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Authors
Bach, Katherine
Coufal, Sarah
Kelly, Nicholas
et al.

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REVIEW

The Pediatric Hip Physical Exam

Katherine Bach[1] · Sarah Coufal[1] · Nicholas Kelly[2] · Ameera Teal[1] · Ishaan Swarup[1,3]

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Abstract
Purpose of Review Atraumatic hip pain in children is one of the most common orthopaedic complaints in this population. This review details the important elements of the pediatric hip physical exam and provides an overview of pertinent clinical exam findings in specific diagnoses of common pediatric hip pathology.
Recent Findings A thorough physical exam is critical for the diagnosis of pediatric hip pathology, as many conditions have exam findings that are very commonly associated with the pathology, if not pathognomonic for the disorder. Additionally, pediatric hip pathology is strongly age-related, so an understanding of typical exam findings and common hip conditions by age can be invaluable in forming a correct diagnosis.
Summary Inspection, palpation, range of motion, gait analysis, and provocative tests provide clues about potential diagnoses. Together with history and risk factors, pediatric clinicians can make appropriate diagnosis of pediatric hip disorders.

Keywords Pediatric hip · Hip physical exam · Provocative testing · Gait analysis · Hip pathology

Introduction

The clinical examination of the hip in children can provide valuable information to guide diagnosis and management of conditions affecting this population. As atraumatic hip pain is one of the most common complaints confronted by pediatricians and pediatric orthopaedic surgeons [1], a complete review of the pediatric hip exam will strengthen the ability to diagnose conditions, which can contribute to better outcomes for patients with hip-related concerns.

✉ Katherine Bach
Kelly.bach@ucsf.edu

Sarah Coufal
Sarah.coufal@ucsf.edu

Nicholas Kelly
Nicholas.kelly@ucsf.edu

Ameera Teal
Ameera.teal@ucsf.edu

Ishaan Swarup
Ishaan.swarup@ucsf.edu

1 UCSF Department of Orthopaedic Surgery, 500 Parnassus Ave, MU 320W, San Fransciso, CA 94143, USA

2 UCSF School of Medicine, San Francisco, USA

3 Benioff Children's Hospital at Oakland, Oakland, USA

Pediatric hip conditions can be caused by developmental abnormalities or acquired disorders that can significantly diminish a child's mobility and their overall quality of life. In children, hip pathology is strongly age-related. For example, septic arthritis of the hip joint is an intra-articular infection of the joint, often caused by staphylococcus aureus, and peaks in incidence within the first few years of life [1, 2]. Septic arthritis occurs in the population at an incidence of 4–12 in 100,000 annually, with males being slightly more affected. Pelvic and femoral osteomyelitis is a bacterial infection of the hip joint, presenting similarly to septic arthritis and often within the first few years of life but also encompassing the pelvis, proximal femur, and tibia, mainly caused by S. aureus [1–3]. Osteomyelitis, with an incidence of 8-10.5 per 100,000 annually, often affects males who have previously undergone trauma or infection [4, 5]. Transient synovitis presents as a periodic, painful joint effusion, usually after a recent viral infection, and commonly affects children aged 2–10 years old [1]. It has an annual incidence of 76 in 100,000 children, primarily affecting males at a ratio of 2:1 [1, 2].

Legg-Calve-Perthes disease (LCPD) is characterized by osteonecrosis of the femoral epiphysis with no known cause, mainly affecting children aged 4–10 years old. Perthes disease has an incidence of 0.4–29.0 in 100,000 children, predominantly affects males more than females at a ratio of 4:1, and is bilateral in 10% of cases [4]. Slipped Capital Femoral Epiphysis (SCFE) is a disorder of the proximal femoral epiphysis involving slippage through the hypertrophic zone of the growth plate, occurring in 1 in 1,000 to 1 in 10,000 adolescents (usually 11-14-year-olds). SCFE can present bilaterally in 20–40% of cases and is most common in obese males [4]. Developmental dysplasia of the hip (DDH) can present in various forms, ranging from complete dislocation of the joint with an irreducible hip to mild acetabular dysplasia [6, 7]. Newborns are commonly screened for DDH due to its incidence rate of approximately 1 in 100, with 80% of these cases being female. However, children can present in adolescence with symptoms related to missed diagnosis [6, 8].

