

Montefiore Pediatric Orthopedic and Scoliosis Center

Children's Hospital at Montefiore

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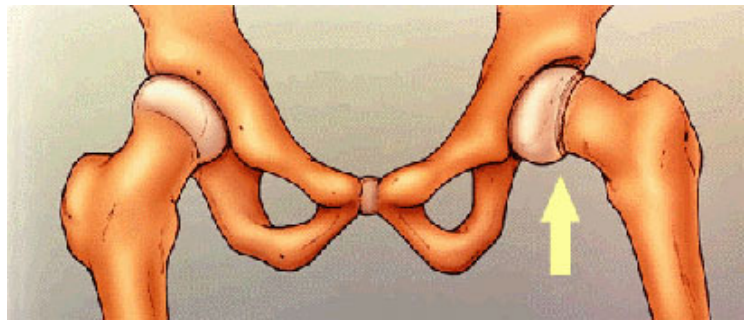
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Slipped Capital Femoral Epiphysis (SCFE)

What is Slipped Capital Femoral Epiphysis (SCFE)?

SCFE is a condition of the hip that usually affects adolescents, in which the epiphysis (growth plate) of the femur (thighbone) becomes separated from the rest of the bone. The epiphysis or growth plate is located at the top of the femur, and the femoral head will usually slip backward and inward in SCFE. A slip occurs when the shearing stress exerted on the femoral head is greater than the resistance provided by the mechanical stability of the growth plate (physis). SCFE is one of the most common orthopaedic hip condition affecting adolescents.



What causes Slipped Capital Femoral Epiphysis?

There are many theories as to the cause of SCFE, however it is believed to be caused by both mechanical as well as constitutional factors. Most likely, SCFE is caused by multiple factors (multifactorial) including local trauma, obesity overcoming the physal plate (growth plate), inflammatory factors, and possible endocrine abnormalities (increased incidence seen in hypothyroidism, panhypopituitarism, renal osteodystrophy). Obesity seems to be the strongest risk factor for SCFE, and it is believed that the child's increased weight causes excessive mechanical stress on the physis (growth plate). Many studies have shown that SCFE tends to occur during an adolescent's rapid growth spurt, as the growth plate appears to be most vulnerable to shear stress and injury at this time. Slipped capital femoral epiphysis NEVER occurs once the growth plate has closed.

Some basic facts:

- SCFE affects approximately 2-10 adolescents/100,000 in the U.S.
- SCFE usually occurs in early adolescents during a rapid growth spurt (age 10-13 in females, 12-16 in males)
- SCFE is BILATERAL (involves BOTH hips) in approximately 25-40% of patients
- The incidence of SCFE is higher than normal in children with the following risk factors:
- Male Sex (approx 60-65% of cases occur in males)
- Obesity (most children are greater than the 95% for their weight)
- Pacific Islanders (have the greatest prevalence of SCFE of any ethnic group or geographical region)
- African-Americans (the condition is approximately 2X more common in African-Americans compared to Caucasians)

How is Slipped Capital Femoral Epiphysis diagnosed?

The diagnosis of SCFE is made based on your child's symptoms, physical examination, as well as radiographs (x-rays) of the pelvis. Typically, a child with a stable SCFE has a history of intermittent limp and pain of several weeks duration that is often poorly localized to the thigh, the groin, and often the knee. Frequently, a vague history of antecedent trauma calls attention to the limp and pain. As the epiphysis continues to slip, there may be decreased range of motion and a limping gait. There may also be automatic external rotation of the lower extremity with flexion of the hip. Patients with unstable acute slipped capital femoral epiphysis usually have an acute onset of severe pain, often after a sports-related trauma or fall. They will be unable to bear weight on the affected leg. Although the diagnosis is often made with plain x-rays, further advanced studies such as a CT or MRI scan may be necessary.

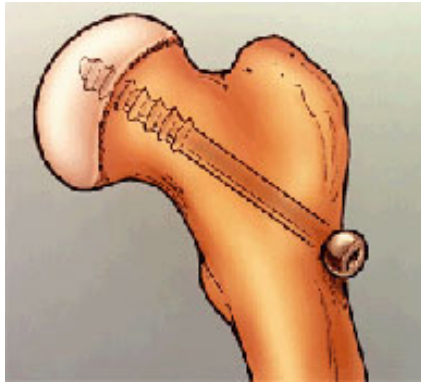
Classification of Slipped Capital Femoral Epiphysis

A SCFE will be classified as acute, chronic, or acute on chronic. The slip is classified as chronic if symptoms have been present for more than three weeks with gradual onset and progression. Acute slips present with a history of sudden onset of severe pain and disability. The slip is also classified as stable or unstable. Patients with a stable slip are able to bear weight on the affected leg, whereas unstable slips will cause severe pain and inability to bear weight. A slipped capital femoral epiphysis is also classified radiographically based on the degree of slip or displacement seen on x-rays. Type I: <33% slip of epiphysis, Type II: 33-50% slip of epiphysis, and Type III: > 50% slip of epiphysis.

What is the treatment for Slipped Capital Femoral Epiphysis?

It is important to prevent the femoral head (top of the thigh bone) from further slippage. Early diagnosis of SCFE provides the best chance to achieve the treatment goal of stabilizing the hip.

The standard treatment for SCFE is to place a single screw across the growth plate through a very small incision on the thigh. This procedure is commonly referred to as a percutaneous pinning. However, if the slip is severe, a more involved procedure or corrective surgery may be necessary.



The goal of treatment is to prevent increasing deformity of the hip or increased slipping of the epiphysis. Therefore, the goal of surgery is to stop slipping while the growth plate is still open. Once the growth plate has closed, no further slipping can occur.

Your child will be admitted to the hospital and taken to the Operating Room for the percutaneous pinning. He/She will likely be in the hospital for 24-48 hours after the surgery. With the exception of severe or unstable slips, the patient will start partial weight bearing (toe-touch) weight bearing for approximately 4-6 weeks post-operatively. He/She will then return to regular activities gradually as tolerated. There may be some restriction of contact sports to minimize the chance of complication. A short course of physical therapy may be needed.

Are there complications from Slipped Capital Femoral Epiphysis or its treatment?

The majority of patients with stable slips that have undergone percutaneous pinning do not have any complications. With early recognition and timely treatment, the long-term prognosis is excellent for patients with a stable SCFE. However, there are several potential complications associated with a slipped capital femoral epiphysis (SCFE).

The most common are avascular necrosis (AVN) of the femoral head (top of the thigh bone) and chondrolysis. Avascular necrosis is loss of blood supply to the head of the femur, causing death of the bone. This condition is much more likely if the slip is severe or unstable. Patients with avascular necrosis will often have early onset arthritis of the hip.

Chondrolysis or loss of articular cartilage of the hip joint is another potential complication of SCFE. This may cause a loss of hip motion, flexion contracture, and pain. This is a relatively rare complication that again is seen more frequently in patients with a severe or unstable slip.

Your surgeon will see the patient in follow-up visits, and x-rays will be obtained to evaluate for these potential complications. Once your child recovers from surgery the follow up visits will be focused on whether any remaining abnormality is present and discuss whether any additional surgery is necessary to realign the hip to minimize the risk of development of early osteoarthritis.