



Orthopaedic Division
CANADIAN PHYSIOTHERAPY ASSOCIATION
Division d'orthopédie
ASSOCIATION CANADIENNE DE PHYSIOTHÉRAPIE

FEMORAL ACETABULAR IMPINGEMENT SYNDROME

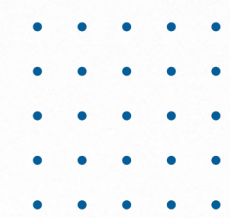
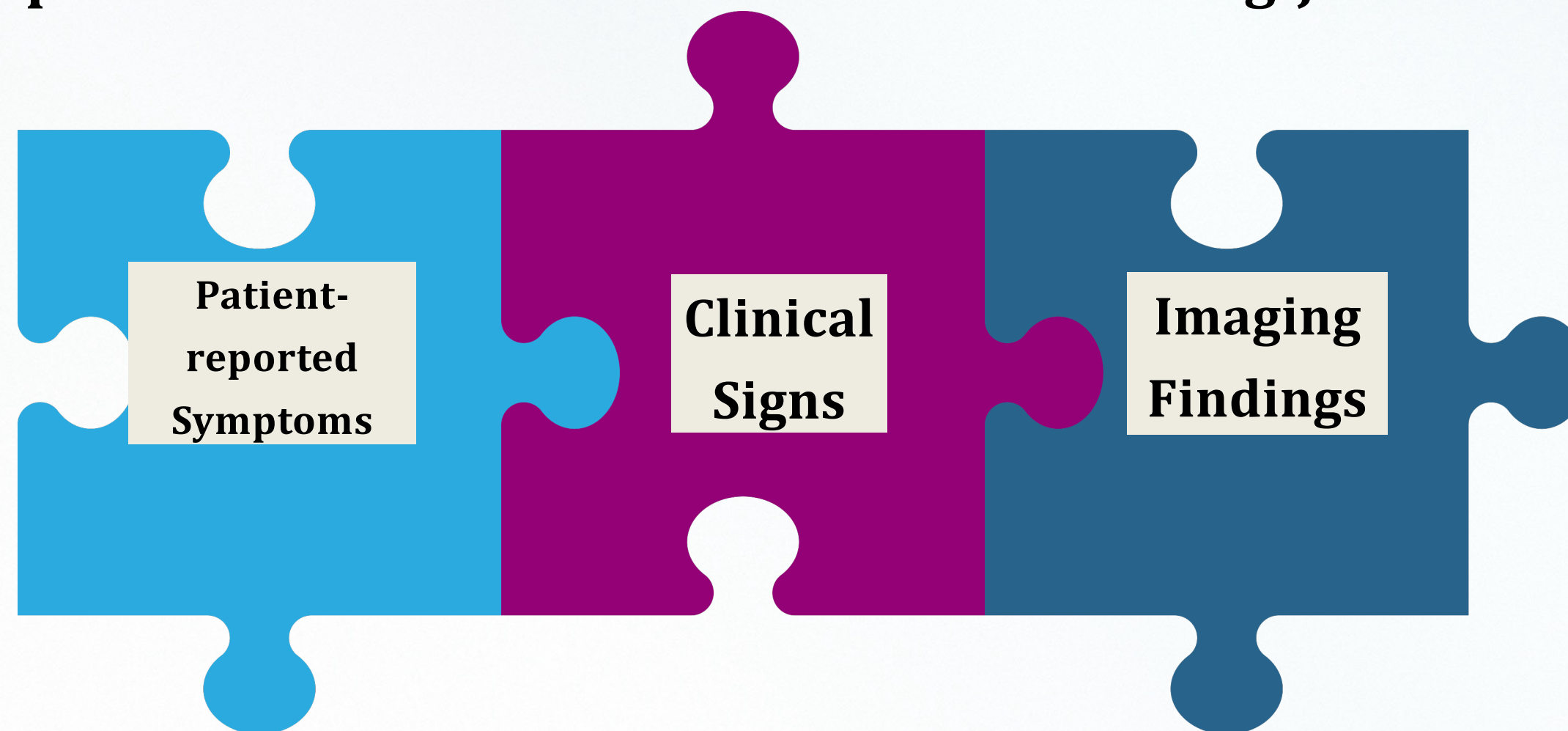


Orthopaedics Division Clinical Update
August 2026

What Is Femoral Acetabular Impingement Syndrome (FAIS)?



