Anterior Hip Pain in Athletes
Disclosure-

Neither I, Willa Fornetti, nor any family member(s), have any relevant financial relationships to be discussed, directly or indirectly, referred to or illustrated with or without recognition within the presentation.
Anterior Hip in Athletes - Overview

- Anatomy of the Hip
- Mechanism of Injury
- Differential Diagnosis
- History
- Physical Exam
- Diagnostic Imaging
- Causes of Hip Pain
- Treatment
Hip Joint Anatomy

- Ball and socket synovial joint
- Multiaxial motion
- Transfers loads between upper and lower body
- Articular surfaces covered by hyaline cartilage
Hip Joint Anatomy
Anterior Hip Pain in Athletes - Mechanism
Groin Pain in Athletes - Mechanism

- Stress forces on the groin
- Abnormal physiologic hip motion required for sport
- Repetitive motion without adequate rest
- Muscle imbalance
- Children doing more earlier leading to the development of hip joint pathology
Differential Diagnosis
Anterior Hip Pain in Athletes

- Labral Tear
- Femoral Acetabular Impingement
- Osteoarthritis of the Hip
- Stress Fracture
- Snapping Hip (Internal)
- Transient Synovitis, Septic Arthritis
- Osteonecrosis
- Hip Flexor Strain
- Adductor tear/strain
- Osteitis pubis
- Sports hernia
- Apophysitis/Avulsion
- Hamstring Injuries
- Myositis ossificans
- Intra articular loose bodies

- Tumors- osteoid osteoma
- Testicular/Epididymal pathology
- Referred pain (ureteric colic)
- Infection
- Cancer
- Obturator nerve entrapment
- Seronegative spondarthropathy
Anterior Hip Pain Characteristics

- Inflammatory
- Mechanical
- Referred
- Strained Tissues
Anterior Hip Pain Characteristics

‘Red Flag’ symptoms:

- Night pain
- Associated weight loss
- Associated night sweats
- Constant pain, unrelied with analgesics
- Inability to weight bear

‘Yellow Flag’ symptoms:

- Seronegative spondloarthropathy:
  - eyes, skin, gu, bowels
Anterior Hip Pain History

• Onset? Gradual? Injury?
• Location? Superficial or Deep?
  – Pubic, anterior or lateral hip, lower abdominal?
• PPQRST
• Worsens pain? Improves pain?
• Mechanical symptoms?
• Reproducible with palpation or motion?
• Prior imaging studies?
• Treatments attempted to date?
• Helpful and for how long?
• Goals of treatment?
Anterior Hip Pain Physical Exam

- **Standing**
  - Gait, proprioception, squat, repeated one legged hop
- **Lumbar spine exam**
  - Lumbar AROM, standing flexion/stork
- **Alignment**
  - Lumbar, SI, pelvis, innominate
  - Leg length discrepancy
- **Hip exam**
  - ROM (passive- seated or prone)
  - Log roll, FADIR, FABER, Scour
- **Knee exam**
- **Reflexes, neurologic**
- **Strength testing- causes pain?**
Anterior Hip Pain Physical Exam
Anterior Hip Pain Physical Exam

• Log Roll - passive hip ROM
  – Restricted movement?
  – Pain?
• Stinchfield test - loads the anterior labrum
  – Pain?
  – Weakness?
Anterior Hip Pain Physical Exam

- FADIR- groin pain
- Scour- groin pain, myofacial tightness, painful click
- FABER- groin pain
Diagnostic Imaging for the Hip

- Hip X-rays
  - AP Pelvis
  - Frog Leg Lateral
  - Dunn View
Diagnostic Imaging for the Hip

- MRI +/- arthrogram
- Ultrasound groin with provocation tests
- CT- 3 D reconstruction
Causes of Anterior Hip Pain - Osteonecrosis

- **Legg-Calve-Perthes disease**
  - Idiopathic osteonecrosis of the femoral head in children 2-12 years of age
  - Affects males more than females ratio 5:1

