Hip Injuries & Arthroscopy in Athletes

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EATA Annual Meeting
January, 2011
Hip Injuries & Arthroscopy in Athletes

• Anatomy
• History
• Physical Exam
• Radiologic studies
• Hip arthroscopy- INDICATIONS
  – Technique
Hip Injuries & Arthroscopy in Athletes

• Anatomy
  – Bony anatomy
    • Femoral head and acetabulum
  – Soft tissue
    • Capsule and ligaments
    • Labrum
    • Ligamentum teres
Hip Injuries & Arthroscopy in Athletes

• Anatomy
  – Hip is a true ball & socket joint
  – Highly constrained joint
  – Neurovascular structures
    • Femoral triangle
    • Lateral femoral cutaneous nerve
    • Sciatic nerve
Hip Injuries & Arthroscopy in Athletes

- Capsule and ligaments
  - Strongest ligaments in the body and are adapted to transfer forces from lower extremities to spine

- Ligamentum teres

- Labrum
  - Deepens the acetabulum and increases articular congruence
Labrum

- Labrum is fibrocartilage
- Has blood supply from the periphery
- Previously tears thought to exist only with major trauma (posterior dislocation)
Labrum

• “Suction-seal”
  – Labrum has a suction-seal effect on joint
  – When hip is reduced, labrum seals the synovial fluid around articular cartilage aiding in stabilization

• Labrum acts as stabilizer and deepends acetabular cup
Hip Injuries & Arthroscopy in Athletes

• Normal hip has approximately 140 degree arc in flexion-extension
  – Only approximately 40 degree arc is used during jogging, with more during vigorous running
Epidemiology

• Hip & groin injuries occur less frequently than those of knee and ankle.

• Account for 5-9% of injuries in high school athletics.

• Rehabilitation & recovery can be significant, so early recognition and treatment are essential.
Biomechanics

• Loads of up to 8 x body weight have been demonstrated with jogging
• Structure of hip joint is uniquely adapted to transfer these forces
• Center of gravity is anterior to second sacral vertebra
  – Forces are transferred from lower extremity through hip
Acute Injuries

• Muscle strains
• Avulsion/ apophyseal injuries
• Labral tears/ chondral lesions
  – Femoroacetabular impingement
• Snapping hip
• Hip dislocation/ subluxation
• Fracture
Acute Injuries

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# Acute Injuries

## Causes of Pain Around the Hip Joint

<table>
<thead>
<tr>
<th>Intra-Articular</th>
<th>Extra-Articular</th>
<th>Hip Mimickers</th>
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<tbody>
<tr>
<td>Labral tears*</td>
<td>Iliopsoas tendonitis*</td>
<td>Athletic pubalgia</td>
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<tr>
<td>Loose bodies*</td>
<td>Iliotibial band*</td>
<td>Sports hernia</td>
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<tr>
<td>Femoroacetabular impingement*</td>
<td>Gluteus medius or minimus*</td>
<td>Osteitis pubis</td>
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<tr>
<td>Capsular laxity*</td>
<td>Greater trochanteric bursitis*</td>
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<td>Ligamentum teres rupture*</td>
<td>Stress fracture</td>
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<tr>
<td>Chondral damage*</td>
<td>Adductor strain</td>
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<td></td>
<td>Piriformis syndrome*</td>
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<td></td>
<td>Sacroiliac joint pathology</td>
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</tbody>
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*Condition can be treated arthroscopically

From: Tibor & Sekiya *Arthroscopy*, 2008 24 (12): 1407-1421
Sports Hernia

• Tear at distal rectus abdominus and proximal adductor longus

• Causes pain at area of symphysis pubis and superior ramus

• Pain with rotation and resisted sit-up

• Treatment: Conservative (rehab, injections)
  – Surgery
    • Pelvic floor reconstruction
Sports Hernia
Labral Tears

• Etiology
  – Subluxation
    • Soccer, ice hockey, gymnastics/cheerleading, ballet
  – Acetabular dysplasia
  – Femoroacetabular impingement
Labral Tears

• Femoroacetabular impingement
  – Impingement between anterior-lateral femoral neck and lateral acetabulum
  – CAM and “pincer” impingement
    • Pincer almost always associated with tears
    • Now thought to be a direct cause of labral tears
  – May be a precursor to arthritis
Labral Tears

• Usually history of minor traumatic injury
  – Twisting or slipping type of injury
  – Can be contact injury (soccer, ice hockey)
  – Many do not recall any significant injury
• Pain is usually sharp or intense and deep in hip joint
• Can have catching, popping, and frank locking of hip
Labral Tears

- Groin pain
- Click in hip (can be audible)
- Limitation of motion
  - especially sitting, internal rotation and flexion
Labral Tears

• Physical examination
  – Gait and posture
  – Palpation for any tender areas
    • Greater trochanter (bursitis)
    • Superior ramus/ symphysis (sports hernia)
    • Inferior ramus (adductor strain/ tear)
  – If pathology is truly intra-articular, you cannot reproduce symptoms by palpation
Labral Tears

• Physical examination
  – Muscle strength
  – Neurovascular exam
  – Evaluate for true hernia
  – Evaluate for sports hernia/ athletic pubalgia
    • Small tear between distal rectus abdominus and adductor insertion on symphysis
    • Pain to palpation in this region that reproduces the symptoms
Labral Tears

