital femoral epiphysis. The patient has not undergone any previous treatment. Which of the following best describes the range-of-motion findings of the involved hip when compared to the uninvolved side?

- 1- Decreased internal rotation and decreased abduction
- 2- Decreased internal rotation and increased abduction
- 3- Increased external rotation and increased abduction
- 4- Increased flexion and decreased extension
- 5- Increased flexion and increased extension

187. The classification of slipped capital femoral epiphysis into stable and unstable types is based on

- 1- duration of symptoms.
- 2- radiographic stability on fluoroscopic examination.
- 3- ability to weight bear on the affected extremity.
- 4- remodeling of the femoral neck.
- 5- degree of displacement present.

Thank You & Good Luck