- **Adults-risk factors include lupus, sickle cell, HIV, smoking, alcoholism and steroid use**
  - Pain, insidious onset

- **Treatment depends on severity**
  - NSAIDS, relative rest, activity restriction and physical therapy
  - Casting, immobilization and crutches
  - Surgical treatment
Causes of Anterior Hip Pain-
Slipped Capital Femoral Epiphysis (SCPE)

- Slipped capital femoral epiphysis (SCPE)
- Adolescent hip during growth spurt
- Patient is usually overweight
- 2-3 more common in males than females
- Pain, insidious onset.
- Limp, leg turns outwards
- Goal of surgical treatment- prevent any additional slipping of the femoral head until the growth plate closes.
- Complication- avascular necrosis (AVN)
- Urgent pediatric ortho consult
Causes of Anterior Hip Pain - Infectious

- Acute onset, atraumatic
- Impaired weight bearing
- Transient Synovitis
  - Children 3-10 yrs old
  - Most common cause of hip pain and limp
  - Recent viral infection commonly cited although true in only 30% cases
  - Diagnosis of exclusion
  - NSAIDS, limit weight bearing
  - Usually clears by itself in 7-10 days
- Septic Arthritis
  - Older adults > 80 yrs old
  - Diabetes, RA
  - Recent joint surgery and hip or knee prostheses
- Septic Joint
  - Fevers?
  - Travel?

- Bloodwork includes: CBC, sed rate, CRP
- MRI without contrast
- If effusion then perform image guided aspiration
- Fluid analysis- cell count and gram stain, cultures
- Positive cultures- proceed with urgent orthopedic consultation
- Surgery to wash out the joint, IV/oral antibiotics
- Older patients may require urgent joint replacement
Causes of Anterior Hip Pain- Hip Fracture

- Occult or stress fracture
- Gradual onset with exercise
- Pain with running, then walking
- Marathon runner
- Can be associated with female athlete triad
- Treatment depends on location and severity of the stress fracture
- Compression side
  - Medial, inferior
  - non weight bearing, activity restrictions
- Tension side
  - Superior, lateral
  - ORIF and percutaneous screw fixation
- Pathologic fractures include osteoporosis, tumors and infections
Causes of Anterior Hip Pain - Iliopsoas Bursitis (Internal Snapping Hip)

- Anterior hip pain when extending the hip from a flexed position
- Young athletes during rapid growth - tight anterior musculature with weak glut/hip/core
- More common in sports with repetitive hip flexion
- Dynamic ultrasound is useful in evaluating snapping hip
- Physical therapy/Rehabilitation
Causes of Anterior Hip Pain - Labral Tear

- Dull or sharp groin pain
- Pain usually insidious onset but can be after trauma
- 50% patients have mechanical symptoms
- MRI arthrogram helpful for diagnostic evaluation
- Surgical vs Non Surgical treatment
Causes of Anterior Hip Pain - Femoral Acetabular Impingement (FAI)

- Abnormal contact between the femoral head and acetabulum during normal or athletic activity
- Bone spurs develop around the femoral head and/or along the acetabulum.
- Up to 90% of hips with labral tears also have FAI pathology
- Breakdown of articular cartilage leads to osteoarthritis
- Congenital abnormalities can contribute
- Sports accelerate process
- Common cause of intra articular hip pain and early osteoarthritis
Causes of Anterior Hip Pain - Femoral Acetabular Impingement (FAI)

- Pain usually begins gradually but can be sudden onset
- Pain occurs with activities requiring flexion, adduction and internal rotation of the hip
- Sports/exercise but also prolonged sitting, getting in and out of a car
- Cam impingement is usually found in men, manifests between ages 20-30
- Pincer more in women present slightly older
- Most cases are mixed pattern
- Problems occur mainly at the anterolateral femoral head/neck junction and anterior/superior acetabulum.
Anterior Hip Pain in Athletes- FAI

