Sports Hernia
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Examine Rehabilitation Perspective on Sports Hernia

- Understand why term sports hernia is confusing
- Discriminate conditions with similar symptoms
- Outline a brief physical exam for surgical consideration of sports hernia
- Define core and global strength as they relate to pre-hab and rehab of sports hernia
- Give rehabilitation protocols and management algorithm for sports hernia / groin pain

Sometimes the Etiology is Clear
Etiology is Often Multifactoral

- Acrotomeal Fractures
- Femoral Ring Canal
- Adductor Langes
- Pubic Tuberosity

Functional Inguinal Canal

- Anterior Wall
- Posterior Wall
- Interior Structures
- Floor

Dependent on the Sum of Its Parts
Sports Hernia (Redefined)

• Groin pain in athletes secondary to acquired “functional” inguinal canal injury with inguinal wall deficiency not sufficient to result in discrete hernia formation

Prevalence and Nature

• Common - Groin pain found in 5-28% of athletes (Preskitt 2011)
• Insidious onset (72%) (Gilmore 2011)

But Not Always Insidious
Triad of Soft Tissue Injury

Eccentric Muscle Contraction puts Greater Load Stress on Muscles

Hamstring Injury
Tendon Stress-Strain Curve

Wang 2006

Muscle Injury Tissue Progression

Healthy Tissue | Injured Tissue | Scar Tissue

Scar tissue forms to heal injured tissue, leaving the muscle weaker and less flexible.
A Cascade of Events Through Kinetic Chain

Classic left anterior inferior chain pattern (from the bottom up)

5) Stretch strain - abdominals
4) Unlevel pelvis -> torsional strain - pubic symphysis
3) Contraction / tightness - left adductors
2) Internal rotation of lower limb
1) Collapsed foot arch

Clinical Exam to Determine Need for Surgery

Dx of Exclusion

#1 - Rule out other causes of groin pain
- Genitourinary
  - Intraabdominal
  - Gynecological
  - Hip / lumbar
- Other muscular strains and sprains

#2 - Standard hernia exam
**Careful bilateral scrotal and external inguinal ring palpation**
Grade Tenderness 0-5 at Five Locations

<table>
<thead>
<tr>
<th>Grade</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>no tenderness</td>
</tr>
<tr>
<td>1</td>
<td>very slight tenderness</td>
</tr>
<tr>
<td>2</td>
<td>mild but definite &amp; reproducible tenderness</td>
</tr>
<tr>
<td>3</td>
<td>moderate tenderness (&quot;Yes, that hurts&quot;)</td>
</tr>
<tr>
<td>4</td>
<td>severe tenderness (&quot;Hey, that really hurts&quot;)</td>
</tr>
<tr>
<td>5</td>
<td>pain is so severe that patient cannot tolerate palpation</td>
</tr>
</tbody>
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#1 - Pubic symphysis

#2 – Left & right adductor tendon

#3 – Left & right inguinal floor

Assess Osteitis Pubis (Percussion)
For those difficult patients

Assess Adductor Tendon Tenderness

Assess Inguinal Floor
Alternative Test Inguinal Floor

Surgical Decision

• In the absence of any other pathology
• + SURGERY
  – If tenderness or pain of ≥ 3/5 in the medial inguinal floor that is clearly dominant over ipsilateral adductor tenderness
• + REHABILITATION
  – If grade is ≤ 2 unilaterally or bilaterally
  – If there is a clear dominance of adductor pathology and injury

Diagnosis of Exclusion – Musculoskeletal

• COMMON DENOMINATOR = Anterior hip pain radiating to the groin
  – Isolated adductor /rectus / pubis injuries
  – Hip injury / fracture
  – Femoral Acatabular Impingement (FAI)
  – Hip snapping syndrome (Iliopsoas Tendonitis)
  – Labral tears
  – Osteoarthritis
  – Osteonecrosis
Isolated Adductor / Rectus / Pubic Injuries

Best evaluated by MRI
- sensitive (98%)
- specific (89-100%) (Zoga 2008)

Hip Injury / Fracture

- Femoral neck stress fracture
  - Activity-related anterior groin pain
  - Relieved by rest
  - Initially mild
  - Worsens with therapy
- Gait assessment
  - Difficulty bearing weight on affected side = limp or antalgic gait
- X-rays negative up to 4 weeks, MRI positive within 2 days

Femoral Acatabular Impingement (FAI)

- Insidious onset
- Pain with sports requiring hip internal rotation (hockey, tennis, golf, soccer...)
- Stepping out of a low-seated car difficult
- FADDIR test
- X-rays lateral and AP
  - Determines cam or pincer morphology
- MRI / MRA
  - Cartilage deterioration / labral tear
FADDIR Test for Impingement

Hip Snapping Syndrome (Iliopsoas Tendonitis)
- Resisted Hip Flexion, Seated Position
- Direct Palpation of Iliopsoas

Labral Tear
- Worsens with twisting motions, running, walking, sitting for long periods
- Clicking or catching
- X-ray, MRA nearly 100% specific

C-Sign
Hip Osteoarthritis

- Progressive deep ache with loss of ROM
- Loss of hip internal rotation
- Confirmed with X-ray

Osteonecrosis

- Age 20-50 years
- Trauma, steroids, ETOH, smoking, lupus, sickle cell, coagulopathy, scuba diving
- Deep intermittent ache
- PE
  - Early – pain with extreme ROM
  - Advanced – pain with limited ROM
- MRI

Prehab & Rehab

The Core Simplified:
4 Sides, a Roof & a Floor
The Core in Action
Functional conduit for the transfer of energy
body’s upper half ⇛ lower half

Foundation for the stabilization of posture and movement

Dependent on the Sum of Its Parts

Strengthening the Abs in Isolation
Does Not a Strong Core Make
The Forgotten Parts

- Would you buy a box without a bottom or top?
  - respiratory diaphragm
  - pelvic floor m. (Kegel)


Posterior Chain

Primary Structures of Good Posture
- Traps, Lats, Gluts

Central Feature
- Thoraco-lumbar Fascia

Global Strength

- Obliques plug into the thoraco-lumbar fascia laterally and, together with core, create a tension-integrity system which stabilizes the pelvis
  - Pelvis = key to all other stability in the body
Stages of Rehabilitation

- Reduce Pain: 
  - Control inflammation & deliver manual therapy
- Improve Range of Motion: 
  - Non-injury related stretching
- Re-educate Neuromuscular Pathways: 
  - Anterior/posterior pathways
- Strengthen and Condition
- Develop Functional Training: 
  - Return to Sport

Take Home Points

- Majority of groin pain correlated to instability across the pubis
- Usually combination injury / conditions can co-exist
- Any type of biomechanical alteration of the core leads to instability across the pubis
- Therefore, pre-habilitation and rehabilitation imperative to correct biomechanical imbalances, ie, potentially the root cause of most groin pain

Proposed Algorithm for Managing Sports Hernia
References


