Femoro-acetabular impingement (FAI)


“The best hip replacement has an unknown but certainly finite life, whereas a hip healed after osteotomy will often last a lifetime.”

Prof. Maurice E. Müller

Two main types of pathology

- Hip Dysplasia (DDH)
  - Too little coverage
  - Instability

- Femoroacetabular impingement (FAI)
  - Too much coverage
  - Abnormal contact during physiologic ROM
  - Can be femoral, acetabular or both in origin
The Normal Hip

INSTABILITY>>IMPINGEMENT

FAI

- Adolescents and young adults
- Groin pain
  - Worse with flexion activities
    - Stairs, shoes, cars, squatting
  - Lateral, cutting movements
- Lateral, buttock pain
- Decreased internal rotation
  - Especially with flexion
- Impingement test
- Trendelenburg sign

Imaging

- Radiographs
  - AP
  - Modified Dunn
- MRI
  - Arthrogram
    - Increases sensitivity/specificty for labral and cartilage injury
FAI – Delay in Diagnosis

- Clohisy CORR 2009
  - 51 patients with FAI
  - 65% insidious onset of pain
  - Groin pain in 83%
  - 88% had positive impingement test
  - Average time from initial symptoms to diagnosis was 3.1 years
  - Patients saw an average of 4.2 (1-16) healthcare providers
    - 16% PCP, 46% orthopods, 15% PT, 5% chiropractors
    - 13% had surgery that did not improve their pain

FAI

- Cam type
  - Femoral origin
    - SCFE, Perthes
  - Lack of head/neck offset
  - Males, younger
- Pincer type
  - Acetabular origin
    - Protrusio
  - Females, older
- Mixed type
• Jamming of an abnormal femoral head with increasing radius into the acetabulum
• Labral damage
  – Relatively little as labrum moves out of the way
• Cartilage damage
  – Deep cartilage delamination, large defects
  – Antero, anterolateral lesions
**Pincer type**

- Acetabular
  - Protrusio
  - Coxa profunda

**Pincer**

- Linear contact between acetabular rim and neck
- Labral damage
  - Degeneration with intrasubstance ganglion
  - Ossification of the rim
- Cartilage damage
  - Adjacent to labral injury; small areas
  - "Contre-coup" lesion; postero-inferior acetabulum
PCP Treatment of FAI

- Activity modification
- NSAIDs
- Physical therapy
  - Core strengthening
  - Posture
  - “Glutes”

Consider referring patients with symptoms of DDH/FAI despite “normal” x-rays
Orthopaedic Treatment

- Non-operative
  - Physical therapy
    - Core strengthening, proper alignment/posture
    - NSAIDs
    - Activity modification
    - Limited roles

- Injection
  - Only for advanced DJD
  - Isolate the hip as pain generator

- Arthroscopy

- Arthrotomy

- Surgical dislocation

- Osteotomy

- Salvage
  - Hip fusion
  - THA
  - Resurfacing

17 yo pitcher. Right groin pain

Fourth opinion. Reverse PAO; SDH, arthroscopy
FAI – mixed type

• Acetabular rim fracture
• Labral tear
• Cam lesion

• Arthroscopy
  – Femoral head/neck osteochondroplasty
  – Acetabular rim fracture excision and labral repair

Post-op  Pre-op
17 yo male with right hip pain
**Bottom line**

- Most OA in the hip has a mechanical etiology
- Impingement and instability are the bad actors
- Identifying and treating these deformities before irreversible cartilage damage has occurred can delay or perhaps prevent the development of OA

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**Thank You**