HIP ARTHROSCOPY: INDICATIONS, APPLICATIONS & CONTROVERSIES

Stephen W. Munns, M.D.
Associate Professor
Department of Orthopedic Surgery
Kansas University Medical Center
July 20, 2013
INTRODUCTION

- First performed hip arthroscopy in 1989
- First described by Glick in 1987*
- Lateral decubitus position
- Fracture table
- Knee instruments

*Arthroscopy, 1987
INTRODUCTION

- Since Y2K
- Availability of increasing array of hip instruments
- Hip distraction devices
- Development/Innovation of new techniques
- Expansion of indications
Commonly Treated Disorders

- Labral tears
- FAI
- Ligamentum teres tears (+/- bone)
- Coxa sultans (snapping hip syndrome)
- Synovitis/synovial osteochondromatosis
- Trochanteric bursitis
- Capsular laxity
- Abductor tendonopathy?
Common Sports Affected

- Golf
- Ballet/Figure Skating
- Taekwando/Martial Arts
- Hockey
- Soccer
- Cycling
- Running
HIP EVALUATION
HISTORY

- Onset of Symptoms
- Exacerbation
  - Sport specific
    - Running, sprinting
    - Golf swing
- Duration
- Snapping, popping
- “C-sign”
PHYSICAL EXAM

- General
  - Posture
  - Generalized laxity
  - Gait
    - Rotation/Alignment
    - Weakness
    - Contractures
  - Trendelenberg
PHYSICAL EXAM: SEATED

- Vascular
- Neurologic
- Rotation
  - IR: 20° - 35°
  - ER: 30° - 45°
PHYSICAL EXAM: SUPINE

- Joint Above and Below
- Abdomen
  - Hernia
  - GI
  - GU
PHYSICAL EXAM: SUPINE

- Palpation
- Pelvis
  - Symphysis pubis *(Birmingham, et al, AJSM 2012)*
  - Ilium
  - Ischium
- Hip
  - Anterior
  - Posterior
  - Trochanter
PHYSICAL EXAM: SUPINE

- Passive ROM
- Log Roll
- SLR
- IT Band
- Resisted Motion All Planes
  - Flexion with knee extended & flexed
PHYSICAL EXAMINATION:SUPINE

- Thomas Test
- Impingement Test
  - McCarthy Test
- FABER
- Extension/External Rotation
  - Lateral labral tear (acetabular dysplasia)
  - OCD
  - Trochanteric bursitis
IMAGING
RADIOGRAPHS

- AP Pelvis (weight-bearing)
- Crossover sign
- Cam
- Acetabular Dysplasia
  - C-E angle < 20°
  - Acetabular Index >38°
  - Tonnis Angle >10°
RADIOGRAPHS

- True Lateral
- Cam shaped femur
- Impingement bump
- Old SCFE
- $\alpha$- angle
  - $<50^\circ$
TRUE LATERAL
Alpha Angle

*Neumann, M, et al. CORR, March, 2009*
MRI/MRA

- **Scout**: effusion, AVN
- **MRA**: gadolinium + lidocaine
- **Labrum**
  - 40% vs 70-90% sensitivity
- **Articular Cartilage**
- **Ligamentum teres**
- **Synovitis/loose bodies?**
- \( \alpha \)- angle more accurate (50-55°)
- **Elimination of pain with lidocaine**
HIP ARTHROSCOPY TECHNIQUES
LATERAL DECUBITUS

- Glick, Sampson, McCarthy
- Early descriptions
- Benefits
  - Obesity
- Limitations
  - Setup
  - Pudendal Nerve
  - Peripheral Space
  - Anterior Portal
SUPINE

- Byrd

- Advantages
  - Ease of positioning
  - Familiar orientation
  - Access
    - Central
    - Peripheral
    - Peritrochanteric
  - Pudendal nerve
SUPINE

- Disadvantages
  - Obese
  - Posterolateral
    - Smith-Nephew Crosstrac
NONOPERATIVE TREATMENT

“Come back when you need a total hip.”
NONOPERATIVE TREATMENT

- IT Band
- Flexion contractures
- Related areas
  - Sciatica
- Abductor Weakness
  - Gluteus medius/minimus tears
    - “Rotator cuff tendonopathy” of hip
NONOPERATIVE TREATMENT

- Currently ineffective for intra-articular lesions
- General measures
  - NSAID’s
  - Analgesics
  - Oral viscosupplementation
  - ROM
  - Assistive Device
OPERATING ROOM SETUP
OPERATING ROOM SETUP
OPERATING ROOM SETUP
OPERATING ROOM SETUP
OPERATING ROOM SETUP
OPERATING ROOM SETUP
OPERATING ROOM SETUP
OPERATING ROOM SETUP
Central Space
- Anterolateral: GT tip, anterior border, parallel to neck
- Anterior: vertical line from ASIS, parallel with anterolateral cannula
- Posterolateral: posterior margin GT, parallel with anterolateral cannula (Crosstrac®)
ARTHROSCOPY PORTALS

Fig. 1. The relationship of the lateral femoral cutaneous nerve, femoral artery, and sciatic nerve during arthroscopy.
ARTHROSCOPY PORTALS

- Peripheral Space
  - Hip flexed 45° without traction
  - Anterior
  - Anterolateral
    - Same skin incision, directed @ central femoral neck
  - Ancillary distal portal
    - 4cm distal/1cm anterior to anterolateral portal
ARTHROSCOPY PORTALS

