DIAGNOSIS AND MANAGEMENT OF HIP DISEASE IN YOUNG ADULTS

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DISCLOSURES

• Stock
• J&J

GOALS

• Discuss clinical presentation of hip disease
• Review diagnostic tools to evaluate hip pain
• Brief overview of treatment options

INTRODUCTION

• History
• Physical Exam
• Diagnostic Studies
• Differential Diagnosis
• Treatment

HISTORY

• Traumatic injury vs insidious onset
• Repetitive overuse (stress) injury
• Childhood hip problems?
• Difficulties with?
  • Walking
  • Sitting
  • Sleeping
  • Sports
  • Shoes & Socks
  • Stairs

HISTORY

• Previous Rx
  • Activity modification
  • PT
  • NSAIDS
  • Injections
**SYMPTOMS**

- Groin pain
- Buttock pain
- Lateral hip pain
- Back pain
- “C” Sign
- Knee pain

**SYMPTOMS**

- Mechanical Symptoms
  - Clicking
  - Locking
  - Popping
  - Snapping
  - Giving way
  - Instability
  - Voluntary / involuntary
- Stiffness
- Weakness
- Numbness

**PHYSICAL EXAM**

- Stance
  - Flexed hip
  - Trendelenberg sign
- Gait
- Seated / Supine / Lateral / Prone
- Limb length discrepancy
- AROM
- PROM
- Snapping
- Pain / tenderness
- Muscle weakness
- Neurovascular exam
- Lumbar spine
- Knee exam
- Pelvic exam
- Hernia
- Ligamentous laxity

**PHYSICAL EXAM**

- Log rolling
  - Sensitive for intra-articular problems
- Thomas test
  - Hip flexion contracture
- OBER test
  - IT band
- Instability
- Voluntary / involuntary
PHYSICAL EXAM

- FABER test
  - Flexion, Abduction, External Rotation
  - Aka Patrick’s test
    - SI joint
    - Hip joint

- Straight leg raise
  - Passive
    - Lumbar nerve root irritation
  - Active (against resistance)
    - Hip joint irritation
    - Hip flexor problems

- Impingement Signs
  - Anterior
    - FADIR
    - Flexion Abduction Internal Rotation

- Impingement Signs
  - Posterior
    - Extension w/ External Rotation

- Snapping Hip (Coxa Saltans)
  - Intra-articular
    - Loose bodies
    - Labral tear
    - Chondral flaps
    - Ligamentum teres

- Snapping Hip
  - Extra-articular
    - Iliopsoas
      - “Hear across the room”
    - Iliotibial band / Tensor fascia lata
      - “See across the room”
PHYSICAL EXAM

- Iliopsoas snap
  - Flex, Abuct & externally rotate hip
  - Extend w/internal rotation + adduction

PHYSICAL EXAM

- Snapping ITB

DIAGNOSTIC STUDIES

- X-rays
  - AP Pelvis
    - Coccyx 1-2 cm above symphysis
    - < 4 cm in males
    - < 6 cm in females

DIAGNOSTIC STUDIES

- X-rays
  - AP Pelvis
    - Tonnis angle
    - Aka Acetabular Index
      - >10°

DIAGNOSTIC STUDIES

- X-rays
  - Normal hip
    - Acetabular fossa lateral to ilioschial line
    - Femoral head extrusion =25%
    - Posterior wall runs thru center of femoral head
DIAGNOSTIC STUDIES

- **X-rays**
  - Coxa profunda
    - Acetabular fossa medial to ilioischial line
    - Femoral head extrusion < 25%
    - Posterior wall of acetabulum lateral to center of femoral head
    - Acetabular index < 10°
    - Center edge angle > 39°

- **Protrusio Acetabuli**
  - Femoral head medial to ilioischial line
  - Femoral head extrusion < 0% or negative
  - Acetabular index < 0°

- **Crossover sign**
  - Focal anterior overcoverage of the femoral head

- **Cross table lateral**
  - Femoral head-neck offset
  - α angle
    - < 50°
  - Notzli et al. JBJS-B 2002

