Hip Pain in the Young Athlete

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OBJECTIVES

- Diagnose common pediatric hip injuries
- Treat common pediatric hip injuries appropriately
- Utilize appropriate imaging studies
- Know when to refer to specialist
PRACTICE PEARLS

- Examine “good” side first
- Save most painful test for last
- Rarely can be faulted for getting plain x-rays
- Xray “good” side for comparison
- Examine joints distal and proximal to area of pain
PRIMARY PREVENTION

- Treat ankle instability
- Correct somatic dysfunctions
- Stretch “tonic” muscles (IT band, adductors, iliopsoas, gastroc-soleus)
- Strengthen “phasic” muscles (Transverse abdominus, gluteus, medius, gluteus maximus, VMO, tibialis anterior)
PRIMARY PREVENTION

- Increase training loads slowly
- Dynamic stretching (Witvrouw, 2007, British Journal Sports Medicine)
- Static stretching for muscles
- Cross-train
- Control chronic disease states
- Adequate nutrition (Vitamin D)/hormonal balance
HISTORY

- Acute vs Chronic
- Mechanism of injury
- Previous Injuries
- Previous Treatments
- PPQRSTa
- Assess Risk Factors
RISK FACTORS

- Training errors
- Muscle-Tendon Imbalances
- Anatomic Malalignment
- Associated Diseases/Infections
- Playing Surface/Footwear
- Nutritional/Hormonal State
- Cultural Deconditioning
JOINT EXAMINATION

- Observation
- ROM (active before passive)/Flexibility
- Neurovascular/Strength
- Palpation
- Joint specific tests
Hip Joint Tests

- Trendelenberg (Gluteus Medius)
- Planks (prone and side) (Core)
- Thomas (Quads/Psoas)
- Ober (IT band)
- Patrick/FABER (hip and SI joints)
- Straight Leg Raise (Spine)
- Labral Test
LEGG-CALVE-PERTHES

- Avascular necrosis of femoral head
- Boys ages 4-12
- Etiology ?
- 4 phases
  - Synovitis (1-3 weeks duration)
  - Osteonecrosis (6-12 months)
  - Fragmentation (1-3 years)
  - Healing (1-3 years)
LEGG-CALVE-PERTHES

- Small, thin active child
- Limp which is worse after activity or at end of day
- Night pain and referred pain
- Pain with internal rotation and/or abduction (flexion/adduction contracture)
- Trendelenburg sign/gait
TRENDELENBURG SIGN

Normal hip abducters

Weak hip abducters

A

B

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LEGG-CALVE-PERTHES

Numerous changes on xray
- Fragmentation and lateralization of epiphysis
- Lucencies and densities
- Smaller epiphysis
LEGG-CALVE-PERTHES

- Refer to pediatric ortho
- Pain control, traction, casting
- Rehab
- Surgery
- Younger kids (<6 yo), those with <50% epiphyseal involvement and shorter duration do better
SLIPPED CAPITAL FEMORAL EPIPHYSIS

- Separation of epiphysis from metaphysis
- Boys > girls
- Ages 12-15 years
- Obesity is a risk factor
- Higher incidence in African-American and Polynesian populations
- Etiology unknown (Endocrine?)
SLIPPED CAPITAL FEMORAL EPIPHYSIS

- Limp; unable to ambulate
- Referred pain (thigh or knee)
- High index of suspicion
- Laterally rotated leg with gait
- Decreased internal rotation
- Hip flexion contracture
SLIPPED CAPITAL FEMORAL EPIPHYSIS

- Xray
  - Ice cream scoop falling off of the cone
  - Klein line
- Put patient non-weightbearing
- REFER TO PEDS ORTHO
DEFINITIONS

OVERUSE GRADING

- 1: Pain after activity only
- 2: Pain with activity but not enough to stop
- 3: Pain with activity enough to stop; pain with ADL’s
- 4: Pain at rest
APOPHYSITIS

- Inflammation at secondary center of ossification (growth plate)
- Sites of tendon attachments
- Subjected to traction forces
- “Growth Plate-itis”
- Growth plate is the weak link
- Pain/tenderness directly over apophysis; worse w/ activity
APOPHYSITIS

- ASIS/Sartorius
- AIIS/Rectus femoris
- Iliac Crest/Abdominal muscles/Glutes
- Ischial Tuberosity/hamstring
- Lesser trochanter/iliopsoas
APOPHYSITIS

- Rest (sometimes weeks)
- Cross train
- Ice/heat
- Acetominophen/NSAID
- Physical therapy; progressive rehab
- OMT
AVULSIONS

- Sometimes the AIIS, ASIS, lesser troch, iliac crest, ischial tuberosity will avulse with acute sudden forceful contraction of their respective muscle
- ASIS and ischial most common (60%)
- Ischial tuberosity may not fully unite until age 25
AVULSIONS
AVULSIONS

- Conservative treatment
- Rest, ice, pain control, position extremity to lessen stretch on affected muscle/apophysis
- Progressive rehab
- REFER TO ORTHO if > 2cm displacement
MYOSITIS OSSIFICANS TRAUMATICA

- Calcification/ossification of muscle hematoma following injury
- Vastus Intermedius
- Continues to grow/mature
- Firm mass, may limit ROM, some pain
- Ca\(^{2+}\) and Alk Phos may be increased
MYOSITIS OSSIFICANS
TRAUMATICA

- X-ray shows calcification separate from the bone and with more mature bony architecture at the periphery
- PRICE, rehab, NSAIDs
- Keep knee flexed
- Avoid Heat
- No surgical treatment until 6-12 months after injury
ACETABULAR LABRAL TEARS

- Acute hip injury or overuse
- Pre-existing dysplasia
- Dancers, Gymnists, Skiers
- Usually anterior
- Pain, clicking, grinding, locking
- Pain with positioning the hip in flexion, ER and abduction and then passively extending, IR and adduction
ACETABULAR LABRAL TEARS

- MRI arthrogram
- Rest
- Surgical debridement
SNAPPING HIP

- Anterior: Iliopsoas
- Lateral: IT band
- May or may not be painful
- US can aid in diagnosis
- Rest, Activity Modification, PT, NSAID, OMT
FEMORAL NECK STRESS FRACTURE

- Distance runners
- Amenorrheic females
- Compression and Tension types
- Pain in groin/hip and limp
- Xray and MRI vs Bone Scan
- Non-weightbearing
- Ortho consult
Types of stress fracture

Compression

Displaced

Tension
OSTEITIS PUBIS

- Inflammation/stress injury at pubic symphysis
- Shearing forces
- Hockey, soccer
- X-ray (Flamingo view), Bone scan or MRI
- Conservative treatment
- Injection, rarely surgery
Transient Monoarticular Synovitis

- 3-8 year-olds
- Preceding viral infection
- Groin pain
- Limp
- Conservative treatment
OTHERS

- Muscle/tendon strains/contusions
- Hernias
- Tumors
- Infections
- Rheumatologic
- Referred pain
REFERENCES


