The Limping Child Athlete

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Limping Child

- Hip
- Knee
- Foot
- Infection
- Tumor
Hip

- Pelvis
- Sacrum
- Hip joint
- Greater trochanter
- Lesser trochanter
- Femur
- Iliopsoas
- Rectus femoris
- Adductor longus
- Gracilis
- Sartorius
7 y/o soccer player

- L groin + thigh pain x 9mo
- Limps after activity
- Pain increasing over last month
Exam

- Pain ROM
  - IR > ER
- Limited ROM
  - IR, EXT, ABD
Hip ROM

Flexion + Extension

Flexion

Extension
Physical Exam

- Muscle atrophy
- + trendelenberg test
  - Gluteus medius weakness
  - Downward tipping of unsupported leg
Diagnosis: X-ray

- Always order: AP pelvis + bilateral frog lat hip
Legg-Calve-Perthes

- Age 4-10
- Male:Female 4:1
- Bilateral: 20%
- Sx
  - Early: Painless limp
  - Groin, ant thigh, knee pain
  - Pain worse with activity
Treatment

Goals:
- Keep femoral head centered in acetabulum
- Pain relief

Rest
- Pain-free activities only

NSAID

Ortho referral
- Surgical procedures may be needed
  - Shelf arthroplasty
  - Osteotomy
  - Adductor release
More Hip Disorders
Slipped Capital Femoral Epiphysis

- 10-15 yo
- Often obese
- Bilateral 20-50%

Sx
- Limp
- Aching: Groin, ant thigh, knee pain
- Hip may be held in flexion
- Lurching gait
SCFE: Classification

- **Stable**
  - Able to weight-bear
  - Usually prolonged sx

- **Unstable**
  - Unable to weight-bear due to pain
  - Can progress from stable to unstable
SCFE

Exam

- Pain with ROM
- Limited ROM
  - IR, FLEX
  - As hip is flexed, rides into ER
- + trendelenberg test
SCFE Diagnosis: X-ray

- AP + bilat frog lateral hip
SCFE: subtle

- Frog lateral shows subtle widening of epiphysis
Treatment

- Surgical referral
  - Immediate
    - Unstable slips may need to be admitted
  - Will pin opposite side if any pain at all
Avulsion Fractures

- **Adolescent**
  - Soccer, sprinters, football, martial arts

- **Feel a pop or snap when:**
  - Kicking
  - Coming out of starting blocks
  - change of direction with running
  - Doing splits or hurdling

- **Immediate swelling and pain**
Avulsion Fractures (apophysitis)

- ASIS
  - Sartorius
- AIIS
  - Rectus
- Iliac Crest
  - Abdominal
- Lesser Trochanter
  - Iliopsoas
- Ishial Tuberosity
  - Hamstring
Mechanism

- **ASIS + AIIS**
  - Kicking
  - Coming out of starting blocks
- **Ischial tuberosity**
  - Hurdler
  - Splits
- **Iliac crest**
  - Change of direction with running
Treatment

- Rest + Protect until pain free
  - Ice + NSAID
- ROM
- Progressive resistive exercise
  - Start when 75% ROM reached
- Stretch, functional exercise, proprioception
- RTP
Stress Fracture: Hip

- **Adolescent**
  - Runners, dancers, soccer, basketball

- **Sx**
  - Limp
  - Achey groin pain
    - Early: pain after practice
    - Mid: pain occurs earlier and earlier
    - Late: pain at rest

- **Ameno/oligomenorrhea**
Stress Fracture

Mechanism

- Repetitive microtrauma
- Training error
- Energy deficiency
  - Poor calorie intake
Exam

- Pain w/ IR + flexion
- Pain w/ single leg hop
Compression v. Tension

Tension

Compression

Displaced
Diagnostic Imaging

- **X-ray**
  - + in 50%

- **Bone scan + after 3 days**
  - Bone scan + x-ray: + 90%

- **MRI**
  - 90%
Femoral Neck: Stress Fracture
Treatment

- **Compression side: nondisplaced**
  - Crutches until pain free + full ROM
  - Gradual RTP

- **Distraction side**
  - Urgent ortho referral

- **Both:**
  - **Nutrition**: Ca 1500mg, Vit D 2000IU
    - Assess calorie intake
  - Cross training (pool running, bike)
10 y/o Hockey Player

- R Knee Pain
- Limps after activity
- Intermittent swelling
- No locking or catching
- Occasional giving way
- No specific injury
Exam

- Effusion
- Quad size ↓
- FROM
  - Pain at 30° flexion
Radiology

- Tunnel View
  - Most useful

- MRI
  - Size and viability of subchondral bone
OCD

- Any age
- History
  - Aching knee pain
  - Knee “give way”
  - Intermittent limp
  - Intermittent swelling
Treatment