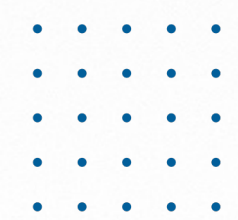
FAI syndrome is a motion-related clinical disorder of the hip with a triad of patient-reported symptoms, clinical signs, and particular bony morphologies reported on imaging findings. It represents symptomatic early contact between the proximal femur and the acetabulum during joint motion.¹



Patient-Reported Symptoms



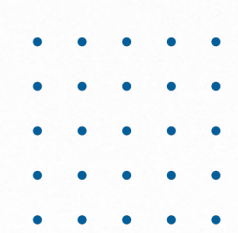
- The primary symptom of FAIS is **motion or position related pain in the hip or groin areas.**¹
- **Wide variation in the location, nature, radiation, severity and precipitating factors** that characterize this pain.¹
- May be reported localized to the hip or groin, or **may refer to the back, buttock, thigh or knees.**^{1,2}
- Often accompanied by **mechanical symptoms of clicking, catching, locking, giving way or stiffness.**¹



Clinical Signs



- While clinical assessment is a crucial aspect to identify range of motion and function deficits, activity limitations, and participation restrictions, **there is limited evidence on the ability to accurately diagnosis FAIS on clinical examination alone.**^{1,3}
- **Many clinical tests available in the literature have low specificity** – where many people without FAIS may still experience pain or test positive during the maneuver.
- Therefore, clustering of clinical signs is essential.



Clinical Signs

- Functional movement screening including gait, single leg control such as the **Star Excursion Balance Test** or **Single Leg Squat Test**, hop distance as well as **timed measures of function** are identified as valuable components of the objective exam.¹⁻³
- **Measures of ROM and strength for hip internal rotation (IR), external rotation (ER), flexion, extension, abduction, and adduction** should be included in the objective exam as **individuals with FAIS** often present with **reduced flexion and IR range of motion**.¹⁻³

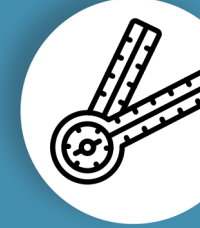
Hip and/or groin pain



Impaired single leg control



Reduced hip flexion & Internal rotation ROM



Reduced hip muscular strength



Positive hip Impingement tests



Clinical Signs

- There is a consensus in the literature that special tests for hip impingement can reproduce the patient's typical pain, including:
 - **Anterior Impingement Test (AIT) and FADIR tests show high sensitivity of 0.80 (0.67-0.93) but low specificity (0.09-0.41).**⁴
 - The AIT was the best individual test with a sensitivity of 0.91. Sensitivity increased to 0.97 either of the following test combinations was present:
 - Groin pain as the primary symptom plus a positive FABER test (+/- Fitzgerald) OR
 - A positive AIT test plus a positive FABER test (+/- Fitzgerald).⁵