Juvenile Rheumatoid Arthritis (JRA) can affect a single hip joint, bilateral hip joints, or multiple joints throughout the body. While no specific cause has been identified, genetic and environmental factors can contribute to the disease's development in children aged 2–18 years [1]. JRA affects 1 in 1,000 children and is the most common chronic rheumatologic disease, most frequently seen in females [1]. Femoroacetabular impingement (FAI) occurs due to abnormal proximal femur and acetabular morphology and can present in adolescence and adulthood. Its incidence has been reported to be 54.4 per 100,000, and it is often found in young athletic males and linked to high-impact sports [9–11].

Pathology	Incidence	Male: Female	Age
Septic Arthritis	4– 12 / 100,000	Male > Female	0– 4 years
Pelvic/Femoral Osteomyelitis	8– 10.5 / 100,000	Male > Female	0– 4 years
Transient Synovitis	76 / 100,000	2:1 Male > Female	2– 10 years
Legg-Calve-Perthes	0.4– 29 / 100,000	4:1 Male > Female	4– 10 years
Slipped Capital Femoral Epiphysis	0.33– 25 / 100,000	Male > Female	11– 14 years
Developmental Dysplasia of the Hip	1 / 100	80% Female	Newborns
Juvenile Rheumatoid Arthritis	14.8 / 100,000	Female > Male	2– 18 years
Femoroacetabular Impingement	54.4 / 100,000	Male > Female	Adolescence, Adulthood

Importance of Pain Localization

Children with hip pathology may present with pain, abnormal gait, refusal to bear weight, or decreased movement of the lower extremity. Hip pathology can cause referred pain to the thigh or knee due to shared nerve pathways, with the hip innervated by the obturator, femoral, sciatic, and superior gluteal nerves and the knee by the femoral, saphenous, sciatic (peroneal, tibial), and obturator nerves [12, 13]. It is possible that the overlap in nervous innervation can explain the occasional presentation of hip pathology as knee pain, and hip conditions should always be considered even when a child primarily complains of knee or thigh pain [12, 13]. Additionally, lumbar spine and sacroiliac joint problems can mimic or contribute to hip pain due to their close anatomic and functional relationships, affecting gait and biomechanics [14].

Purpose of this Review

A comprehensive hip exam in children is critical for accurate diagnosis, treatment, and monitoring of pediatric hip conditions [15, 16]. The physical exam includes gait analysis, inspection, palpation, range of motion (ROM), and provocative tests [15]. Specific pertinent findings in some conditions can help narrow the focus to the most likely diagnoses. This review will detail the important elements of the pediatric hip exam and provide an overview of pertinent clinical exam findings in specific diagnoses of pediatric hip pathology.

Gait

Changes in gait can be an early sign of injury or illness that may prompt a parent to seek medical attention [16, 17]. However, it is important to understand the characteristics of a normal gait pattern before attempting to describe and evaluate an abnormal gait pattern.

Gait Development

Abnormalities in gait, compared to age norms, warrant attention, and a thorough clinical examination can help identify underlying issues. Children begin to walk between 10 and 18 months of age in what is commonly referred to as a toddler gait pattern. Toddler gait is characterized by short, fast steps, achieved through excessive hip and knee flexion, absent arm swing, and a flatfooted wide base of support. Around 4 years of age, children begin to demonstrate more coordination as they develop a heel-to-toe step pattern. An adult gait pattern is usually achieved by age 7 and children should then be evaluated according to a mature gait cycle [18, 17].

Gait Analysis

For ambulatory patients, the pediatric hip exam starts by observing their natural gait upon entering the room. If the patient is unwilling or unable to ambulate, asking parents for videos of abnormal gait can be helpful. The formal gait analysis begins with the examiner standing behind the patient. The patient's standing position should be noted along with any erythema, swelling, deformity in the trunk and lower limbs, and changes that may have occurred as the patient transitioned from sitting to standing to walking. Patients are then asked to walk away and back, observing for several gait cycles to identify any structural or movement asymmetries [16, 19, 20].

