Disclosures

Consultant- Allosource/JRF.

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Topics

- Apophysitis.
- Apophyseal avulsion fractures.
- Femoral acetabular Impingement.
- Acetabular dysplasia.
- Acute dislocation.
- SCFE.

Anatomy

Apophysis
- Secondary ossification center.
- Contributes to peripheral but not longitudinal growth.
- Pelvic apophyseal ossification centers appear in early adolescence and fuse in late adolescence.
- Common site of overuse injuries.
- Avulsion fractures of the pelvis are a nearly adolescent-specific fracture.

Physis, or apophys

- Weak Link.
- Decreased stiffness compared to bone.
- Hypertrophic zone.

Timing

- Hormonal influence during adolescence.
- Time of peak growth velocity.
- Physis is weak.
Other Common Apophyses

Pelvic Apophysis

Presentation

Apophysitis
- Gradual onset.
- Progressive, activity related pain.
- Overuse.

Avulsion Fracture
- Acute onset.
- Intense, disabling pain.
- Mechanism
  - Eccentric or Concentric contraction
  - Typically non-contact injury

Diagnosis

Apophysitis
- History.
- Tenderness of affected apophysis.
- Reproduction of pain with contraction against resistance.
- X-Rays negative.

Avulsion Fracture
- History.
- Tenderness and swelling.
- May not be able to contract against resistance.
- Difficulty with ambulation.
- Much more painful and disabled acutely.
- X-Rays positive.
**Differential Diagnosis**

Clinical
- Groin or Hamstring Strain
- Labral Tear
- Intra-abdominal pathology

Radiographic
- Osteomyelitis - rest pain.
- Malignant Tumor - rest pain.

**Misdiagnosis: Malignant Tumor**

1. **Anterior Superior Iliac Spine (ASIS)**

![ASIS Diagram](image)

Sartorius

2. **Anterior Inferior Iliac Spine (AIIS)**

![AIIS Diagram](image)

Rectus Femoris (Straight Head)
3. Ischial Tuberosity

Hamstrings and Adductors

4. Iliac Crest

Rectus - Oblique
5. Superior Pubic Ramus

Lesser Trochanter - Iliopsoas

Treatment

Apophysitis
- Rest from painful activity.
- Physical therapy.
  - Flexibility
  - Hip/Core strengthening.
  - Gradual RTP.

Avulsion Fracture
- Rest/Crutches.
- Pain controlled start PT.
- 6-8 weeks minimum.
- Gradual return to explosive activity.

Femoroacetabular Impingement

NORMAL

PINCER

CAM

CAM + PINCER
Clinical Findings

- Teens to Early 40’s
- Prevalence: 10 - 15%
- Groin Pain
- Start-up Pain, Pain with prolonged sitting
- C-Sign

Physical Exam

Aspherical femoral head-neck junction

Over-coverage (focal or global)

Non-Operative

- Many studies which have demonstrated presence of radiographic features in asymptomatic patients (pediatric and adult)
- The presence of a positive impingement test or radiographic findings in isolation do not mandate treatment
- Hip and Core Strengthening
- Formal physiotherapy program may be required
Treatment

Principle
- Correct the underlying bony pathology.
- Pincer – rim resection/trimming.
- Cam – bony resection.
- Address any labral or cartilage pathology that has been caused by underlying abnormal pathology.
- Arthroscopic vs. Open Surgical Treatment.
- Beware of labral tears with underlying dysplasia.

Hip Dislocation

- Relatively rare in football.
- Posteriorly directed force on a flexed, adducted hip.
- Generally posterior.

Hip Dislocation

- Treatment
  - Emergent reduction.
  - Look for associated fractures
    - Posterior wall of the acetabulum.
- Sequelae:
  - Risk for avascular necrosis.
  - Post-traumatic arthritis.
  - Labral/Chondral injuries.

Slipped Capital Femoral Epiphysis-SCFE

- Obese, adolescent male.
- Stable vs. unstable.
- Matava et al. [JPO 1999]
  - 46% of children with stable SCFE present with distal thigh or knee pain.
- Always examine the hip in a child with knee pain!!!!
- Obligatory external rotation.
Hip X-Ray- Kline's Line

Initial Management SCFE

- No weightbearing!
- Referral to orthopaedic surgeon immediately.

Treatment

Thank You