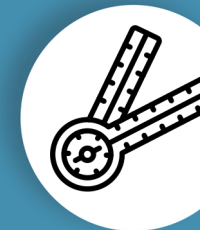
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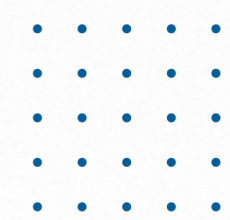
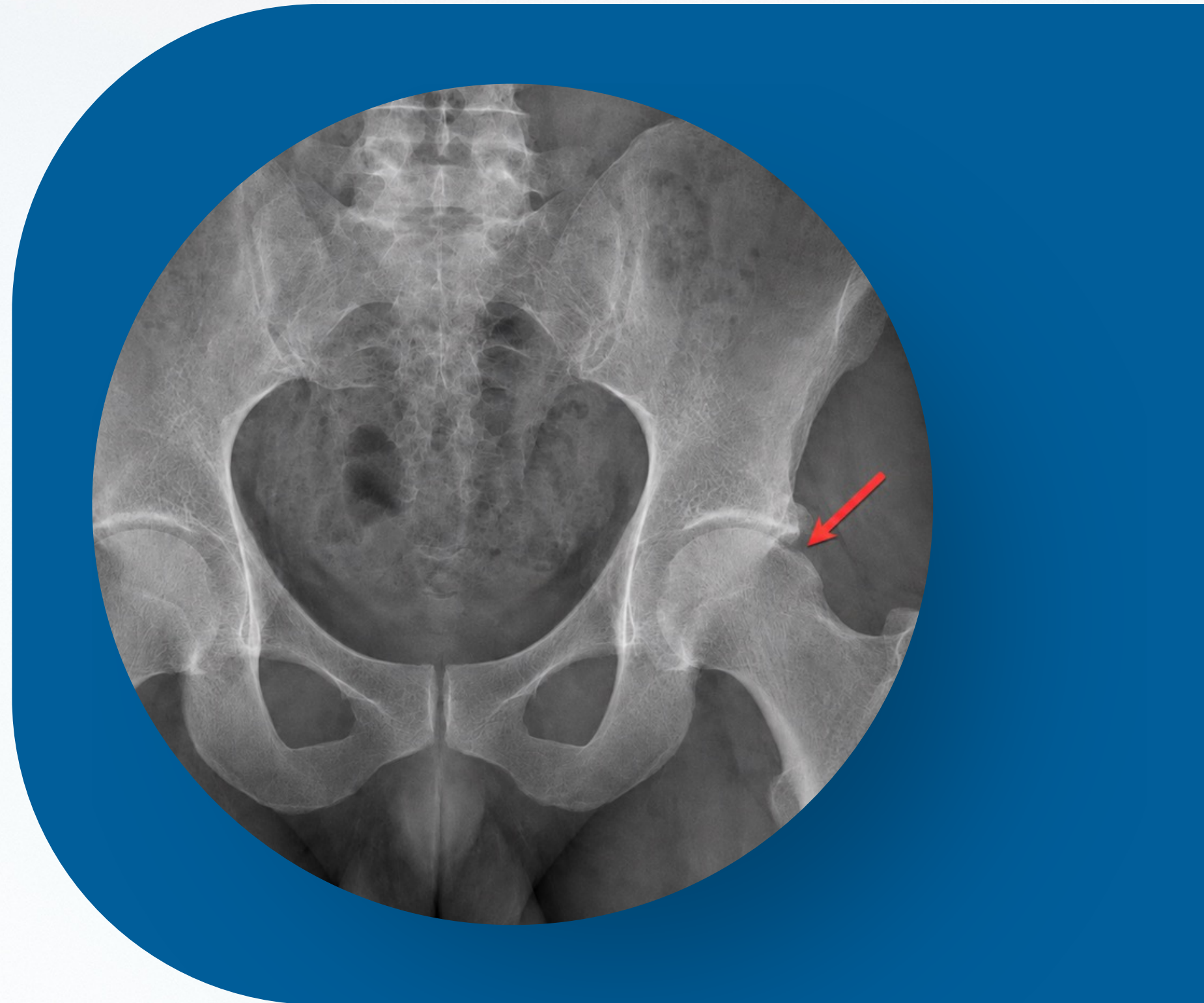
Positive hip Impingement tests