Gait Abnormality

Variations from a normal gait pattern may be defined as antalgic or non-antalgic. Antalgic gait is a protective mechanism to minimize or resist pain that accompanies a normal gait, and is characterized by a reduced stance phase on the affected limb, a slower pace of movement, and a shorter stride length on the unaffected limb [16, 19, 21]. When taking the history, ask the patient or their parents if they can discern whether the pain preceded the child's change in gait. If the pain preceded the limp, it is likely a pathology of musculoskeletal origin. Alternatively, if the limp preceded the pain, it is possible the issue is of neurological origin [20, 22]. A specific type of antalgic gait characterized by an exaggerated trunk lean towards the affected limb is called coxalgic gait. This maneuver may allow the patient relief from hip pain by decreasing joint reactive forces over the affected hip through shifting the center of mass over the affected limb [23].

If the patient has an abnormal gait that is not characterized by pain, it is considered a non-antalgic gait. The non-antalgic gait most relevant to the pediatric hip exam is the Trendelenburg gait. A patient exhibiting Trendelenburg gait will demonstrate a pelvic drop on the unaffected limb during the swing phase. Patients with bilateral weakness in the hip abductor muscles will present with a waddling gait and exhibit a positive Trendelenburg sign when testing both legs [17]. While Trendelenburg gait may not be painful, it can increase the hip load on the affected limb. If maintained for a prolonged period, it may predispose the patient to chronic pathologies like osteoarthritis [24].

Inspection

Inspection of the hip and pelvis consists of observation while standing, supine, and gait analysis as discussed above. Clinicians can assess pelvic heights, degree of lumbar lordosis, and lower limb alignment when a child is standing. While supine, lower limb lengths and alignment can be evaluated and measured [4]. Inspection of the skin and soft tissue is important to ascertain swelling, warmth, and skin changes, which can raise suspicion for potential bacterial or viral causes of hip pain. Cellulitis, an infection of the skin and subcutaneous tissues, is a crucial finding, often presenting as erythema with ill-defined margins, edema, and warmth. Inspection of hip cellulitis during the physical exam should raise suspicion for potential infectious causes of hip pain [4, 25].

Palpation

Palpation of the area around the hip is important for assessing tenderness and swelling. Palpating the anterior superior iliac spine helps assess for tenderness or other abnormalities in the anterior hip region. Palpation of the greater trochanter can allow for evaluation of hip abductor muscles and detection of any other signs of inflammation, tenderness, or bony abnormalities. Palpating the femur also aids in identifying bony prominences, fractures, or soft tissue injuries that may also impact hip function [15].

Range of Motion

Supine Range of Motion (Fig. 1)

Evaluating the hip's ROM involves testing flexion, extension, external rotation, and internal rotation with the hip flexed at 90°. To test hip flexion, the patient lies supine while the examiner stabilizes the pelvis and flexes the hip by bringing the knee towards the chest. To test hip extension, the patient lies on their side; the examiner stabilizes the pelvis and moves the leg posteriorly, extending the hip. Normal ranges of hip flexion and extension in children are 120–135° of flexion and around 30° of extension. To assess external rotation, the patient lies supine with the hip flexed to 90° while the examiner holds the knee and ankle, rotating the leg outward. In internal rotation, similarly, the examiner rotates the leg inward with the hip flexed to 90°. Assessing External and Internal Rotation precisely at 90° of hip flexion is critical for evaluating hip joint stability and integrity, particularly in compromised hip stability, such as DDH and SCFE.

