A Pain in the Butt: Rehabilitation for Hip Pathologies

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August 10, 2013
Objectives

I. Identify differential diagnoses for hip pain
II. Identify common hip pathologies
III. Select key elements of a hip pain evaluation/examination
IV. Understand the relationship between the foot, core and hip as related to hip pain
V. Explain femoral acetabular impingement
VI. Introduce protocol for rehabilitation of femoral acetabular impingement
360 Sports Medicine

- Collaborative care for medical, surgical, rehabilitative, preventative and sports enhancement services
- 27 ortho/sports PTs at 5 sites
- Physical therapists’ roles:
  - Post-operative rehabilitation
    - First post-operative visit and PT evaluation conducted with surgeon and PT present when possible
  - Non-operative injury rehabilitation
  - Injury prevention workshop
  - Community outreach to educate athletes, parents, trainers and coaches
Differential Diagnosis for Hip Pain

- Sacroiliac dysfunction
  - Anterior or posterior innominate rotation
  - Ilium inflare or outflare
  - Upslip or Downslip
  - Sacral torsion
  - Flexed or extended sacrum

- Lumbar spine involvement
  - Discogenic pathology
  - Spondylolysis or spondylolisthesis
  - Radiculopathy and/or neural impingement
  - Lumbar paraspinal muscle strain

- Red flags for hip pain related to hip pathology
  - Presence of a limp
  - Groin pain
  - Limited internal hip rotation
Common Hip Pathologies

- Trochanteric bursitis
- Illiotibial band tightness/friction disorder
- Piriformis syndrome
- Labral tear
- Avulsion fracture
  - Anterior inferior iliac spine
  - Iliac crest
- Muscle strain
- Femoral acetabular impingement
Key Elements for Hip Examination

- **History**
  - Identify
    - Mechanism of initial injury
    - Movements that reproduce symptoms
    - Sport involvement
    - **Foot wear (shoes, orthotics, etc.)**
Key Elements for Hip Examination

- **Objective Measures**
  - **Postural screen**
    - Sagittal, frontal and transverse plane assessment
  - Palpation
  - Range of motion (ROM)
  - Flexibility
    - Hamstrings, quadriceps, piriformis, iliotibial band/tensor fascia lata, gastrocnemius/soleus
- **Strength**
  - Core, gluteus medius, gluteus maximus, gluteus minimus, quadriceps, hamstrings, gastrocnemius
- **Special tests**
  - Rule out low back and/or sacroiliac diagnoses
  - Determine hip diagnosis
- **Functional screen**
  - Double leg squat, single leg squat/dip, heel raise, functional step up, double leg jump, single leg jump, walk, run
Linking the Foot and Hip

- Postural assessment finding → Excessive subtalar pronation
  - Causes of:
    - Ligamentous laxity at the ankle joint
    - Weak hip abductors
    - Poor mechanical alignment of lower limb during high impact activities
  - Results in:
    - Tibial internal rotation
      - Induces a compensatory femoral internal rotation
    - Genu valgum
      - Increases Q angle
    - Femoral anteversion
Linking the Foot and Hip

- Treatment for excessive pronation
  - Orthotic management
    - Demonstration
  - Posterior tibialis strengthening (isolated)
    - Towel curl
    - Wiper
    - Big toe push
  - Gluteus medius strengthening (isolated)\(^2\)
    - Clam
    - Side-lying hip abduction
    - Single leg bridge
    - Lateral band walk
    - Single leg squat

- Link increased isolated strength to functional skills to change movement patterns
Linking the Core and Hip

- **“CORE”** does not mean **“Six-pack”**
- Four parts of the core:
  1. Diaphragm
  2. Pelvic floor
  3. Transverse abdominus
  4. Multifidus
- Function of the core
  - Stabilize lumbar spine
  - Increase stability and control for functional skills
  - Generate increased power for functional skills
Linking the Core and Hip

Core stabilization will:

- Decrease overuse of hip flexor tendons
- Reduce lumbar extension to keep the body operating in neutral
- Improve balance and control
- Reduce asymmetrical loading at the hip joint
Femoral Acetabular Impingement

“Femoral acetabular impingement is a pathological condition leading to abutment between the proximal femur and the acetabular rim.”

Two Types:

I. Pincer lesion
   - Soft tissue abnormality = Excessive coverage of the acetabulum
     - Repetitive contact of the over-covered acetabulum rim and femoral neck with hip flexion and/or internal rotation will create impingement.

II. CAM lesion
   - Bony abnormality = Non-spherical femoral head
     - Repetitive contact with hip flexion and/or internal rotation will create impingement due to the abnormal femoral head shape.
Femoral Acetabular Impingement

Current non-operative management

- Discontinuation of sport
- Avoid repetitive hip flexion and internal rotation
- Non-steroidal anti-inflammatory agents
- ??? Physical Therapy ???

According to Banerjee, et al.,

“Surgical intervention is a more realistic option. Physiotherapy has no role in the management of FAI and hence not recommended.”