- Peritrochanteric
  - Proximal
  - Distal
- No two articles describe exactly the same
SURGICAL INDICATIONS
LABRAL TEARS

- Most common indication
- Anterior
- Anterolateral
- **Posteroinferior**
  - Uncommon
  - Contracoup
- **Posterior**
  - Traumatic posterior dislocation
LABRAL TEARS

- Multiple Causes
- **Single trauma**
- Repetitive trauma *
  - Golf, martial arts, skating
- **Structural**
  - Hip dysplasia
  - FAI
  - Instability
    - *Dy et al, JBJS A, July, 2008*
LABRAL TEARS

- **Labral Function**

- **Stability**
  - Increase volume (33%) & surface area (22%)
  - Seal/↑ hydrostatic pressure
  - Can↓ distraction force (60%)
  - Capsular ligaments do NOT attach to it

- **Nutrition**

- **Chondroprotective**

- **Effect of loss: unknown**

*Safran, MR. J Am Acad Orthop Surg, June, 2010*
MRI INCIDENCE LABRAL TEARS*

- 45 unpaid volunteers, asymptomatic hips with no history of hip injury
- Mean age 38yrs, 28 men, 17 women
- 88% of adults in county active in leisure activities
- Single hip imaged 3T MRI/optimized protocol
- 69% labral tears, 24% chondral defects
- Mean $\alpha$ angle 61°

LABRAL TEARS: TREATMENT

- Debridement
- 85-90% success
  - Pain relief
  - Return to previous activity level*
- Long term effect unknown

*Byrd, AOSSM, Orlando, 7/08
LABRAL TEARS: TREATMENT

- Repair
- Technically demanding
- Prolonged recovery
- Retear

Outcomes
- Ganz: Open
- Phillipon: Comparable to debridement except in hockey players
LABRAL TEARS: TREATMENT

- Debridement/preservation
- **Current standard**
- Opinion: More basic science and clinical data necessary for repair to become standard. Indications need to be defined. No evidence that labral “reconstruction” is effective. Critical to address correctable causes of labral tears, ie FAI
FEMOROACETABULAR IMPINGEMENT
CAM IMPINGEMENT

- Non-spherical head impinges on acetabular rim
- Young active males
  - Pitcher’s hip
- Anterior labral tear (more often repairable)
- Anterior articular cartilage delamination
PINCER IMPINGEMENT

- Abnormal contact between acetabular rim & femoral neck as the result of “overcoverage” of acetabulum
- More common in females
- Anterolateral
- Progressive
  - Anterolateral labral tearing
  - Articular cartilage delamination
  - Ossification
  - Paralabral bone cysts
FAI CAUSES

- Congenital
- SCFE
- Coxa vara & valga
- Acetabular Retroversion
**FAI**

- Often Combined Lesion
- **Larson, Giveans** *
- 96 patients treated or FAI
  - 17 Cam
  - 28 Pincer
  - 55 Combined

*Arthroscopy, May, 2008*
Christoforetti, et al *

- Evaluated 20 rookie professional baseball pitchers
- 50% had X-ray evidence of Cam impingement
- 70% were bilateral
- 11% history of symptoms, none significantly limiting

*AOSSM Annual Meeting, Orlando, FL 2008
“There’s a lot of funny looking hips out there.”

J.W. Thomas Byrd, M.D.
**FAI TREATMENT**

- Adequate decompression to allow full unimpeded flexion
- Stahelin et al. * reported up to 30% femoral head/neck resection without weakening neck
- Address Labrum
- Address acetabular cartilage
- Controversial

*Arthroscopy, Jan, 2008*
LIGAMENTUM TERES

- Partial Tear
  - Degenerative
  - Can result in
    - Painful impingement
    - Articular cartilage wear

- Complete
  - Hip subluxation or dislocation, often bone fragments

- Treatment: Debridement
CAPSULAR LAXITY/HYPERMOBILITY

- “You may not have seen it but it’s seen you.” Jack Hughston, M.D.
- Present with symptoms of
  - Labral tears
  - FAI
  - Iliopsoas tendonitis
- Treatment
  - Primary symptoms
  - Capsular Plication: suture, thermal
MISCELLANEOUS

- Hip dysplasia
  - Labrum
  - Capsular plication
  - Periacetabular osteotomy

- Psoas impingement (coxa sultans, internal)
  - Arthroscopic debridement or release*
  - Release best done at acetabular rim**
  - Capsular plication

  *Torry et al, Clinics in Sports Medicine, April, 2006
  **Byrd, AOSSM, Orlando, 7/08
MISCELLANEOUS

- Trochanteric bursitis*
- Debridement
- Gluteus medius/minimus tears**
- External Snapping Hip (Coxa saltans)
- Z-release of IT band

*Baker et al, Arthroscopy, Aug, 2007
**Marco, Keene, et al, AOSSM, Orlando, FL, 2008
MISCELLANEOUS

- PVNS
- Synovial Chondromatosis
- Synovial Osteochondromatosis
- Loose bodies
- Post-dislocation debris
- Arthrofibrosis
CONCLUSIONS
CONCLUSIONS

- Hip arthroscopy is a rapidly evolving surgical technology
- No longer a surgical procedure in search of an indication
- Facilitates diagnosis & treatment of many previously unrecognized causes for hip pain
- Offers minimally invasive option for procedures previously requiring big open surgery
CONCLUSIONS

- Many aspects of treatments and problems still unknown
- Labrum
- FAI
- Long term outcomes
CONCLUSIONS

The people that worry me the most are the ones who “know” the answers!
THANK YOU!