Abduction

Abduction is measured supine with the knee flexed and extended to differentiate between abductor brevis and longus. To measure abduction with knees flexed, the child lies on their back with hips and knees flexed and feet placed together; both knees are allowed to fall outward away from

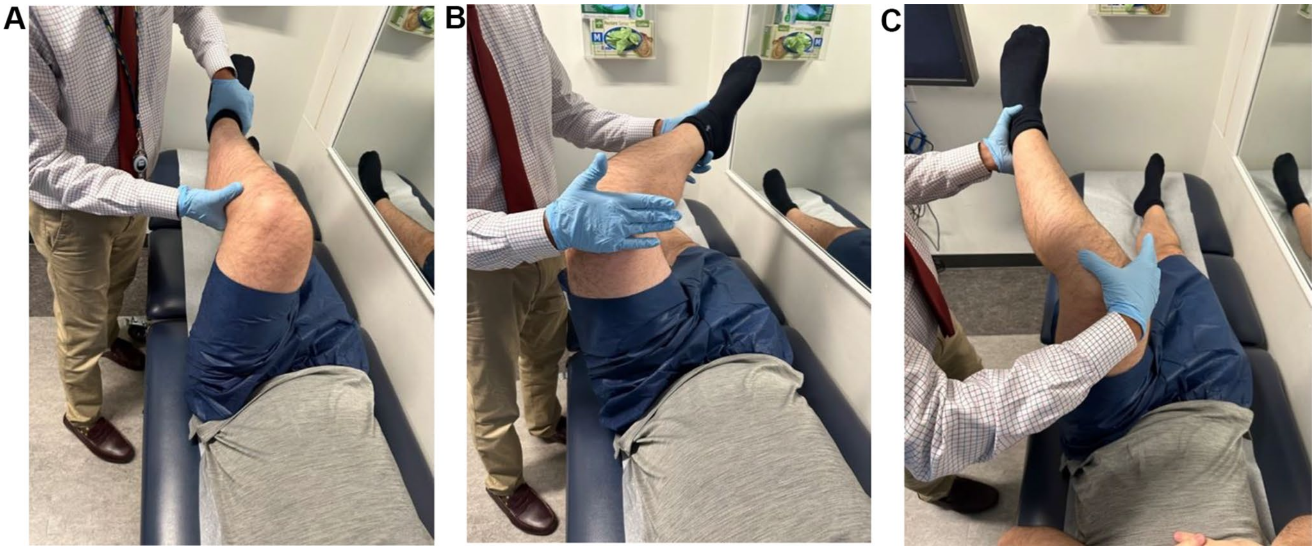

Fig. 1 **A**: Supine flexion. Patient lies supine while the examiner flexes the hip by bringing the knee towards the chest. **B**: Supine flexion 90° external rotation. Patient lies supine with hip flexed to 90 degrees while examiner rotates the leg outward, bringing the foot across the body. **C**: Supine flexion 90° internal rotation. Patient lies supine with hip flexed to 90 degrees while examiner rotates the leg inward, bringing the foot out lateral to the body

Fig. 2 Thomas test. With the patient lying flat with a level pelvis, the examiner places one hand under the patient's lumbar spine while one hip is flexed as much as possible; the opposite leg extends straight. A hip flexion contracture and positive Thomas test presents as inability to fully extend the leg without arching the spine

midline. Passive hip abduction with hip and knees fully extended is tested with the child supine and examiner moving the limbs away from midline. Assessing abduction is critical in patients with LCPD.

Thomas Test (Fig. 2)

The Thomas Test assesses hip flexion contracture and hip extensibility in a patient lying flat with a level pelvis. One hand is placed under the patient's lumbar spine while one hip is flexed as much as possible to eliminate the influence of lumbar lordosis. The patient's back should remain flat when the opposite leg extends straight. A hip flexion contracture and positive Thomas test presents as inability to fully extend the leg without arching the spine. The degree of contracture is measured as the angle between the table and the leg at the most significant extension point. A positive test can indicate DDH or hip flexor tightness [26, 27].

Prone Rotation (Fig. 3)

To evaluate prone rotation, the patient lies prone on the examination table with legs extended while the examiner bends the knee of the tested leg to 90°. Internal rotation is evaluated by moving the legs away from midline, causing the hip to rotate internally, while external rotation involves allowing the legs to cross at midline. Normal values for internal and external rotation are 40–50° and around 45°, respectively; [28]. it is normal for internal rotation to decrease with age as femoral anteversion naturally decreases with growth.