- **Immobilization/NWB**
  - If painful to walk
  - 1-2 weeks

- **Activity modification**
  - 6-12 weeks
  - No cutting, jumping, contact, sprinting activity
  - Gradual return to full activity
    - Progress as tolerated
RTP

- RTP Criteria
  - No pain
  - Normal PE
  - +/- normal XR
More Knee Injuries
Osgood Schlatter Disease

- **Sx**
  - Pain swelling tibial tubercle
    - Variable
  - Limp
    - After activity only → all adl’s
- **Apophysitis of Tib Tub**
- **Age**
  - 11-13 ♀
  - 13-15 ♂
- **Running + jumping sports**
Pre-disposing Factors

- Inflexible quads
- Patella alta
- Maltracking patella
- Foot pronation
Exam

- TTP tib tub
- Swelling tib tub
- 20-30% bilateral
Radiographs
Treatment

- Improve flexibility
- Improve strength
- Ice
- NSAIDS
- Relative rest
- Cho-pat strap
- RARELY
  - casting
MCL

- Planted foot + valgus stress
- Swelling + limp
- NO or small effusion
Physical Exam

- **Pain**
  - TTP distal femur and medial jt line
- **Eval ACL**
Treatment: Grade I + II

- **Initial**
  - RICE, NSAIDS
  - Bracing
  - Quad sets/SLR/wall sits

- **When pain improves**
  - ROM

- **At 60% strength**
  - Straight ahead jogging
Treatment: Grade I + II

- At 80% strength
  - Agility drills

- RTP: when doing sport specific skills
  - Grade I: few days - wk
  - Grade II: 2 -- 3 wks
MCL: immature athlete

- BEWARE the distal femoral physis injury
  - Often mistaken for MCL injury
  - Associated with growth arrest
Distal Femoral Physis

- Stress Radiographs

AP

Stress View
Distal Femoral Physis

Treatment

- SH I
  - Immobilization + NWB 2-6 weeks
  - Until non tender
- SH II-V
  - Surgical referral
Distal Femoral Physis

- 13 y/o knee pain
- Plain x-ray
  - Normal
- Very significant swelling
- ROM very limited
Stress Fracture

- Pain + limp
  - Insidious onset
  - Comes on earlier and earlier during activity
- May have visible swelling
Stress Fracture: Diagnosis

- **X-ray**
  - May need to repeat after 2-4 weeks
  - MRI sometimes needed
Foot + Ankle

- Cuneiforms
- Cuboid
- Navicular
- Talus
- Calcaneus
9 y/o Basketball Player

- Foot pain + intermittent limp x 1y
- Worse with long walks, basketball
- No swelling, erythema
Exam

- Pes planus
  - Rarely pes cavus
- TTP subtalar jt
Calcaneal-navicular
Calcaneonavicular Coalition
Tarsal Coalition

- **Symptoms**
  - Foot pain + limping
    - Worse with activity
    - Walking uneven ground

- **Pre adolescent - adolescent**
  - Calcaneo-navicular: age 8-11
  - Talo-calcaneal: age 12-15

- 50% bilateral
- 1-3% incidence
Diagnosis

- X-ray
  - CT may be needed
Talo-Calcaneal

- C sign
Stress Fracture

- **Symptoms**
  - Limping
  - Worse with activity
    - Eventually pain at rest

- **PE**
  - Localized TTP over site of fracture
Navicular Stress Fracture

- TTP navicular
- X-ray often neg
- Bone scan/CT/MRI often needed
Navicular Stress Fracture

- High rate avascular necrosis
- 6 wk cast
  - Non-weight bearing until pain-free with WB
- 6 wk relative rest then RTP
OCD Talus

Symptoms + History

- Intermittent:
  - Pain
  - Swelling
  - Limp

- Previous ankle sprain
  - Often multiple
Exam

- Effusion (+/-)
- Palpation
  - TTP talus
MRI
Management

- Non-displaced
  - 6-8 wk NWB cast

- Surgery
  - Displaced
  - Chronic
Tumor
Symptoms: LE Tumor

- Painful limp
  - Distal femur/prox tibia most common site
- Night pain + Pain at rest
- Systemic symptoms
  - Weight loss
  - Fatigue
- Leukemia: vague pain
  - pain out of proportion to injury
  - Pallor, LAD, HSM
Ewing’s Sarcoma

- Permeative, mottled appearance
Osteosarcoma

- Periosteal elevation
- Sunray spicules
Growing Pains

• Diagnosis of exclusion

- Inclusion criteria
  - Intermittent
  - Bilateral
  - Location
    - Anterior thigh
    - Calf
    - Distal hamstring
  - Late afternoon/evening pain
  - Normal PE + Labs

- Exclusion criteria
  - Persistent pain
  - Ing ing pain
  - Joint pain
  - Am pain
  - Swelling, erythema
  - TTP or ↓ ROM jt
  - Limping during day
  - + labs/radiology
Thank You

Questions??