Evaluation of Hip Pain in Adults

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Objectives

► Develop a better understanding of the differential diagnosis of hip pain in active young adults

► Appreciate key points in patient history

► Learn physical examination pearls for evaluating hip pain

► Understand role for various imaging modalities in patients with hip pain

► Differentiate between those processes in which observation is indicated and those diseases that need earlier orthopaedic referral
Hip Pain Differential Diagnosis

► Musculoskeletal
  ▪ Intra-articular
  ▪ Extra-articular
  ▪ Radicular/ Spinal stenosis

► Non musculoskeletal
  ▪ Hernia
    ► Abdominal/umbilical, sports, inguinal
  ▪ Retroperitoneal abscess/ hematoma
  ▪ Tumor/infection
DDx for Intra-articular Hip Disease

- Osteoarthritis
  - Primary or Idiopathic
  - Secondary (Degenerative Joint Disease)
- Rheumatoid Arthritis and Juvenile Chronic Arthritis
- The Seronegative Spondyloarthropathies
- Psoriatic Arthritis
- Reiter’s Disease
- Ankylosing Spondylitis
- Inflammatory Bowel Associated Arthropathy
- Connective Tissue Disease
- Crystal Arthropathies

- Gout
- CPPD
- Rapidly Destructive Hip disease
- Chondrolysis
- Pigmented Villonodular Synovitis
- Synovial (Osteo) Chrondromatosis
- Metabolic and Endocrine Disease
- Nutritional Disorders
- Radiation Chrondrosis and Osteonecrosis
- Miscellaneous Disorders
AND...

- Labral tears
- Femoral acetabular impingement (FAI)
- Loose bodies
- Chondral flaps or lesions
- Ruptured ligamentum teres
- Synovial chondromatosis
- Developmental Dysplasia of the Hip (DDH)
Patient History

- History of trauma vs atraumatic onset
  - Subacute vs acute vs insidious

- Mechanical symptoms such as locking, catching, and giving way

- Pain only with prolonged weight bearing activities

- Pain with out of plane activities only

- Systemic symptoms or multiple joint involvement
Patient History

► Childhood conditions
  - First born?
  - Female?
  - Natural birth? C-section?
  - Bracing as a child?

► Malignancy

► Inflammatory conditions

► ETOH/ Corticosteroid use

► Back Problems
Patient History

► Occupational Risk factors
  ▪ Diving
  ▪ Construction/Heavy labor
  ▪ Farmers
  ▪ Lifting > 25 -50 Kg on regular basis

► Recreational risk factors
  ▪ Hockey, Rugby, Martial Arts, Soccer, Football (place kicker, punter), etc.

► Obesity not a consistent risk factor
Patient History

Location of pain

- Groin
- Buttock
- Lateral
- Radiation to knee and past knee
Physical Exam - Gait

- Antalgic or coxalgic gait

- Trendelenburg gait
  - Fractures, CDH, SCFE, old SCFE and L-5 neuropathy

- Shuffling or ataxia

- Flexed trunk/stenosis
Physical exam
Extra-articular sources of pain

- Trochanteric Bursitis
- Snapping Iliotibial Band
  - “External snapping hip”
- Iliopsoas tendonitis
  - Could result in “internal snapping hip”
- Ischial bursitis
RANGE OF MOTION

► Can depend upon body habitus

► Can also depend upon injuries
  ▪ Simple things such as swelling can affect ROM
    ► Joint effusion from an injury
    ► Post-surgical swelling
Flex 105-135°
Extension 0-20°
Abduction 30-50 °
Adduction 10-30 °
Internal Rotation
30°
External Rotation
60°
Physical Exam

Assess for pelvic obliquity and leg length difference
Special Tests

► Thomas test
► FABER or Patrick’s Test
► Active SLR or Stinchfield test
► Ober test
► Impingement test {Flexion, Adduction, Internal Rotation}
► McCarthy Test for intra-articular hip pathology
► Apprehension {Extension, Abduction, External Rotation}
Thomas test
- Hip flexor tightness or hip flexion contractures
Faber or Patrick’s
-Pathology of the hip joint and/or sacroiliac joint
Ober Test
- IT Band tightness

Fig. 1-A
Abduction.

Fig. 1-B
Hyperextension.