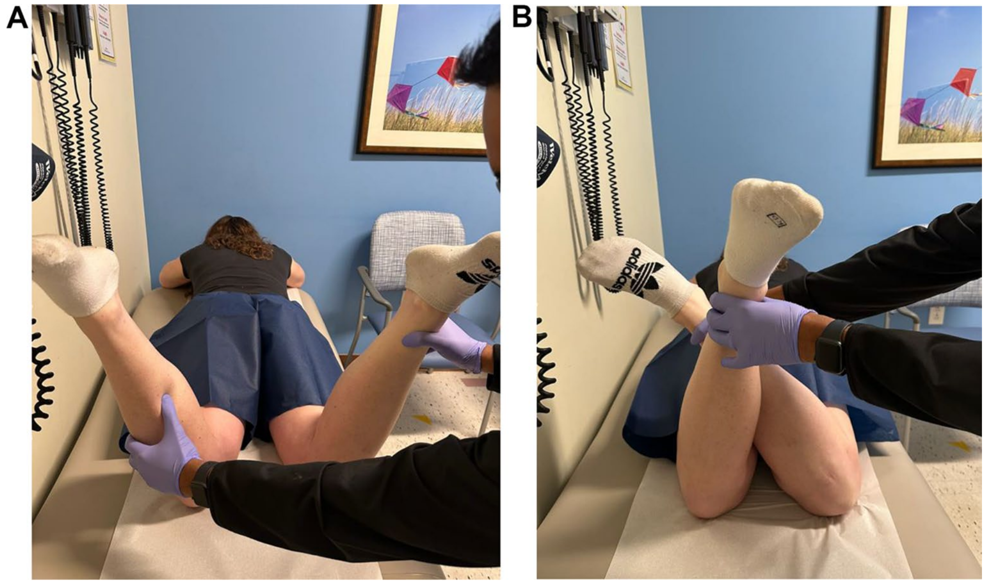

Fig. 3 **A**: Prone rotation (Internal). The patient lies prone on the examination table with legs extended while the examiner bends the knee of the tested leg to 90°. Internal rotation is evaluated by moving the legs away from midline, causing the hip to rotate internally. **B**: Prone rotation (External). Measure external rotation by allowing the legs to cross at midline while patient is prone with legs extended and knees flexed

Fig. 4 Stinchfield test. Lying in supine position, the patient raises a straight leg with knee extended and hip flexed at 45°. The examiner applies pressure proximally above the knee and the patient is asked to resist. The test is positive if there is significant weakness or pain present

Fig. 5 Apprehension test. Patient lies at the end of the table in supine position with the legs unsupported. The contralateral leg can be flexed towards the chest, while the affected leg is hyperextended over the table and abducted and externally rotated

Provocative Tests

Stinchfield Test (Fig. 4)

The Stinchfield test, also known as the resisted straight leg raise, can be used to detect intra-articular hip pathology such as FAI or labral pathology [29]. Lying in supine position, the patient raises a straight leg with knee extended and hip flexed at 45°. The examiner applies pressure proximally above the knee and the patient is asked to resist. The test is positive if there is significant weakness or pain present [30].

Apprehension Test (Fig. 5)

The apprehension test can help indicate hip dysplasia and hip instability. For this test, the patient lies at the end of the table in supine position with the legs unsupported. The contralateral leg can be flexed towards the chest, while the affected leg is hyperextended over the table and abducted and externally rotated [26]. A test is positive if the extended leg reproduces anterior hip pain or elicits a feeling of apprehension [31, 32].

Prone Apprehension Relocation Test (Fig. 6)

The Prone Apprehension Relocation Test (PART) can also indicate hip dysplasia or hip instability [33]. The patient lies in prone position on the examination table. On the ipsilateral side, the examiner raises the patient's leg, extending the hip 10–15°, and supports the knee flexed at 90°. Then, the examiner abducts the leg approximately 10° from the midline and presses down on the femur distal to the inferior gluteal crease. The test is positive if there is anterior hip pain due to the downward pressure on the femur and relief when the pressure is released [33, 34].