- **Frog lateral**
  - Femoral head-neck offset

- **Modified Frog lateral**
  - “Elongated neck” view
  - Dunn view
**DIAGNOSTIC STUDIES**

- **X-rays**
  - False Profile
    - Anterior Center-edge angle
      - > 25° - normal
      - < 20° - dysplasia

- **MRI scans**
  - Labral tears
  - FAI
  - Fractures
    - Stress
    - Traumatic
  - Osteonecrosis
  - Neoplasm
  - Muscle & tendon injuries

- **MRI scan**
  - FAI protocol
    - Coronal
    - Oblique axial
    - Oblique sagittal
    - Radial
  - Labrum
  - Articular cartilage
  - Femoral head / neck offset
  - α angle
  - Acetabular version
  - Paralabral cysts

- **MRI arthrogram**
  - Improved visualization
    - Labrum
    - Articular cartilage
    - Capsular injury

- **MRI arthrogram**
  - Herniation pits

- **MRI arthrogram**
  - Para-labral cysts
DIAGNOSTIC STUDIES

- dGMERIC MRI
  - Delayed Gadolinium Enhanced MRI of Cartilage
  - GAG content
  - IV gadolinium
  - 30 minutes walking
  - Then MRI

- CT scan
  - Fractures
  - FAI
  - w/ 3D recons w/ digital subtraction
  - Elucidate bony morphology
  - Cam
  - Pincer
  - Acetabular version

- CT scan
  - 3D cine

- Dynamic Ultrasound
  - Snapping iliopsoas
  - Snapping ITB / TFL

- Bone scan
  - Stress injuries
  - Fractures
  - Aphphysitis
  - Neoplasm
  - Infection
  - Osteonecrosis

- Injections
  - Intra-articular
  - Trochanteric bursa
  - Iliopsoas bursa
  - LS spine
  - SI joint
  - Knee
**DIAGNOSTIC STUDIES**

- **Algorithm**
  - X-rays: AP pelvis, Frog Lateral & Cross-table lateral
  - MRI or MRI arthrogram
  - 3D CT scan
  - +/- Fluoroscopic injection

**DIFFERENTIAL DX OF HIP PAIN**

- **Intra-articular causes:**
  - Labral Tears
  - Femoroacetabular Impingement (FAI)
  - Chondral lesions
  - Loose Bodies
  - Ligamentum Teres Tears
  - Instability
  - Dysplasia
  - DJD
  - Synovial diseases
    - Gout
    - CPPD
    - Inflammatory Arthropathy

- **Extra-articular causes:**
  - Adductor Strain
  - Trochanteric bursitis
  - Iliopsoas tendinitis
  - External Snapping Hip (ITB / TFL)
  - Abductor tendinitis / tear
  - Stress Fracture
  - Apophysis / avulsion fractures
  - Osteitis Pubis

- **Other causes:**
  - Athletic Pubalgia / Sports Hernia
  - SCFE
  - Legg-Perthes
  - Osteonecrosis
  - Neoplasm
  - Transient osteoporosis
  - Knee problems
  - LS spine problems
  - Pelvic problems

**FEMORO-ACETABULAR IMPINGEMENT**

- **FAI**
  - Abnormal contact between the proximal femur and the acetabular rim that leads to early degenerative changes.
  - Typically with flexion & IR
  - Less commonly w/ extension & ER

**FAI**

- Cam
- Pincer
- Combined
FAI

- Cam
  - Abnormal head / neck offset
  - Aspherical femoral head
  - More common in males
  *Hack et al. JBJS 2010*

- Pincer Impingement
  - Prominence of the anterior acetabular rim
  - Acetabular retroversion
  - Global overcoverage of the femoral head
  - Coxa Profunda
  - Protrusio
  - More common in females

- Combined Cam & Pincer

- Symptoms
  - Groin Pain
    - Worse with sitting
    - Worse with activities
    - +/- pain at night
    - Mechanical Sx

