Conservative Management of Femoracetabular Impingement in a Female Soccer Player: A Case Study

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Biomechanics of FAI

Altered joint kinematics of the ball and socket joint of the hip[1]

- Cam impingement: femoral head enlarged
- Pincer impingement: acetabular overcoverage

Clinical presentation:

- Pain anterior medial hip/groin
- Limited hip flexion, internal rotation

Patient Case:

- 12 yo female soccer goalkeeper
- DX: Avulsion fracture R ASIS, stress fracture pubic symphysis (SPECT scan)

Congenital Factors vs. Overuse

Congenital[2-4]

- Hip dysplasia
- Coxa vara, coxa valga
- Legg Calve Perthes
- Slipped capital epiphysis

Overuse[1,5]

- Excessive anterior pelvic tilt (APT)
- ASIS, AIIS avulsion fractures
- Femoral neck stress fractures
- Acetabular labral pathology

Patient Case:

(+) for APT, ASIS avulsion fracture, ? Acetabular labral pathology

Evaluation

Mechanical Diagnosis: FAI

- Posture: ↑ lordosis, APT
- ROM: ↓ hip flexion, IR
- Strength:
  - MMT ↓ hip abduction, IR, extension by 1 grade
  - Sahrmann Level 1A (transverse abdominals)
- Gait: ↑ Trendelenberg, shortened stance involved side
- Functional strength: ↓ hip movement
  - Lateral step down
  - Single leg squat

Special tests[6-7]:

(+)Flexion Adduction Internal Rotation Test (FADDIR)

(+) Flexion Abduction External Rotation Test (FABER)

(+) Sacroiliac compression test

(+) Hypomobility of Lumbar spine facets, involved side

(-) Hip scour

Manual Therapy Interventions

- Pelvis: Anterior rotated involved side
  - Muscle energy technique
- Involved hip: Tight posterior hip capsule
  - Posterior lateral mobilizations gr III-IV
- Lumbar spine: Hypomobility of R facets
  - Unilateral PA mobilizations gr III-IV

Intervention required for Week 1-4 and then intermittently going forward

Core Stabilization

SAHRMANN PROTOCOL[8]:

TRANSVERSE ABDOMINAL

Table 3
Sahrmann Core Stability Test

Level 1	Begin in supine, crook-lying position while abdominal hollowing Slowly raise 1 leg to 100° of hip flexion with comfortable knee flexion Opposite leg brought up to same position*
Level 2	From hip-flexed position, slowly lower 1 leg until heel contacts ground Slide out leg to fully extend the knee Return to starting flexed position
Level 3	From hip-flexed position, slowly lower 1 leg until heel is 12 cm above ground Slide out leg to fully extend the knee Return to starting flexed position
Level 4	From hip-flexed position, slowly lower both legs until heel contacts ground Slide out legs to fully extend the knees Return to starting flexed position
Level 5	From hip-flexed position, slowly lower both legs until heels 12 cm above ground Slide out legs to fully extend the knees Return to starting flexed position

* Subsequent levels begin in this hip-flexed position.

Sahrmann: Weeks 1-4

PROGRESSION OF POSITIONS

Quadruped

↓

Tall Kneeling/Half kneeling

↓

Standing with functional activities

Progression: Weeks 3-6

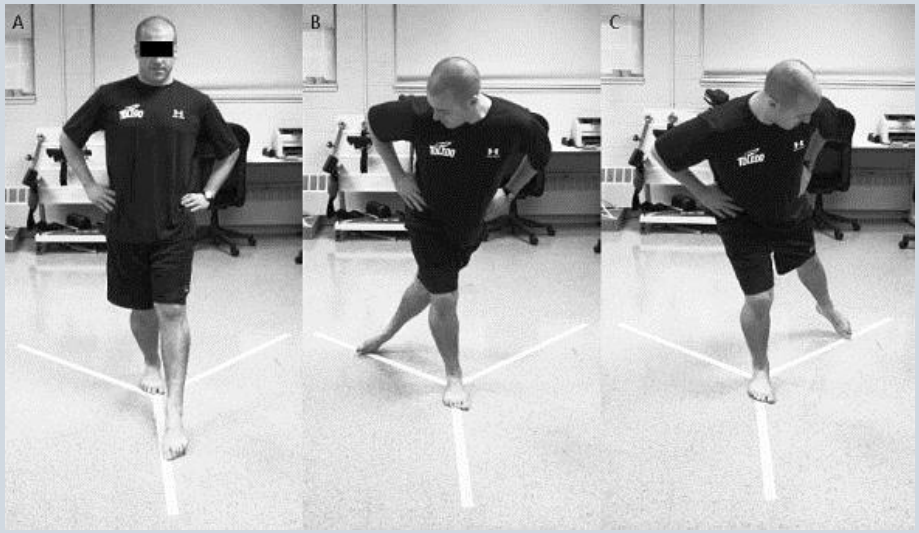
Lower Extremity Neuromuscular Training

(+)DYNAMIC VALGUM, TRENDELENBERG IN SLS

- Clamshells (hip ER)
- Single leg squat
- Lunge walking
- Lateral step down
- Theraband lateral and diagonal walking

CAUTION FOR ACETABULUM ON FEMUR ROTATION

- STAR balance activities
- Figure 4 lifts (ER with extension) in standing



Intervention Weeks 4-8

Image from Gribble 2012[9]

Progression for Return to Sport

Weeks 8-10:

- Return to run progression
- Double to unilateral jumping
  - Functional Hop test[10]

Weeks 10-12:

- Agilities with change of direction
- Sport specific training[11]
  - Goalkeeper diving
  - Long kicks

Able to return to non-contact activities but has pain with return to contact. Referred back to physician for possible surgery.

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