• Physical examination
  – Reproduction of hip pain or pop/click with specific maneuvers
  – Anterior labrum
    • Flexion, abduction, external rotation followed by extension, adduction, internal rotation (FADDIR)
    • Usually pain in FABER position
  – Posterior labrum
    • Passive flexion, posterior load
Labral Tears

• Physical examination
  – Impingement sign
    • Hip in neutral position
    • Flexion over 90 degrees, internal rotation reproduces pain
      – Often described as “pinching” sensation
  • Can overlap with symptoms of labral tear
Labral Tears

• Physical examination
  – “C sign”
    • Patients will cup their hand around their hip when asked where to locate their pain
  – Piriformis test
    • Hip flexed to 60 degrees and downward pressure on knee (pain = tight piriformis; radicular = sciatic)
  – Ober test (IT band)
  – Thomas test (Flexion contracture)
Labral Tears

- Radiologic studies
  - X-rays
  - MRI
- Direct MR Arthrogram
  - Best study, but still limited
  - Have radiologist inject the joint with lidocaine and corticosteroid (diagnostic and therapeutic)
MRI
MRI
MRI
MRI
Labral Tears

• Treatment
  – Conservative
    • Rehabilitation and reconditioning
    • NSAIDs
    • Modify activities
    • Corticosteroid injection
  – Surgical
    • Open
    • Arthroscopy
Snapping Hip

• Snapping sensation in hip joint with flexion or extension

• Patient may also complain of hip “giving way”

• Usually due to a tendon subluxation over hip joint (internal) or greater trochanter (external)
Snapping Hip

• External (much more common)
  – Fascia lata

• Internal
  – Iliopsoas tendon
  – Loose bodies
  – Unstable labral tear
Snapping Hip

• Treatment
  – Surgery for those who fail conservative measures
  – Arthroscopy excellent tool to address internal and some external snapping hip
    • Remove loose bodies
    • Iliopsoas tendon lengthening
    • Lengthening fascia lata
Snapping Hip

• Internal snapping hip
  – Iliopsoas tendon lengthening
    • Can be done through iliopsoas bursa or intra-articular release
    • Hook bovie to release directly off of lesser tuberosity
    • Patients will have some flexion weakness initially, but this should resolve by 2 months
    • Should have immediate relief of snapping
Hip Dislocation/ Subluxation

- Traumatic injury
  - Automobile accident, football tackle
- More often posterior dislocation (85%)
- Associated fracture of acetabulum
- Subluxation originally thought to be uncommon, but gaining increased recognition
Hip Dislocation/ Subluxation

- High incidence of intra-articular injury with subluxation or dislocation
  - Chondral injury, labral tear, ligamentum teres tear
- Unlike shoulder, not a high incidence of recurrent instability
Hip Arthroscopy

- Indications
  - Labral tears
  - Loose bodies
  - Chondral lesions
    - Lateral impact
  - Femoroacetabular impingement (FAI)
  - Snapping hip
  - Septic hip
Hip Arthroscopy

- Hip Arthroscopy
  - Technically demanding procedure
  - Excellent procedure for intra-articular problems in young patients
  - Labral debridement, labral repair
  - Removal loose bodies
  - Chondroplasty
  - Decompression for impingement
Hip Arthroscopy

• Complications
  – Chondral injury (iatrogenic)
  – Neurologic injury
    • Pudendal nerve, lat fem cutaneous nerve
  – Stiffness
  – Fracture
  – Blood clot
Hip Arthroscopy

• Outcomes
  – Byrd & Jones (Arthroscopy, 2009)
    • Prospective study with 10 yr follow-up after hip arthroscopy and labral debridement
    • 29 patients (31 hips) met inclusion criteria
    • Avg increase in HHS 29 points
    • Patients with clinical findings of arthritis had uniformly poor results
Hip Arthroscopy

• Outcomes
  – Larson & Giveans (Arthroscopy 2009)
    • Labral debridement (36 hips) vs repair (39 hips) with femoracetabular impingement surgery
    • Repair group did significantly better (HHS 94.3 vs 88.9; good-excellent results 89.8% vs 66.7 %)
    • Only minimum 1 year follow-up
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Hip Arthroscopy

- Supine or lateral
- C-arm
- Need traction to distract the hip joint
  - 20 to 50 lbs with pelvis stabilized
- Specialized instrumentation to safely work in the highly constrained hip joint
  - Curved shavers and flexible ablation probes
  - Long cannulas to safely enter hip joint
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Summary

• Hip arthroscopy is an evolving field
  – Excellent tool to address intra-articular hip pathology through a minimally-invasive approach
    • Labral tears, chondral injuries, subluxation, snapping hip, loose bodies, septic hip
  – Hip arthroscopy can be helpful in patients with impingement or early arthritis
Summary

• Direct MR arthrogram best study, but still has limitations

• Hip arthroscopy is an outpatient procedure
  – Return athletes to previous level of competition quickly
  – Technically demanding and requires special training and specialized equipment
Summary

• Hip arthroscopy is an evolving field
  – Stay tuned!

• Able to recognize more subtle injuries now than in the past

• Excellent tool in the right hands, especially for younger athletic population
Labral repair

- Labral repair
Labral repair
Impingement
Thank You