HIP & GROIN PAIN
“A BLACK BOX”

Casey G. Batten MD
Assistant Clinical Professor
UCSF Sports Medicine

OBJECTIVES:

- Recognize an expanded differential diagnosis for groin and hip pain
- Be able to describe the anatomy associated with specific injuries
- Be able to identify, diagnose, and treat selected injuries

Not a “Black Box”

- Legg Calve Perthes
- SCFE
- Stress Fx
- FAI
- OA
- Labral Tear
- Sports Hernia
- Nerve Impingement
- Adductor Strain
- Piriformis Syndrome
- GT Bursitis
- Snapping Hip
- Osteitis Pubis
- Avulsion Fx
- Ovarian Cyst
- Inguinal Hernia
- IBD
- AGE
- Endometriosis
- Lumbar Disease

Not a “Black Box”

- Large Differential
- History is KEY
- “A little bit of anatomy goes a long way”
- What is the groin?
- Many patients have >1 issue
Case # 1

- 31-year-old female runner describes a chronic history of popping in the left hip that became painful approximately 1 month before she sought medical intervention. Her primary complaints were pain, popping, and decreased functional abilities such as jumping, crossing her left leg over the right, getting out of a car, or running. The patient's goal was to return to pain-free functional activities. She was unable to identify any specific factors that may have contributed to the onset of pain and popping.

- On exam both AROM & PROM WNL. Pain with end-range passive extension. Strength 5/5. Mild pain w/ resisted left hip flexion Bilateral LE's NV intact. No bony TTP. When the hip was moved into extension from a flexed/ER/Abducted position a popping sound was present and associated with pain.

- X rays negative

Snapping Hip Anatomy

Snapping Hip Anatomy

- ITB over GT #1
  - Gluteus Max over GT

External

- ITB over GT #1
  - Gluteus Max over GT

Internal

- Iliopsoas over IPE #1
  - Labral Tear (MRI)
  - Loose Body

ITB=Flex/AB
Iliopsoas=Flex
GMax=Ext/ER
Snapping Hip HX

- Typically 15-40 yrs, female > male
- Audible “snap/click,” +/- Pain, Anterior/Lateral
- Provocative Mvts, Chronic (months), Overuse
- Decreased pain & “snapping” with rest

Snapping Hip PE

- Inspection: Gait, Snapping (pseudosubluxation), LL, ?pronation
- Palpation: External vs. Internal
- Strength and Flexibility
- Functional Testing: External vs. Internal

Iliopsoas

- Pain anterior / groin
- TTP femoral triangle
- Hip extension limited / painful
- Hip flexion weak / painful
- Extending hip from Flex/AB/ER

ITB

- Pain over GT
- TTP GT Bursa
- All ROM except AB limited / painful
- Hip extension & AB weak
- Ober Test
**Imaging:**

- Xray (-)
- US (Tx/FxN)
- MRI (Anat.)

**Snapping Hip Tx**

- May only need reassurance
- Activity modification
- PT=ITB stretch, Hip AB/ADductors/FLEX, Modalities
- NSAIDs
- Steroid injection for ITB...?IR for Iliopsoas
- Surgical if failed conservative Tx (?Dx)

**Snapping Hip Review**

- Can be INTERNAL or EXTERNAL
- ITB over the greater trochanter is #1 cause
- Correct any biomechanical errors
- Conservative therapy / reassurance is typical

**Case # 2**

- 32-year-old male, soccer referee, presents with 1 month h/o worsening midhypogastric and midline pelvic pain. Denies injury, however now officiating 4 games/wk. Worse with coughing and with kicking soccer ball. Pain described as sharp/"stabbing." No PSH, Neg ROS for GI/GU.

- On exam abdomen wnl, midline TTP over pubic symphysis, GU wnl. FABER's some discomfort. Pain and weakness with resisted hip aDduction. NV intact.
AP X-RAY:

OSTEITIS PUBIS

- First described in 1924, Infectious vs. Inflammatory
- Surgery as a risk factor
- Males > Females, Age 20-30's
- Soccer

? CAUSE IN ATHLETES

- “Stress injury”
- Due to shear stress
- Trauma
- Pregnancy
- Rheumatological
- Idiopathic

OSTEITIS PUBIS Hx

- Pain (“burning”) localized over symphysis, radiates into groin (AD's), medial thigh, lower abdomen, +/- click/pop
- Worse with kicking, pivoting, running, Valsalva
- Weakness of lower extremities
- Acute or sub-acute onset
**Osteitis Pubis PE**

- TTP over symphysis, may have swelling
- Weakness with hip adduction/flexion
- + Squeeze test
- Check for hernia

**Imaging - X Ray**

- May order CBC/ESR if ? infectious
- First choice, may not see changes < 4 weeks
- May perform single leg to eval instability (>2mm)
- > 10mm = widening of cleft
- Sclerosis, cystic changes, rarefaction

**Normal vs OP**

**Imaging**

- Bone Scan = non-specific changes, + in adductor injury, obturator neuropathy, conjoint tendon abnormality. May be positive early on however
- CT = Bone changes
- MRI = Bone marrow edema
Osteitis Pubis Tx

- Rest, activity modification, NSAIDs (natural history is progressive)
- PT w/ modalities, abductor massage, core strength/stabilization, HEP
- RTP may take months-years, usually 3-6 mo’s, recurrent in approx 25%
- Injection dx/tx
- Surgery not recommended, chronic instability

Osteitis Pubis Review

- Primary or secondary cause
- A “stress” injury
- Classic X-ray findings
- May take many months to return to activity

Case # 3

40-year-old female triathlete presents with a 6 wk h/o left, lateral hip pain. Denies trauma. Notes that the pain radiates down the lateral thigh, waking her up at night. Pain is also worse with climbing stairs. Has tried to decrease training volume, however pain continues. Has been resistant to NSAIDs. No distal numbness, tingling, weakness below the knee.