Imaging Findings

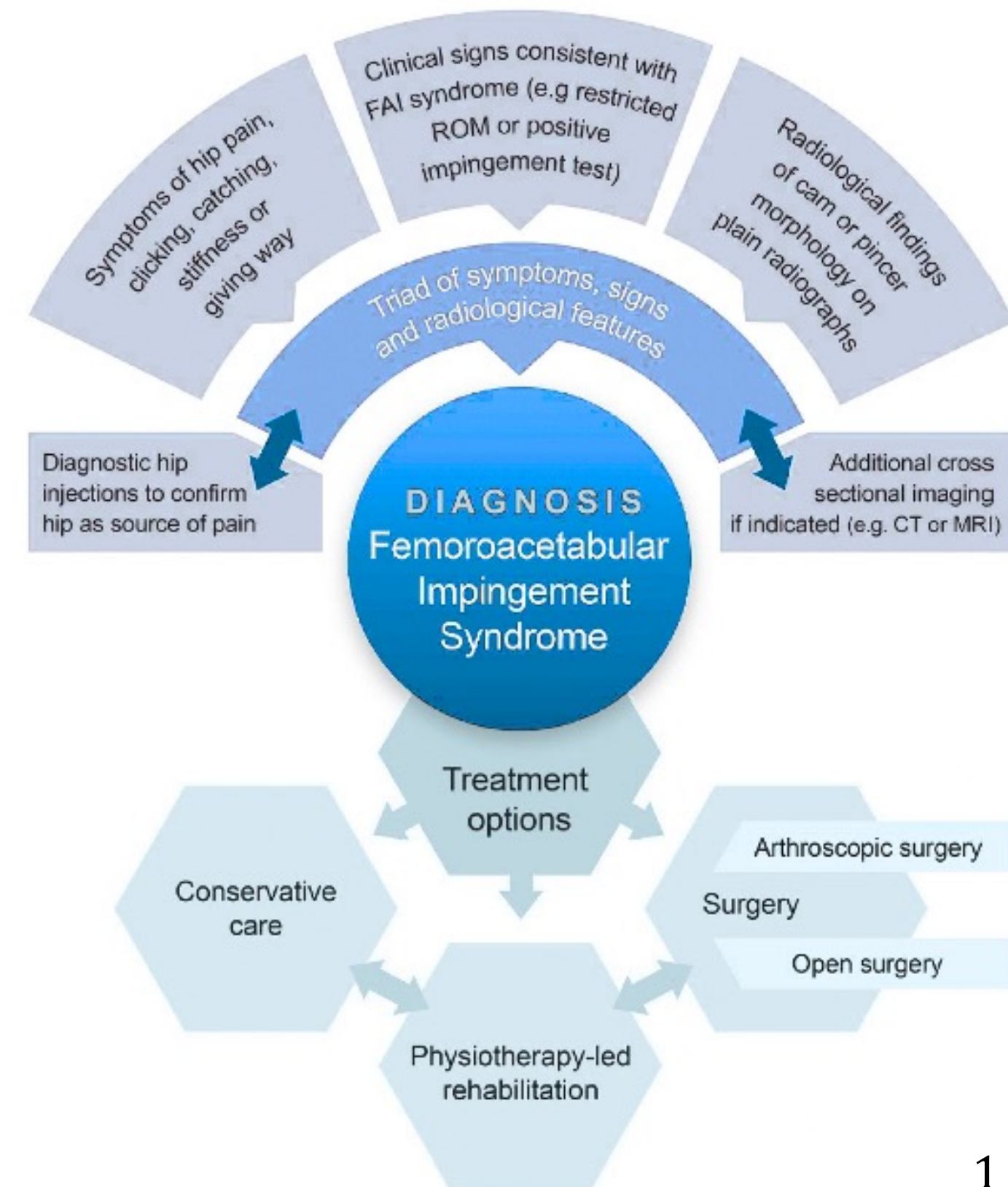


- Bony morphologies are typically identified on anterior-posterior (A-P) radiographs.¹
- Cam morphology is defined by an abnormal osteocartilagenous prominence located at the anterolateral femoral head-neck junction.²
- Pincer impingement is defined by excessive anterolateral femoral head coverage due to abnormal structural anatomy of the acetabulum.²
- Cam and pincer morphology can occur independently, but **more commonly coexist resulting in a mixed presentation.**²
- Additional imaging beyond plain radiographs is rarely indicated and may be requested by an orthopaedic surgeon following assessment as needed.¹