Fig. 6 Prone Apprehension Relocation Test. The patient lies in prone position on the examination table. On the ipsilateral side, the examiner raises the patient's leg, extending the hip 10–15°, and supports the knee flexed at 90°. Then, the examiner abducts the leg approximately 10° from the midline and presses down on the femur distal to the inferior gluteal crease

Impingement Test/FADIR (Fig. 7)

The impingement test or FADIR (flexion-adduction-internal rotation) can be used to help diagnose FAI. Lying supine, the patient flexes both the hip and knee at 90°. The examiner rotates the hip from abduction to adduction with internal rotation. It is a positive test if the movement elicits a sudden sharp pain in the hip or reproduces similar symptoms as the patient experiences when active (e.g. clicking, pain) [35]. The maneuver may be uncomfortable in an unaffected hip, so it is important to compare the symptomatic and asymptomatic side [15].

Fig. 7 Impingement test/FADIR. Lying supine, the patient flexes both the hip and knee at 90°. The examiner rotates the hip from abduction to adduction with internal rotation

Trendelenburg and Single Leg Squat (Fig. 8)

The Trendelenburg test and single leg squat test can both help determine abductor weakness. Weakness in this muscle group may be secondary to disorders such as LCPD or Hip Dysplasia [36]. In the Trendelenburg test, the patient stands on the affected leg and lifts the other leg off the ground at approximately 30° of hip flexion. In a negative test, the pelvis remains level, illustrating normal abductor strength. In a positive test, the pelvis drops on the side of the unaffected lifted leg, illustrating hip abductor (gluteus medius and minimus) weakness [15, 37, 38]. The single leg squat test has also been shown to have reliability and validity to detect impaired hip abductor muscle function [39]. Pelvic tilt, hip rotation, and medial knee deviation during the squat can all be signs of abductor weakness.

Fig. 8 Trendelenburg test. In the Trendelenburg test, the patient stands on the affected leg and lifts the other leg off the ground at approximately 30° of hip flexion. In a negative test, the pelvis remains level, illustrating normal abductor strength. In a positive test, the pelvis drops on the side of the unaffected lifted leg, illustrating hip abductor (gluteus medius and minimus) weakness

Patrick/FABER (Fig. 9)

The Patrick or FABER test (Flexion-abduction-external rotation), is traditionally used to evaluate sacroiliac joint pain, but can reveal impingement and intra-articular hip involvement if the patient experiences anterior hip or groin pain. For this test, the patient lies in supine position. The examiner flexes, abducts and externally rotates the hip so that the ankle rests above the contralateral knee. It is a positive test if there is decreased ROM compared to the unaffected leg or there is a reproduction of pain [40]. External rotation of the hip can be measured and compared with the contralateral side in the FABER position by measuring the distance from the lateral epicondyle of the knee to the exam table, with an increased distance signaling decreased external rotation possibly due to intra-articular pathology, capsular tightness or irritation [30].

Fig. 9 Patrick/FABER test. Patient lies in supine position. The examiner flexes, abducts and externally rotates the hip so that the ankle rests above the contralateral knee

Passive Straight Leg Test

The passive straight leg test can assess for lumbosacral nerve irritation from pathologies such as lumbar disc herniation, and can help elucidate possible lumbosacral contributions to hip pain. The patient lies in supine position as the examiner gently raises the leg by flexing the hip with the knee extended. The test is positive if there is pain along the leg when the hip is flexed less than 45° [41].

Log Roll

The log roll test, also known as the passive supine rotation test, can check the integrity of the hip joint. The patient lies in supine and the examiner places one hand on the thigh proximally above the knee and the other at the distal end of the tibia. Then, the examiner gently rolls the leg internally and externally to move the femoral head within the acetabulum. The test is positive if the patient presents with pain [26]. The log roll is the most specific test for intra-articular hip pathology as it moves the articular surface of the femoral head within the acetabulum without stressing any of the surrounding extra-articular structures [15].

Infant Specific Provocative Tests

There are a series of infant specific tests to help screen for DDH. They are valuable as DDH can be asymptomatic in infancy and early childhood.