Physical Exam

- Log roll- 56% sensitive for FAI
- Stinchfield- 30% sensitive for FAI
- FADIR
  - 88% sensitive for FAI
  - 96-75% sensitive for labral tears
- Scour
- FABER
  - 96-99% sensitive for FAI
  - 88% sensitive for labral tears

Imaging

- X-rays
- MRA arthrogram used to assess cartilage and labral tears
- Intra articular anesthetic injection may confirm source
- Measurement of the alpha angle for CAM
- Measurement of overcoverage of the acetabulum or Pincer
Causes of Anterior Hip Pain - Osteoarthritis

- Gradual onset of pain, worse over time
- More common in older patients (>40 years)
- Pain typically dull but sharp with weight bear and pivot motion
- Unable to cross her right foot over knee when putting on socks or shoes
- Antalgic gait
- Narrowing of the joint space, bone spurs, sclerosis
Treatment for Anterior Hip Pain

- Education
- Activity modification
- Ice and/or Heat
- Home exercises
- Physical therapy
- Medications
- Cortisone injection
- Surgery
MSK Treatment for Anterior Hip Pain

Causation?
Multiple Interdependent Pathologies

Groin Pain

• Hip flexor tightness
• Lumbar lordosis
• Lumbar dysfunction
• QL and TFL tightness
• Asymmetrical sheer force across the symphysis
• Osteitis pubis
• Adductor and Iliopsoas spasm and strain
MSK Treatment for Anterior Hip Pain

Principles:
- Mobilize and stabilize lumbar spine
- Relieve QL & TLF tightness
- Relieve neural tension
- Relieve iliopsoas tightness
- Strengthen and balance adductors & abdominals
- Strengthen gluteal musculature
- Correct leg length discrepancy
Treatment for Femoral Acetabular Impingement

• Non operative treatment
  – Rest
  – NSAIDS
  – Core/hip strengthening
  – Physical Therapy

• Surgical treatment
  – Arthroscopic or open
  – Goal is to restore normal joint morphology
  – Osteoplasty of the femoral neck
  – Trimming of the acetabular rim
  – Torn labrum debrided or repaired
Efficacy of Surgical Treatment for FAI

- 23 articles included in this systematic review
- 608 males, 362 females; mean age of the patients were 34.8 yrs
- Does surgical treatment for FAI succeed in improving patient symptoms?
  - Both arthroscopic and open treatment, improved mean postoperative scores
- In which patients should standard treatment for FAI be avoided?
  - 0-30% dissatisfied and went onto have THA
  - Outerbride grade 3 or 4 cartilage injury seen intraoperative and OA greater than Tonnis grade 1 on preoperative radiographs were associated with poorer outcomes
- Is labral refixation superior to labral resection?
  - Studies varied in their treatment of labral injury
  - 2 studies- hip function, pain scores and delay of radiographic OA improved more with labral refixation (1 study), another found no significant difference
- Does treatment for FAI affect the progression of OA?
  - Difficult to determine
  - Cases were relatively recent and OA is a gradual process.

Surgical Treatment for FAI in Athletes

- Systematic review of 9 studies
- 418 athletes surgically treated for FAI
- Mean age was 25.4 years (range from 11 to 66 yrs)
- Return to sport- 92%
- Rate of return to the previous level of competition- 88%.
- Professional athletes- rate of return 95%, return to preinjury activity levels was 92%
- Level 4 studies (case series) but findings suggest that surgical treatment for FAI resulted in a high return to preinjury activity levels of sports.

Treatment for Anterior Hip Pain

- Education
- Activity modification
- Ice and/or Heat
- Home exercises
- Physical therapy
- Medications
- Cortisone injection
- Surgery
Anterior Hip Pain in Athletes Review

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- Differential Diagnosis
- History
- Physical Exam
- Diagnostic Imaging
- Causes of Hip Pain
- Treatment
References

Questions??

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