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 hip¹
- 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\textsuperscript{2-4}
\begin{itemize}
  \item Hip dysplasia
  \item Coxa vara, coxa valga
  \item Legg Calve Perthes
  \item Slipped capital epiphysis
\end{itemize}

Overuse\textsuperscript{1,5}
\begin{itemize}
  \item Excessive anterior pelvic tilt (APT)
  \item ASIS, AIIS avulsion fractures
  \item Femoral neck stress fractures
  \item Acetabular labral pathology
\end{itemize}

Patient Case:
\textbf{(+)} for APT, ASIS avulsion fracture, \textbf{?} 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 tests6-7:
(+ 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:

TRANSVERSE ABDOMINAL

PROGRESSION OF POSITIONS

Quadruped

Tall Kneeling/Half kneeling

Standing with functional activities

Sahrmann: Weeks 1-4

Progression: Weeks 3-6

Table 3

<table>
<thead>
<tr>
<th>Level 1</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 2</td>
<td>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.</td>
</tr>
<tr>
<td>Level 3</td>
<td>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.</td>
</tr>
<tr>
<td>Level 4</td>
<td>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.</td>
</tr>
<tr>
<td>Level 5</td>
<td>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.</td>
</tr>
</tbody>
</table>

* Subsequent levels begin in this hip-flexed position.
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
Progression for Return to Sport

Weeks 8-10:
  ◦ Return to run progression
  ◦ Double to unilateral jumping
    ◦ Functional Hop test

Weeks 10-12:
  ◦ Agilities with change of direction
  ◦ Sport specific training
    ◦ 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.
References


