CONDITION

Slipped capital femoral epiphysis

Slipped capital femoral epiphysis is a hip condition in which the upper thighbone slips through a weakened growth plate.

WHAT IT IS
A hip growth plate slip during adolescence

BODY SYSTEM
Bones, joints and muscles

MAIN SYMPTOMS
Hip or knee pain, limp, outward-turned leg

WHAT CAUSES IT
Growth-plate weakness; exact cause often unknown

HOW IT IS DIAGNOSED
Hip X-rays, sometimes MRI

MAIN TREATMENT
Urgent surgery to stabilize the growth plate

CAN IT BE CURED?
Yes - surgery stops slipping; lasting changes may remain

IS IT AN EMERGENCY?
Sometimes - sudden pain with inability to bear weight

LONG-TERM OUTLOOK
Often good after early treatment; arthritis can develop later

Overview

Slipped capital femoral epiphysis, often shortened to SCFE, is a hip condition that affects children and teenagers who are still growing. It is also called slipped upper femoral epiphysis, or SUFE.

At the top of the thighbone is a ball-shaped area called the femoral head. It fits inside the hip socket. Just below it is a growth plate, which is an area of developing cartilage where the bone lengthens.

In SCFE, this growth plate weakens. The femoral head stays in the hip socket while the upper thighbone shifts away from it. This changes the alignment and shape of the hip.

The slip may develop gradually over weeks or months. Less often, it happens suddenly or a

long-standing slip becomes suddenly worse. Either hip can be affected, and some young people develop the condition in both hips.

SCFE matters because the slip can continue until it is stabilized. A severe or unstable slip can also damage the blood supply to the femoral head. Early assessment and treatment help prevent further movement and may reduce long-term damage.

Symptoms

Symptoms can begin slowly and may not seem to come from the hip. Knee pain is a common reason the condition is initially overlooked.

Possible symptoms include:

A young person may have symptoms for weeks or months while still being able to walk. This is usually described as a stable SCFE.

An unstable SCFE causes more sudden and severe symptoms. The young person cannot walk or put weight on the affected leg, even with support. This may happen after a minor fall, twist or other injury, but there is not always a clear trigger.

When the hip is examined, the leg may turn outward as it is bent. Turning the hip inward is often limited or painful. These findings can support the diagnosis, but imaging is needed to confirm it.

- Pain in the hip, groin, upper thigh or knee
- A limp or change in walking
- A foot or leg that turns outward
- Stiffness or reduced hip movement
- Difficulty running, playing sport or climbing stairs
- Pain that becomes worse with activity and improves with rest

Causes and risk factors

SCFE develops when forces across the hip act on a growth plate that has become less able to hold the bone in place. The exact reason this happens is often unknown.

It usually occurs during the adolescent growth spurt, when the growth plate is changing and has not yet closed. Higher body weight increases the force across the growth plate and is an important risk factor. However, SCFE can also affect young people who are not overweight.

Hormone and metabolic conditions can weaken growth plates. These include an underactive thyroid, growth hormone disorders and some conditions related to kidney disease. An underlying disorder is more likely when SCFE occurs at an unusually young or older age, affects both hips, or develops in a child who is short for their age.

SCFE is not usually caused by ordinary exercise, sport or a minor injury. An injury may bring attention to an already weakened growth plate or cause a stable slip to become unstable.

Having SCFE in one hip increases the possibility of later developing it in the other. The risk is higher in younger children and in those with certain hormone, growth or kidney conditions.

Diagnosis

A health professional will ask where the pain is felt, how long it has been present and whether the young person can walk. Both hips, legs and knees are usually examined because pain may be felt away from the affected hip.

X-rays are the main tests used to confirm SCFE. Images are usually taken of both hips so their shape and growth plates can be compared. Different side views may be used depending on whether the hip is stable.

If an unstable SCFE is suspected, the leg should be moved as little as possible. A gentler cross-table side view may be used instead of positioning the hip for a frog-leg X-ray.

Early SCFE may occasionally be difficult to see on an X-ray. MRI can show changes in the growth plate when suspicion remains high despite normal or uncertain X-rays. MRI is not needed in every case.

Blood tests do not diagnose SCFE. They may be used to look for thyroid, growth, kidney or other metabolic problems when the young person's age, growth pattern or medical history suggests one.

SCFE is also classified as stable or unstable. This describes whether the young person can bear weight and helps estimate the risk of complications. It does not simply describe how far the bone has moved.

Treatment and management

Suspected SCFE requires urgent assessment by an orthopaedic team experienced in children's hip conditions. Until it has been assessed, the young person should avoid putting weight on the affected leg. Walking on a slipping growth plate can make the displacement

worse.

Treatment is usually surgery. The main aim is to stop further slipping, protect the hip's blood supply and allow the growth plate to close safely.

The most common operation is called in-situ fixation. A surgeon places a metal screw or similar device across the growth plate to hold the femoral head and thighbone together. "In situ" means the hip is secured in its existing position rather than being forcibly moved back into place.

An unstable slip needs especially careful handling because the blood vessels supplying the femoral head may be vulnerable. The timing and type of surgery are decided by the specialist surgical team based on the stability and severity of the slip.

Some severe deformities may need a more complex operation to improve hip alignment. This is not necessary for everyone and is generally performed in specialist centres.

The unaffected hip is monitored because SCFE may later develop there. Preventive fixation of the other hip may be considered for some young people, particularly those who are very young or have a hormone, growth or kidney disorder. It is not automatically required in every case.

After surgery, crutches or another walking aid may be needed. The amount of weight allowed on the leg is determined by the operation and the hip's stability. Follow-up normally includes examinations and X-rays to check healing, growth-plate closure and the other hip.