Treatment Options

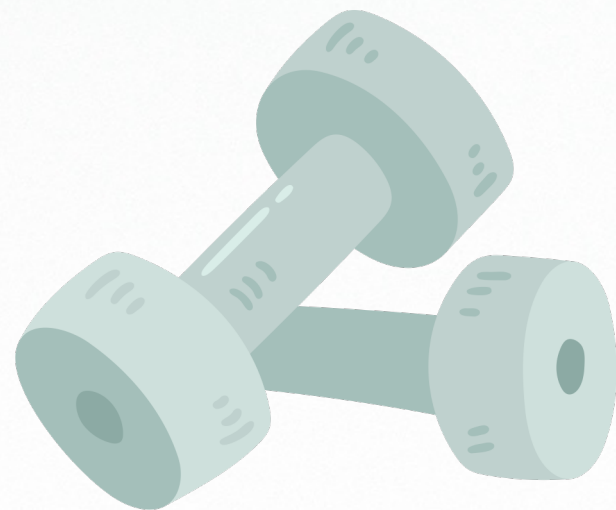
- **Treatment options for FAIS include conservative care and surgical intervention.**^{1,2}
- Conservative care may involve education, rest, activity modification, medications, and rehabilitation.^{1,2}
- Rehabilitation involves physiotherapy-led interventions to improve range of motion, strength, neuromuscular control, stability and movement patterns.
- Surgical intervention may include either open or arthroscopic methods to improve the joint morphology and repair damaged tissue. The latter is reserved for patients that fail the other approaches, or present with severe symptoms.^{1,2}
- **Some patients may require a combination of these treatment options throughout their rehabilitation plan.**



Rehabilitation Guidelines & Recommendations

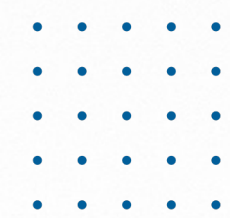


To date, formal nonoperative protocols to manage FAIS using high-evidence study designs are scarce. Current clinical practice guidelines published in 2023 recommend **clinicians should utilize multimodal interventions consisting of activity modification and strengthening exercises for hip musculature, trunk musculature, and general lower extremity musculature, combined with additional interventions such as manual therapy, postural and movement correction, stretching, and balance exercises.**³



Patient Education

- 
- Increase **rest**
 - Use **nonsteroidal anti-inflammatory medications** or analgesics as needed for pain management (as prescribed or advised by doctor or pharmacist)
 - Encourage **improved postural awareness during sitting, gait, sleeping, and physical activity**
 - avoiding a cross-legged seated position or static postures for extended periods
 - full squats or pivoting on the affected side may need to be reduced or eliminated completely
 - avoid sleeping with the affected leg in a flexed/adducted position
 - correct anterior pelvic tilt^{6,7}



Rehabilitation Principles



Hip Strength

Target iliopsoas, gluteus medius, gluteus maximus, and the internal and external rotators.^{3,6,7}

Motor Control

Target pelvic and hip stabilization.^{3,6,7}

Core Strength

Target abdominals and paraspinals.^{3,6,7}



Rehabilitation Principles



Lower Extremity Strength

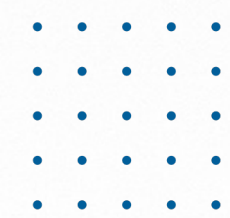
Incorporate functional movements including lunges, squats and step ups.³

Flexibility

Target hip flexors and IR/ER as indicated, avoiding painful end-range positions.^{3,6,7}

Manual Therapy

Techniques including joint mobilizations and soft tissue release.^{3,7}



Conservative vs Surgical Intervention



Over the last decade, several systematic reviews and meta-analyses indicate that **both conservative physiotherapy and hip arthroscopy can improve pain, hip-related function and quality of life in individuals with FAIS.**⁸⁻¹³

When the two approaches are compared directly, hip arthroscopy generally produces statistically greater improvements in some patient-reported outcomes during the first 8–12 months.⁸⁻¹⁰

A recent 2025 multilevel meta-analysis found that arthroscopy resulted in higher self-report outcomes including Harris Hip Scores within 12 months and higher International Hip Outcome Tool scores within 24 months compared with conservative management.⁸ However, **the average between-group differences did not reach accepted minimal clinically important difference thresholds.**¹⁴



Conservative vs Surgical Intervention



Earlier systematic reviews reached similar but not identical conclusions. Mahmoud et al.¹⁰ found that arthroscopy produced better early patient-reported outcomes than targeted physiotherapy, particularly for hip-related quality of life and activities of daily living. In contrast, Ferreira et al.⁹ found that although arthroscopy was superior at approximately 12 months, **outcomes for hip-related quality of life were similar between surgery and non-operative care at 24 months.**

These findings suggest that the clearest surgical advantage occurs in the short term, while its longer-term superiority remains uncertain. Current systematic reviews do not establish that hip arthroscopy prevents the development or progression of hip osteoarthritis.^{8,9}