Ortolani/Barlow (Fig. 10/11)

The Ortolani and Barlow maneuvers can help determine infant hip instability or dislocation [42]. These tests generally are only useful in infants three months or younger. After three months of age, soft tissue contractures will often limit the movement of even a dislocated hip, making these physical maneuvers less effective [43].

In the Ortolani Maneuver, the infant lies supine with the hip flexed at 90°. The examiner should place the index finger and long finger laterally on the child's greater trochanter and the thumb on the inner thigh near the groin crease [43]. While holding the contralateral hip stable, the examiner should apply gentle hip abduction and pressure in an upward force through the greater trochanter. If the femoral head is unstable or dislocated at rest, this maneuver will reduce it into the acetabulum. The test is positive if the examiner feels a "clunk," which is the reduction of the dislocated hip into the acetabulum [42, 44].

In the Barlow Maneuver, the infant and examiner are in the same position and the examiner applies gentle adduction and downward pressure to the leg in an attempt to posteriorly subluxate or dislocate an unstable hip. In a stable hip, there will be no motion in this direction. If the hip is unstable, the gentle adduction can cause dislocation and there should be a clear "jerk" or "clunk" when the femoral head pops out of the joint [42, 43, 44].

Fig. 10 Ortolani Maneuver. Infant lies supine with the hip flexed at 90°. The examiner places the index finger and long finger laterally on the child's greater trochanter and the thumb on the inner thigh near the groin crease. While holding the contralateral hip stable, the examiner should apply gentle hip abduction and pressure in an upward force through the greater trochanter

Fig. 11 Barlow maneuver. With the infant lying supine with the hip flexed at 90°, the examiner applies gentle adduction and downward pressure to the leg in an attempt to posteriorly subluxate or dislocate an unstable hip

Galleazzi (Fig. 12)

Galeazzi's test can help determine hip dislocation or congenital femoral shortening. The examiner places the child in supine position and flexes both the hips and knees with feet held together at the ankles. If there is an inequality in the height of the knees, it is a positive Galeazzi sign [43].

Hip Abduction

The hip abduction test can reveal limited abduction due to a dislocated hip. The child first lies in supine position with the hip and knee flexed at 90°. Then, in flexion, allow the child to relax the legs so that they abduct [43]. If maximal abduction is less than 60° on one side, or there is an asymmetry in abduction greater than 20°, a dislocated hip should be suspected [40].

Fig. 12 Galeazzi test. The examiner places the child in supine position and flexes both the hips and knees with feet held together at the ankles

Diagnosis-Specific Exam Findings

The physical exam is often crucial to diagnosis in orthopaedics, and pediatric hip pathology is no exception. Many diagnoses have physical exam findings that are commonly associated with the pathology, if not pathognomonic for the disorder.

Septic Arthritis/Transient Synovitis

In patients with septic arthritis and transient synovitis, we expect the affected hip to be held in flexion, abduction, and external rotation, as this position maximizes the capsular volume of the hip and relieves pressure on the joint. These patients typically have severe pain with any passive ROM of the joint and unwillingness to actively range the hip, often described as pain with micromotion. They are frequently unable to bear weight on the extremity, with antalgic gait disturbance if they attempt walking. Additional clinical findings may include swelling, erythema, and tenderness to palpation [2].

Hip and Pelvis Osteomyelitis

The diagnosis of hip or pelvis osteomyelitis is challenging as the clinical exam findings are nonspecific and overlap with many other conditions, including septic hip, acute abdomen, and discitis. Children typically present with pain in the groin, hip, thigh, or lower back, limited ROM, difficulty walking, and/or refusal to weight bear. Osteomyelitis is commonly associated with local signs of inflammation such as swelling, erythema, warmth, and tenderness to palpation, as well as potentially cellulitis overlying the affected bone [45].

Hip Dysplasia

All newborns should undergo careful physical examinations to screen for hip dysplasia. Careful observation can reveal asymmetric skin folds or leg length differences with unilateral hip dislocation. Infant specific tests for dysplasia include the Barlow and Ortolani maneuvers, described above, which should be performed in the first three months of life to evaluate stability of the hip [43].