- PE
  - << ROM
  - IR
  - +/- Ant. Impingement sign
FAI

- **Rx**
  - PT?
  - NSAIDs
  - Activity modification?
  - Fluoro-guided steroid injection
  - Surgery
    - Open
    - Combined Arthroscopic & mini-open
    - Arthroscopic

LABRAL TEARS: ISOLATED

- Not very common
- Most often associated with FAI
- Traumatic event
- **Sx**
  - Groin Pain
  - Typically activity related
  - Mechanical Sx

LABRAL TEARS

- **PE**
  - Normal ROM
  - + Anterior impingement sign

- **Dx**
  - MRI
  - MRA

LABRAL TEARS

- **Rx**
  - Activity modification
  - PT?
  - NSAIDs
  - Fluoro-guided steroid injection
    - Equivocal MRI
    - No mechanical Sx
    - Older patients
  - Arthroscopy

ILIOPSOAS PROBLEMS

- **Sx**
  - Groin pain
    - Running activities
    - Hip flexion
  - Differential Dx
    - Psoas tendinopathy
    - Snapping psoas
    - Psoas impingement
    - Arthroscopic Dx

ILIOPSOAS PROBLEMS

- **PE**
  - Normal ROM
  - Pain with resisted seated hip flexion
  - Pain with resisted SLR
  - +/- snapping (Painful)
    - Active
    - Passive
ILIOPSOAS PROBLEMS

- **Dx**
  - MRI?
  - Dynamic ultrasound
  - Ultrasound guided injection of local anesthetic

- **Rx**
  - PT
  - Activity modification
  - NSAIDs
  - Ultrasound guided steroid injection
  - Arthroscopic psoas tenotomy

TROCHANTERIC BURSITIS

- **Sx**
  - Pain over lateral aspect of hip
    - Radiates to knee
    - Difficulty laying on side
    - Often associated with groin pain

- **PE**
  - + / - normal ROM
  - Tenderness of GT
  - Tenderness over ITB
  - + / - weakness of abductors
  - + / - anterior impingement sign

- **Dx**
  - + / - MRI

TROCHANTERIC BURSITIS

- **Rx**
  - PT
  - Activity modification
  - NSAIDs
  - Pillow-top mattress pad
  - Steroid injection(x 3?)
  - Bursectomy
    - Open
    - Arthroscopic
    - + / - Z-lengthening ITB

SNAPPING ITB

- **Sx**
  - Visible painful snapping
SNAPPING ITB

- **PE**
  - Visible snapping
  - Tenderness over GT
  - Tight ITB (Ober test)

- **Rx**
  - PT
  - NSAIDs
  - Steroid injection
  - ITB release
    - Open
      - Z-lengthening
      - Bursectomy
      - Arthroscopic

ABDUCTOR TEARS

- **PE**
  - Similar to Trochanteric Bursitis
  - Weakness
  - +/- Trendelenberg sign

- **Sx**
  - Pain over lateral hip
  - Weakness
  - Similar to Trochanteric Bursitis

- **Dx**
  - MRI
  - Ultrasound

- **Rx**
  - PT
  - NSAIDs
  - +/- steroid injection?
  - Surgery
    - Open Repair
    - Arthroscopic

CALCIFIC TENDINOPATHY

- **Similar to calcific tendinopathy of the rotator cuff**
- **Sx**
  - Similar to trochanteric bursitis
- **PE**
  - Similar to trochanteric bursitis
CALCIFIC TENDINOPATHY

- Rx
  - PT
  - NSAIDs
  - Fluoro guided steroid injection
  - Surgery
    - Open
    - Arthroscopic

CONCLUSION

- Dx & Tx of hip disease is evolving
- Better understanding of
  - Anatomy
  - Radiology
  - Biomechanics
  - Natural history
- Similar to ACL & Shoulder Rx in early 90’s

THE END

THANK YOU