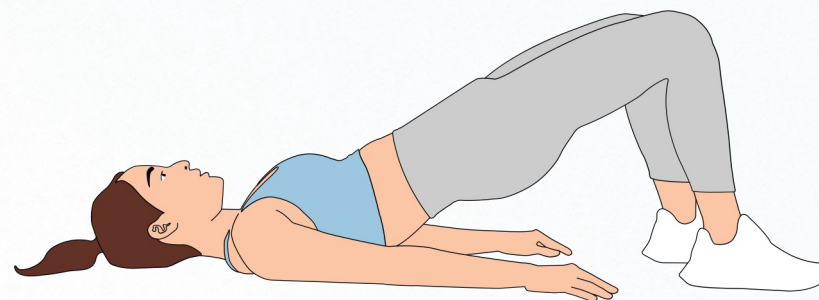


Clinical Implications



A structured, progressive physiotherapy program is a reasonable first-line intervention for most individuals with FAIS.

An initial rehabilitation period is approximately 8–12 weeks, with treatment individualized to the patient's impairments, activity demands, psychosocial factors and functional goals.^{11,12} Progress should be evaluated using hip-specific patient-reported outcomes, pain, strength, functional capacity and the patient's ability to participate in meaningful activities.



Clinical Implications



Hip arthroscopy may be considered when a patient continues to experience substantial pain and activity limitations despite completing an adequately dosed and individualized rehabilitation program. Surgery may offer a modest additional short-term improvement for selected patients, but **current evidence does not support routine early surgery for every person with symptomatic FAIS morphology.**

Prior to the consideration of surgical intervention, patients should receive comprehensive information regarding the realistic expectations of both surgical and nonsurgical management, including:

- (i) the benefits and risks of both options;**
- (ii) the expected magnitude of improvement;**
- (iii) the anticipated duration and cost of treatment; and**
- (iv) the unclear relationship between pain and hip joint structural findings.**

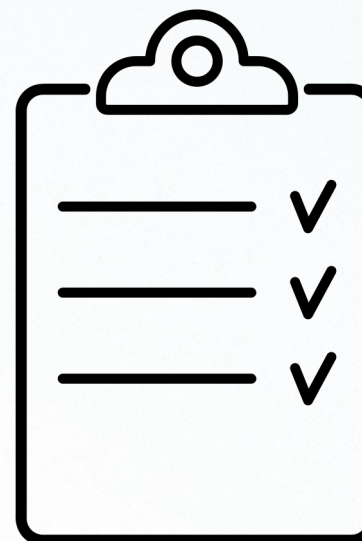
This information is essential to support informed decision-making



Outcome Measures for FAIS

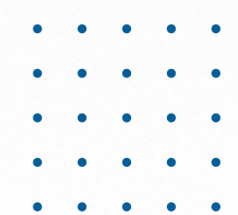


Clinicians should use a validated outcome measures including the International Hip Outcome Tool-33 (iHOT-33), Copenhagen Hip and Groin Outcome Score (HAGOS), Hip Outcome Score (HOS) at baseline and at least 1 other follow-up assessment (including discharge), to assess the impact of impairments in body function and structure on activity limitations and participation restrictions in those with FAIS.³



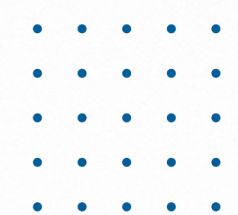
Key Take Aways

- FAIS is a clinical syndrome—not an imaging diagnosis alone: **diagnosis requires the combination of symptoms, clinical signs, and imaging findings.**
- **Clinical tests should not be used in isolation:** impingement tests such as FADIR/AIT are generally sensitive but have limited specificity; **combine patient history, examination findings, and functional assessment.**
- **Physiotherapy is an appropriate first-line treatment for most patients, with an individualized 8–12 week structured rehabilitation program before considering surgery.**
- Both physiotherapy and hip arthroscopy improve pain and function. **Surgery may provide greater short-term improvements in some outcomes,** but average differences may not reach clinically important thresholds, and long-term superiority remains uncertain.
- **Measure outcomes, not just morphology: use validated patient-reported measures** such as the iHOT-33, HAGOS, or HOS alongside pain, strength, function, and participation.



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