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Protocol for Non-Operative Femoral Acetabular Impingement

Protocol for Non-Operative Femoral Acetabular Impingement

➢ Purpose: To determine if physical therapy is effective as a non-operative treatment for FAI

GOALS:
1. Reduce pain at affected hip to 0-2/10 on the Numeric Pain Scale\textsuperscript{12} with:
   - Repetitive transitions from supine $\rightarrow$ sit, sit $\rightarrow$ stand and stand $\rightarrow$ sit over at least 10 minutes
   - Ambulation on varied terrain (i.e. flat ground, grass, sand or incline) for at least 20 minutes
   - Seated position for at least 60 minutes
   - Run and/or jog for at least 30 minutes
   - Sport specific tasks like cut, jump and pivot for at least 30 minutes
Protocol for Non-Operative Femoral Acetabular Impingement

2. Return patient to prior level of function without the need for surgical intervention through:

- **Improved postural alignment to locate neutral spine and improve body awareness**
- **Increased strength and endurance of core stabilizers** \(^{13,14}\)
  - Achieve a 4/5 on the Double Straight Leg Test and maintain neutral alignment for 60 seconds in prone plank
- **Increased strength and endurance of proximal hip muscles (i.e. Gluteus medius, Gluteus maximus, Gluteus minimus)** \(^{15,16,17}\)
  - Achieve a 5/5 on Manual Muscle Testing (MMT)\(^{18}\) and perform 10 consecutive single leg dips
- **Increased flexibility of lower extremity muscles that have attachments at the hip and/or pelvis** \(^{19}\)
  - Meet all standards outlined for the flexibility tests
Protocol for Non-Operative Femoral Acetabular Impingement: Therapeutic Exercises for Posture$^{13,14}$

BEGINNER-ADVANCED

- Train the patient to achieve neutral spine
  - I. Address all postural deviations with home program exercises.

- Lumbo-pelvic mobility training
  - I. Hook-lying pelvic tilt anterior \(\rightarrow\) posterior and posterior \(\rightarrow\) anterior
  - II. Quadruped cat/camel
  - III. Standing pelvic tilt anterior \(\rightarrow\) posterior and posterior \(\rightarrow\) anterior
  - IV. Squat with anterior pelvic tilt
Protocol for Non-Operative Femoral Acetabular Impingement:
Therapeutic Exercises for Core Stabilization\textsuperscript{13,14}

**BEGINNER**

- Transverse abdominus (TrA) recruitment
  - I. Breathing with abdominal draw in maneuver
- Multifidus (MTF) recruitment
  - I. Prone posterior pelvic tilt with unilateral lower extremity elevation
- TrA & MTF engagement with lower and/or upper extremity movement
  - I. Single knee fall out
  - II. March
  - III. Heel slide
  - IV. Contralateral upper extremity and lower extremity extension
Protocol for Non-Operative Femoral Acetabular Impingement: Therapeutic Exercises for Core Stabilization

**INTERMEDIATE**

- **Bird-dog**
  1. Upper extremities only
  2. Lower extremities only
  3. Contralateral upper and lower extremity

- **Plank**
  1. Weight bear through hands and toes
  2. Weight bear through elbows and toes

- Swiss ball kneeling upper extremity roll-out
Protocol for Non-Operative Femoral Acetabular Impingement:
Therapeutic Exercises for Core Stabilization$^{13,14}$

**ADVANCED**

- Rotational stability activities
  - I. Seated
    - Stable surface
    - Unstable surface
  - II. Kneeling
    - Stable surface
    - Unstable surface
  - III. Standing
    - Stable surface
    - Unstable surface
- Rotational mountain climbers
Protocol for Non-Operative Femoral Acetabular Impingement: Therapeutic Exercises for Proximal Strengthening\textsuperscript{15,16,17}

BEGINNER

- Clamshell
  (hip flexed 30 degrees)
- Side-lying hip abduction
  (hip extended 30 degrees)
- Double leg bridge
Protocol for Non-Operative Femoral Acetabular Impingement:
Therapeutic Exercises for Proximal Strengthening$^{15,16,17}$

**INTERMEDIATE**
- Standing single leg balance (hip flexed to 20 degrees)
  - I. Maintain neutral pelvis with no movement
    - Stable surface
    - Unstable surface
  - II. Maintain neutral pelvis with hip abduction, extension, and flexion
    - Stable surface
    - Unstable surface
    - Progress to resisted
- Lateral band walks (knees and hips 30 degrees of flexion)
- Lunges (<90 degrees hip flexion)
  - I. Forward
  - II. Lateral
  - III. Transverse
- Single leg bridge
I cropped the picture, which will allow you more space to increase font.
Laura, 6/21/2013
Protocol for Non-Operative Femoral Acetabular Impingement: Therapeutic Exercises for Proximal Strengthening¹⁵,¹⁶,¹⁷

ADVANCED

- Single leg squats
- Single leg deadlift
- Double and single limb plyometrics (specific to PLOF)
  - I. Forward
  - II. Lateral
  - III. Transverse
- Agility drills
  - I. Forward
  - II. Lateral
  - III. Transverse
Protocol for Non-Operative Femoral Acetabular Impingement: Therapeutic Exercises for Lower Extremity Flexibility

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<td>• Gastrocnemius</td>
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<tr>
<td>• Piriformis</td>
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<td>• Double knee to chest</td>
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Thank You for all of Your Contributions

- Dr. Andrew Pennock
- Jessica Garfin, PT, DPT
- Danielle Sidoti, PT, DPT
- Nan Haney, PT, Physical Therapy Manager
- Alexa Kratze, Director, Developmental Services Programs
- Linda Heartness, Administrative Associate
- Eric Julienne, Rehabilitation Aide
- Physical Therapy Team
ANY QUESTIONS???
References