On exam normal lumbar spine exam, no SI joint TTP. Point TTP over lateral aspect GT. Pain with FABER. NV intact LE’s.

Trochanteric Bursitis

- Any age
- Females > Males
- Acute/repetitive trauma = Inflammation
- Biomechanical risk factors
**GT Bursitis Hx**

- May recall h/o trauma, ? training surface
- Classic lateral hip pain, +/- radiation thigh / groin
- Worse at night on side, climbing stairs, running, prolonged standing
- Wakes up at night

**GT Bursitis PE**

- Point TTP which reproduces pain, +/- Edema
- In obese pt’s, approx 8” below crest
- Pain with passive hip ER, FABER
- Pain with active hip ABduction
- Tight ITB
- Must evaluate for radiculopathy

**GT Bursitis Dx**

- Obtain plain film if h/o acute trauma or concerning PMH

![Image](image1.png)

*Figure 1. The doctor examines the greater trochanter with the patient lying on their side.*

**GT Bursitis Tx**

- Rest, activity modification, ice, NSAIDs
- PT = Stretch ITB, Strengthen Hip ABductors, modalities, HEP
- Correct LLD, training errors
- Injection
- Surgery rarely needed
**ITB Stretching**

![ITB Stretching Image]

**GT Bursitis Injection**

- Can be DX or Tx
- Mix of steroid and anesthetic
- Correct needle
- Point of maximal TTP
- Do NOT “fan”
- Repeat in 4-6 wks if pain relief <50%

**Post Injection Cares!**

**GT Bursitis Prognosis**

- Most respond well to PT in combo with injection
- 0/1/5 yr 36%/29% + 5x’s, most with OA
- If + injection, 2.7x LESS likely to develop chronic pain

**Case # 3 Continued...**

Pt previously described underwent a 6 week course of PT w/ modalities & rest. Attempted activity, however pain persisted. Seen for GT bursa injection twice which only afforded “slight” improvement. Exam is notable for pain that is less localized over lateral aspect of thigh, and is more superior and posterior to the GT.

? What would you do?
G. Medius T.O. / Bursitis

- Often overlooked!
- Bursa MEDIAL to GT
- Co-exists with tendinopathy of Glut Medius
- TTP ABOVE GT
- Pain with Glut Medius stretch (pretzel)

Bursitis Review

- Greater Trochanter Bursitis most common (lateral)
- Correct biomechanical errors
- PT with injection (may repeat injection!)
- Do not overlook Gluteus Medius Bursitis/tendinopathy (superior/posterior)

Case # 4

- 20-year-old collegiate cross country runner notes aching groin pain for the past 2 weeks. Pain continues at night. States that she has a history of an “eating disorder.”
- On exam key findings are pain with single-leg hop test and pain with passive hip rotation
Femoral Neck Stress Fracture

- Do not want to miss!
- XR / Bone scan / MRI
- Treat with rest

Femoral Neck

- MRI 100% Sens, gold standard
- If displaced: AVN 42%
- Major surgery in 30%

ORIF?

- Grade 4 changes on MRI
- Tension side involvement
- Displaced

Return to Sports?

- N=53
- Recovery vs. Grade (MRI)
- Pearson 0.627
- Bone remodeling approx. 180 days

Arendt et al., AJSM, 2003
**Stress Fx Review**

- High index of suspicion
- ? Female Athlete Triad
- MRI
- Rest

**Case # 5**

- 35-year-old female runner complains that 6 months ago had insidious onset of anterior hip pain with a sensation of “deep popping.” Pain worse with hip flexion. No radiation. Denies low-back pain or radicular symptoms. Unable to run without pain.
- On exam, pain with resisted flexion, and notes anterior pain with FABER test.

**Femoral-Acetabular Impingement (FAI)**

- 20-50 year-old
- Secondary to retroversion or too much bone
- Ache in groin / anterior hip
- Cam (femoral) vs. Pincer (acetabular)
Acetabular Labrum Injury

- Associated with FAI?

Labrum Function

- Load Transmission
- Increases joint stability
- Hydrostatic Pressure
- Deepens socket

Acetabular Labral Tear

<table>
<thead>
<tr>
<th>Location of pain</th>
<th>0.06235 (53%)</th>
<th>Mechanical snapping/popping/locking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Night pain</td>
<td>0.0006*47 (71%)</td>
<td>Night pain</td>
</tr>
<tr>
<td>Activity-related pain</td>
<td>&lt;0.0001*60 (91%)</td>
<td>Activity-related pain</td>
</tr>
<tr>
<td>Buttock pain</td>
<td>0.05*25 (38%)</td>
<td>Buttock pain</td>
</tr>
<tr>
<td>Lateral hip pain</td>
<td>0.1439 (59%)</td>
<td>Lateral hip pain</td>
</tr>
<tr>
<td>Anterior thigh/knee pain</td>
<td>0.8134 (52%)</td>
<td>Anterior thigh/knee pain</td>
</tr>
<tr>
<td>Groin pain</td>
<td>&lt;0.0001*61 (92%)</td>
<td>Groin pain</td>
</tr>
</tbody>
</table>

Burnett SJ et al., JBJS-A, 2006

MRI vs. MRA

- MRI with large field of view, Sens = 8%
- MRI with small field of view, Sens = 25%
- MR Arthrogram with small field of view, Sens = 92% (+ injection)
FAI / LABRUM REVIEW

- Concurrent FAI and labral injury
- MRI + arthrogram, diagnostic injection
- Refer for possible scope

QUESTIONS?