In older children, stress-related pain and mobility limitations are not seen until the hip dysplasia/displacement is advanced. Hip dysplasia can be detected in clinical exam with limited abduction and a positive Galeazzi sign. Children should have maximal hip abduction of greater than 60°, with limitations raising concern for hip dislocation. A positive Galleazzi sign is important in dysplasia, as an inequality in height of the knees is indicative of hip dislocation or congenital femoral shortening. Hip abduction and the Galleazzi test should be evaluated together, as bilateral hip dislocation would result in equal leg lengths [43]. In children who are walking, a dysplastic or dislocated hip can cause a Trendelenburg stance and gait as the abduction of gluteus medius and minimus are ineffective without a stable fulcrum. Two additional provocative exams to evaluate symptomatic hip instability in older patients are the anterior apprehension test and the Prone Apprehension Relocation Test, or PART.

Perthes Disease

LCPD describes osteonecrosis of the proximal femoral epiphysis secondary to an idiopathic vascular insult. It is most common in active boys ages 4–8 with delayed skeletal maturity and typically presents with hip, medial thigh, or knee pain, limping, and effusion. Perthes disease is a pertinent example of the importance of evaluating the hip for pathology when patients complain of knee and thigh pain. Physical exam often reveals Trendelenberg gait and decreased hip ROM, specifically decreased abduction and internal rotation [46].

SCFE

In SCFE, the capital femoral physis is disrupted with varying degrees of epiphyseal displacement and deformity. Diagnosis can be challenging as symptoms are often vague, not located at the hip, and not always including pain. When they experience pain, patients often describe a vague ache in the groin, thigh, or knee. There is a wide spectrum of clinical presentation, from a child experiencing mild pain to one who is unable to bear weight on the leg or who has a pronounced limp due to pain [47]. On physical exam, patients present with limited internal rotation of the hip and obligate external rotation of the hip when the hip is flexed, as well as limited passive hip flexion. The obligate passive external rotation is known as a positive Drehmann sign. Patients often have an antalgic externally rotated gait and occasionally display thigh atrophy in more severe/chronic cases.

Femoroacetabular Impingement

FAI is a hip pathology seen in both children and adults that arises due to abnormal contact between the femoral head-neck junction and the acetabulum, leading to labrum and chondral damage and symptoms. Impingement mechanisms can present as cam impingement, pincer impingement, or mixed impingement. These patients commonly have groin or hip pain along with limited hip ROM, especially limitations in internal rotation and flexion. An antalgic or Trendelenburg gait may be observed. Provocative testing for anterior rim impingement includes the anterior impingement or FADIR test [35]. Posterior rim impingement is evaluated with the apprehension test with pain or resistance considered a positive result. The FABER test can reveal impingement and intra-articular hip involvement if the patient experiences anterior hip or groin pain with the maneuver. External rotation of the hip can be measured and compared with the contralateral side in the FABER position, with an increased distance signaling decreased external rotation possibly due to intra-articular pathology and capsular tightness or irritation [30].

Inflammatory Arthritis

Inflammatory arthritides like juvenile idiopathic arthritis and ankylosing spondylitis often present in children with oligoarticular or polyarticular joint pain and swelling. Effusions are commonly encountered in multiple joints on exam, with the knee, ankle, wrist, and hand most often affected [48]. An affected hip can be a monoarticular arthritis or one of multiple joints affected (oligo/polyarticular arthritis). Children often exhibit a change in gait and in extreme cases, a refusal to bear weight. Limited ROM on exam is commonly caused by joint effusion and synovial thickening.

Conclusions

The pediatric hip exam is a critical part in assessing children with hip pain. Inspection, palpation, range of motion and provocative tests provide additional clues about potential diagnoses. Together with history and risk factors, pediatric clinicians can make appropriate diagnosis of pediatric hip disorders.

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Explanation of a lesser known physical exam maneuver of the hip (PART) and its clinical utility.

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Declarations

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