Return to running and sport is gradual. It should wait until the surgical team confirms that the hip is stable and movement and strength have recovered.

Complications

Complications are more likely when the slip is severe or unstable, but they can also occur after a stable SCFE.

Avascular necrosis means that part of the femoral head loses its blood supply and the bone tissue is damaged. It is a major concern after an unstable slip. It may cause ongoing pain, stiffness or collapse of the femoral head.

Chondrolysis is a rapid loss of cartilage from the hip joint. Cartilage is the smooth tissue that lets the bones move against each other. Chondrolysis can lead to pain and marked stiffness, although it is less common with modern treatment.

The changed shape of the upper thighbone can create abnormal contact within the hip. This is called femoroacetabular impingement. It may cause groin pain and limited movement, particularly when the hip is deeply bent.

Over time, damage to the joint surface can contribute to osteoarthritis. Osteoarthritis is the wearing down of joint cartilage and may cause pain and stiffness in adulthood.

Other possible problems include a difference in leg length, reduced hip movement, failure of the fixation or a slip in the other hip. Scheduled follow-up helps identify these issues.

Prevention

There is no reliable way to prevent SCFE because the exact cause is often unknown and the condition develops around a vulnerable growth plate.

Maintaining a weight that supports overall health may reduce stress across the hips, but it cannot guarantee prevention. A young person or family should not be blamed for the condition.

Treating an identified thyroid, growth, kidney or metabolic disorder may support bone and growth-plate health. It does not reverse a slip that has already occurred.

Prompt recognition does not prevent the first change in the growth plate, but it can help prevent further slipping. Persistent hip, groin, thigh or unexplained knee pain during adolescence should not be ignored, especially when it causes a limp.

Living with it and what to expect

During the first weeks after surgery, daily life often centres on protecting the hip and learning to use crutches safely. Help may be needed with stairs, transport and carrying school materials. A temporary school plan can make it easier to avoid long walks and physical education.

Pain usually improves as the hip stabilizes and heals, although recovery is not identical for everyone. Follow-up X-rays continue until the growth plate has closed and the surgical team is satisfied that the fixation remains secure.

Many young people return to ordinary school, social activities and later physical activity. The timing depends on the stability of the original slip, the type of operation, healing and hip strength.

A mild slip treated early may leave little day-to-day limitation. A larger slip can leave the hip with less inward rotation or a different shape even after successful stabilization. Some people need further treatment for impingement, stiffness or pain.

The other hip remains important during follow-up. New pain, limping or outward turning on that side needs prompt assessment rather than waiting for the next scheduled appointment.

In adulthood, some people have no major hip problems. Others develop pain, impingement or osteoarthritis years later. Keeping follow-up appointments during growth and seeking assessment for recurring hip symptoms can help identify changes early, but no treatment can promise a particular long-term course.

When to get medical help

Seek emergency assessment now if a child or teenager develops:

Keep the young person off the affected leg while arranging help. Do not try to stretch, rotate or force the hip back into position.

Arrange urgent same-day assessment for persistent hip, groin, thigh or unexplained knee pain accompanied by a limp, reduced hip movement or an outward-turned foot. This remains urgent even if the young person can still walk.

After treatment, contact the surgical team promptly about increasing pain, a new limp, wound redness or drainage, fever, or symptoms in the other hip.

Routine care includes attending planned orthopaedic appointments and X-rays, following weight-bearing instructions and discussing when school sport or other activities can safely resume.

- Sudden severe hip, groin, thigh or knee pain
- Inability to stand, walk or put weight on one leg
- A leg that suddenly appears shortened or turned outward
- A sudden major worsening of an existing limp or hip pain

Common questions

Is SCFE the same as a dislocated hip?

No. In a dislocation, the femoral head comes out of the hip socket. In SCFE, the femoral head usually stays in the socket while the thighbone shifts through the growth plate beneath it.

Can SCFE heal without surgery?

It should not be expected to heal safely without stabilization. The growth plate may remain vulnerable and the slip can worsen while growth continues. Surgery is usually used to stop further movement.

Why does SCFE cause knee pain?

The hip and knee share nerve pathways. The brain may interpret pain coming from the hip as pain in the thigh or knee. This is called referred pain. Unexplained knee pain with a limp should therefore include an assessment of the hip.

Can SCFE happen in both hips?

Yes. It may affect both hips at the same time, or the second hip may develop a slip later. This is why both hips are imaged at diagnosis and monitored during growth.

Will the screw need to be removed?

Not always. Removal is considered individually because another operation has its own risks. The surgical team may recommend leaving the fixation in place unless it causes a problem or there is another specific reason for removal.

Can I play sport again after SCFE?

Many young people return to sport after the hip has healed, but the timing is individual. Running, jumping and contact sport should wait until the treating team confirms that the hip is stable and strength and movement are adequate.

Sources

- American Academy of Orthopaedic Surgeons. Slipped Capital Femoral Epiphysis . OrthoInfo.
- Pediatric Orthopaedic Society of North America. Slipped Capital Femoral Epiphysis . POSNA Study Guide.
- Royal Children's Hospital Melbourne. Slipped upper femoral epiphysis: Emergency Department guideline . Clinical Practice Guidelines.
- Millis MB. SCFE: clinical aspects, diagnosis, and classification. Journal of Children's Orthopaedics . 2017;11(2):93-98.
- Loder RT, Richards BS, Shapiro PS, Reznick LR, Aronson DD. Acute slipped capital femoral epiphysis: the importance of physeal stability. Journal of Bone and Joint Surgery American Volume . 1993;75(8):1134-1140.