Optimal Patient Selection. What I Learned Over the Past Decade
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Disclosure
Srino Bharam, MD
- American Academy of Orthopedic Surgeons
  - Sports Medicine Program Committee
- Arthroscopy Association of North America
  - Research Committee
- Smith and Nephew Endoscopy
  - Consultant

Comprehensive History
- Presentation of symptoms
  - Onset, trauma?
  - Referred pain
- Change in activity level
- Functional status
  - Sports history
  - Past injuries/sx
  - Family hx

Differential Diagnosis
- Lumbar spine
- Herniated discs
- Spondylolysis
- Spondylolisthesis
- Spinal Stenosis
- Lower abd conditions
  - Hernia (femoral, inguinal)
  - Appendicitis
  - Ovarian cysts
- Genito – urinary problems

Extra-articular vs Intra-articular
- Isolation
- Co-existing
- Underlying intra-articular disorder

Differential Diagnosis
- Intraarticular
  - Labral tear
  - FAI
  - Loose body/synovial chondromatosis
  - Chondral injury
  - Ligamentum teres tear
  - Rotatory instability
  - Femoral neck stress fracture
  - Avascular necrosis
Pincer Type

- Focal
  - Prominent ant wall

- Global
  - Coxa profunda
  - Coxa protusio

- Iliac spine sign
Global Overcoverage

Coxa Profunda
Coxa Profusa

CAM Type
- Cam Lesion
- Abnormal Shear Forces
- Anterior-Superior Labral Tears
- Chondrolabral Separation
- Cartilage Delamination

Etiology
- Osseous bump
- Pistol grip deform
- SCFE
- LCPD
- Retroversion

Presentation
- Typical males
  - 20-40's
- Restriction in motion prior to symptoms
- Mechanical pain with activity, sports, sitting

Systematic Six Part Exam
- Gait
- Standing
- Seated
- Supine
- Lateral
- Prone

Patient Selection
- No relief with conservative tx
- Manage patient expectations!!
**MR-ARTHROGRAM**

- 1.5 Tesla, hip coil
- Arthro vs plain MRI:
  - 8% vs 42% FN
  - 10% vs 20% FP
- Intra-artic injection:
  - 7% FN
  - Byrd et al. AJSM 2004

**Coronal PD**

**Sagittal PD**

**Axial Oblique**

**3D CT: Assessing CAM**

**Conservative Management**

- Activity modification
- NSAIDs
- Physiotherapy
- Injections
  - Guided
  - Diagnostic/Anesthetic
  - Therapeutic
    - Steroid
    - Viscosupplementation
    - PRP
Patient Selection

- Avoid significant DJD
- Avoid significant dysplasia
- No relief with conservative tx
- Manage patient expectations

Pincer Management

Arthroscopic Focal Management

- Intraop
- Postop resection

Arthroscopic Rim Resection

Surgical Hip Dislocation

Labral Management

- Selective Debridement
- Labral Repair
- Labral Reconstruction
Labral Reconstruction with Allograft

Pincer Groove
- Pincer Trough
- Trough Resected

Second look s/p femoral neck osteoplasty

FAI with athletes

Rehab: Return to sports
- Athlete #1
- Athlete #2

Arthroscopic limitations: posterior cam impingement
CAM: Arthroscopy vs Open Radiologic Comparison

- Bedi, Zaltz, Kelly AJSM 2011
  - Level 3 evidence
- 60 pts under 40 y/o with CAM
  - Arthroscopic grp
    - Correction: 17.2° Lat, 12.6° AP
  - Surgical hip dislocation grp
    - Correction: 21.2° Lat, 20.1° AP

Open surgery may be considered for posterior and proximal femoral head deformity.

Addressing Femoral Retroversion

- Hip arthroscopy combined derotational femoral osteotomy
- No bracing
- Protective WB

Femoral Retroversion

Secondary Impingement

- Soft tissue Impingement
  - Psoas impingement
- Bony Impingement
  - AIIS overgrowth

Iliosposas Communication

AIIS Impingement
Defining Dysplasia
- CEA angle
  - < 25 deg
- Ant CEA angle
  - < 20 deg
- Inclination angle
  - > 10 deg

Reliability in the Diagnosis of Femoroacetabular Impingement and Dysplasia Among Hip Surgeons
Mayilva et al. ISWA 2013

Additional Radiographic Evaluation
- False profile
  - Weightbearing
  - Lat view acetabulum
- Von Rosen view
- Elongated Neck View

MRI findings
- Hypertrophic labrum
- Labral tears
- Paralabral cysts
- Ligamentum teres tears
- Anterior subchondral cysts

3D CT Imaging

Role of hip arthroscopy
- Indications
  - Labral repair
  - Chondral lesions
  - Address underlying FAI
  - Capsular management
Parvizi, J, Bican O et al. JOA 2009
34 patients with DDH + labral pathology
All underwent arthroscopic labral excision
41% patients had accelerated arthritis

Results
Incidence of Mild Dysplasia (7.4%)

<table>
<thead>
<tr>
<th>Pre-op mHHS</th>
<th>Standard Deviation</th>
<th>Post-op mHHS</th>
<th>Standard Deviation</th>
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<td>15.0</td>
<td>78.3</td>
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Poor Indications
- Lateral Subluxation
- Significant dysplasia
- Underlying DJD

Case #1
Case #2

PAO Intermediate Follow up
- Matheney et al. *JBJS*, 2010
- 135 hips avg 9 yr f/u
- Poor Predictors
  - Over age 35, joint incongruency
- THR 13%
- Hip arthroscopy 11%

Combined PAO and Hip Arthroscopy
- Clohisy
  - 39% of PAO cases
  - Advantage: Avoid open capsulotomy
  - Better visualization and management of chondrolabral pathology.
- Domb *Arthroscopy* 2015

Hip Instability *Bharam, ISHA 2010*

Log Roll Test Under Anesthesia
- Preop
  - Iliofemoral lig deficiency
- Postop
  - Capsular plication

Hip Instability: Etiology

- Trauma
- Dislocation
- Infection
- Posterior wall deficiency
- Polyethylene
- Collagen disorder
**Lateral Decub**
- Greater Troch Facets
  - Posterol: Med
  - Ant: Minimus
  - Post: Troch bursa
- SI Joint palpation
- Lateral rim impingement
- Piriformis Test

**Peritrochanteric Space**

**Summary**
- Patient selection
- Proper imaging
- Patient expectations
- Future: Long term outcomes