Fig. 1-C
Adduction.
Tests for labral pathology and hip instability

► Apprehension test
  ▪ Hip dysplasia

► Impingement test
  ▪ Femoral acetabular impingement

► McCarthy test for intra-articular pathology
Radiographic Evaluation

- Plain Films
- Bone Scan
- MRI
- CT Scan
- MRI Arthrogram
- Diagnostic Injections
Radiographic Studies

High quality X-rays are critical

- Standing AP pelvis
- AP of the hip
- Frog lateral of the hip
- False Profile
AP pelvis, Frog lateral view
False Profile view
CT scan

► Useful in trauma

► Delineate subtle arthritis

► Clarify unusual anatomy
**Bone Scan**

- Largely supplanted by MRI
- Assessing occult lesions/malignancy
- Determine metabolic activity of plain film findings
MRI

► Most sensitive and specific for
  ▪ Osteonecrosis (AVN)
  ▪ Stress Fractures
  ▪ Early arthritis
  ▪ Certain soft tissue problems about the hip

► Not as good for intra-articular labral or chondral pathology, without contrast (arthrogram)
OSTEONECROSIS (AVN)
Transient Osteoporosis
or
Bone Marrow edema Syndrome
Femoral Neck Stress Fracture
Dysplasia with labral tear (and subchondral cysts)
MR Arthrograph
Diagnostic Injection

- With or without fluoro or ultrasound guidance
- Localize intra-articular pathology
- Useful in discrimination of spine vs hip OA as source of pain
Femoral Acetabular Impingement
FAI

► 3 TYPES:

- CAM (Primary lesion on the femur)
- PINCER (Primary lesion on the acetabulum/pelvis)
- COMBINED (Both lesions present)
Inadequate Femoral Offset (followed by too much resection)
Hip Arthroscopy

- Minimally invasive means of seeing inside the hip joint without cutting muscles or using big incisions much like is done in the knee or shoulder.

- First done in 1930s but re-introduced in late 1980s by Dr. Glick of San Francisco.

- Techniques and indications refined in mid-late 90s allowing more predictable results.
Hip Arthroscopy
Becoming much more popular recently
Hip Arthroscopy
Becoming much more popular recently

- Hip joint is much less accessible than other joints

- More technically difficult
  - Need specialized equipment and expertise

- Conditions warranting its use are more rare

- Use and indications are emerging
Hip Arthroscopy

► Indications

- Remove loose bodies such as cartilage or bone from hip joint as on right
  - Synovial chondromatosis
Hip Arthroscopy

► Indications
  - Diagnostic
  - Synovial Biopsy
Hip Arthroscopy

- **Indications**
  - As an adjunct to other procedures in order to rule out problems inside the hip joint or allow other procedures to be performed less invasively
  - Peri-acetabular osteotomy (PAO)
Hip Arthroscopy

► Contraindications (reasons not to do hip arthroscopy)

- Advanced arthritis
- Arthritis without mechanical symptoms (catching, locking)
- Very stiff hips
- Fresh fractures or dislocations
- Surgical problems in which opening the hip joint is not necessary
- Obesity…the instruments are sometimes not long enough
- Hip dysplasia
Technique

► In order to view the hip joint without scuffing the cartilage it is necessary to use a traction device to open up the hip joint and allow instruments to be introduced

► General or spinal anesthesia is preferred to allow for complete muscle relaxation
Special instruments have been designed to aid entry into hip joint and to remove damaged tissues
Technique

- In most cases surgery can be performed through two small incisions

- In lower picture patient is draped and fluoroscopy unit in position to guide procedure
Hip arthroscopy
Example

► 29 year old woman with pain and catching after intense period of exercise 8 months previously

► X-rays were normal but the MRI arthrogram showed a tear in the labrum
Hip Arthroscopy Example

► At surgery a torn labrum was diagnosed and excised
► Patient was back to full activities at 3 months
Hip Arthroscopy Example

- 41 yo male with persistent hip pain after ATV accident 2y previously
Post debridement....
What needs early referral

► Osteonecrosis
  - Early stages have higher success rates in saving hip

► Femoral neck stress fractures
  - Early diagnosis and treatment prevents AVN, non-union

► Sepsis…Tumor

► Early OA
  - Some hips are amenable to biologic solutions
OA of the Hip
usually has a cause

- DDH – 43%
- LCP – 22%
- SCFE – 11%
- Idiopathic – 12%
- Other – 12%
  - Aronson 1986

- By age 50 years:
  - 25-50% in DDH
  - 50% in Perthes
  - 20% in SCFE
Saving Hips

- Hip Arthroscopy
- Osteotomy
- Debridement
Periacetabular Osteotomy
Treatment of choice for dysplasia
Hip Arthroscopy Failures

► When hip arthroscopies fail, they fail very quickly – recent study presented this past weekend during AAHKS 2015:

- Tracking of patients revealed 67/1305 (5.1%) patients that had a hip arthroscopy went on to a subsequent ipsilateral THA within the time constraints of the dataset (2007-2014). Of the subsequent THA, 37.3% occurred within 6 months of hip arthroscopy and 85.1% had occurred within 18 months. 100% of subsequent THA occurred within 48 months of initial hip arthroscopy.
Conclusions

► Hip Pain is a common presenting complaint

► A thorough history and examination accompanied by appropriate studies generally leads to successful diagnosis

► Improved knowledge and understanding of the causes of hip osteoarthritis has led to earlier diagnosis of hip conditions and emerging methods of treating those conditions

► Early recognition is the key
THANK YOU