Knee Pain: Arthroscopy or Ace Wrap?

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Objectives

• Identify Key History and Physical Exam Findings for:
  – Knee
    • Meniscus tear
    • ACL tear
    • Overuse injuries
    • Fractures

  – Review timelines for treatment/referral based on diagnosis
DO NOT FORGET!

KNEE PAIN = HIP PROBLEM
Slipped Capital Femoral Epiphysis

“SCFE”

“Slip”

“SUFE”
SCFE

- Most Common Hip Disorder of adolescence
- Peak Age 11
- Thyroid and other endocrinopathies
- Increased BMI strong risk factor
Key Points

- Overweight
- 9-12yo
- Male > Female
- Chronic>acute
- Knee or Hip Pain
- Obligate External Rotation
- Limited Internal Rotation
- Immediate referral
  - Wheelchair
  - Surgical treatment
Fractures

14yo male
- playing basketball
- "hurt my knee jumping for a rebound"

- Emergent Referral
- Immobilize
  - (splint or knee immobilizer)
- NPO
Fractures

11yo female
- playing soccer
- “I felt a pop when kicking the ball”

• Emergent
• Immobilize
  – (splint or knee immobilizer)
• NPO
Fractures

13yo male
- playing football
- hit from the side
- MCL tear?

- Emergent
- Immobilize
  - (splint or knee immobilizer)
- NPO
Fractures – Key Points

• Beware of pediatric “MCL tears” (physeal fx)
• Small fx fragment ≠ Small injury
• Always order 2v x-ray
• Immobilize, NWB, NPO
• Emergent Referral
Overuse Injury

- Osgood-Schlatter
  - Tibial tubercle

- SLJ Syndrome

- PLICA Syndrome

- Patellar Tendonitis

- Pes Anserinus Bursitis
Overuse Injury

- Osgood-Schlatter
- Sinding-Larsen-Johansson Syndrome
  - inferior pole of patella
- PLICA Syndrome
- Patellar Tendonitis
- Pes Anserinus Bursitis
Overuse Injury

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  - medial hamstring insertion
Overuse Injury

- High risk in Pediatric
- Direct relationship to activity
- Treatment often difficult to implement
- Physis particularly vulnerable during periods of rapid growth
Apophysitis - Key Points

- Where do you hurt?

- Osgood-Schlatter
  - Tibial Tubercle

- Sinding-Larson-Johansson Disease
  - Inferior Pole of the Patella

TX –

Rest, Rest, Rest
NSAID’s
Quad Stretching
No risk of Damage or tear

Not Urgent
Patellofemoral pain

- Anterior
- Non-Focal
  - “U sign”
- No Injury

Treatment
- Quad/Hip/Core strengthening
- Rest from aggravating activity
- NSAIDS
- ICE

Not Urgent
Knee injury and effusion

14yo female
- playing soccer
- I was running, then planted to change direction...pop, swelling, pain

....BUT that was 3 weeks ago and now it feels okay....!
Segond Fracture

- Highly associated with ACL tear
- Lateral capsular avulsion fracture
- ACL tear until proven otherwise
  - 75%
Non-Operative Management in Young Patients

- Meniscal damage
- Damage to articular cartilage
- Worsening instability
- Compromised knee function
- Earlier evidence of degeneration in the knee

Ganley 2010
Henry 2009
Millett 2002
Achroth 2000
Mizuta 1995
McCarroll 1993
Kannus 1988
Pediatric-Adolescent ACL Reconstruction

ACL Tear

Physiologic and Skeletal Age

- Skeletally Mature
  - Autograft

- < 3 years of Growth Remaining
  - Hamstring Autograft with extraphyseal fixation

- > 3 years of Growth Remaining
  - Physeal-Sparing
ACL Treatment

- Psychological impact
- Growth remaining
- Activity Level

- Concomitant Injuries

- Not just a small knee…
  - Pediatric specialists
    - Surgeon, nurse, anesthesiologist, physiotherapist, ATC
    - Radiology
    - Return to play considerations
    - Prevention!
Key Points - ACL tears

• Non-contact > contact
• Pop
• Effusion
• Unable to continue play
>90% chance

Be wary of ….

But it feels okay now!

Urgent
Tibial Spine Fractures

- Myers/McKeever 1970
  - Most common Mechanism
    - Bicycle Accident
  - Non Contact
  - Hyperextension
  - ACL equivalent
Patellar Dislocation...not a knee dislocation

Emergent  Urgent
Acute Dislocation

• 2-3% of all knee injuries
  – Non-contact or blow to 30 degree flexed knee
• 2nd most common cause of traumatic hemarthrosis
• peak incidence 14-16yo
• Effusion

Patellar Dislocation

“Apprehension” Sign
Patellar Dislocation

- Treatment
  - Brief immobilization
  - Muscular functional rehabilitation
  - MRI for persistent effusion or mechanical symptoms
  - High recurrence
    - may require surgical reconstruction
• 12yo
• Knee pops
• Soreness along lateral jt line
• (may have episodes of locking)
**Discoid Meniscus**

- Most meniscus tears in patient <16yo
- Developmental difference
- Lateral, not medial
- Painless popping
- Painful popping
- Catching/Locking

**Surgical Treatment**

**Urgent**
• 10-12yo
• Soreness in knee with activities
• Difficult to pin-point location
  – Seems more **medial** than lateral
Osteochondritis Dissecans

- Subchondral osteonecrosis +/- Trauma
- 2:1 male
- 25% Bilateral
Osteochondritis Dissecans

- Activity Related Pain
- Possible Mechanical Popping
- “notch” Radiographic view helpful for DX
Osteochondritis Dissecans

– Healing Potential

• Age at Diagnosis
  – Age less 12 years old
  – Open Physis

• Location of lesion
  – MFC > LFC

• Status of articular surface

Osteochondritis Dissecans

Treatment for **STABLE** lesions
- Forced Rest
- MRI for symptoms > 4 months

Treatment for **UNSTABLE** lesion or that fail non-operative treatment
- Drilling
- Fixation
- Bone graft
- Osteochondral Autologous Implantation
Key Points - OCD

• Vague knee pain
• Usually worse with activity

• Usually medial femoral condyle

• Radiographs
  – AP, Lateral, NOTCH

• Rest and Referral

Urgent
When to Get an MRI?

- Effusion (traumatic)
  - Most common ACL (2nd Patellar Dislocation)
- Mechanical symptoms
- Atraumatic Effusion
- Unable to Straight leg raise
- Knee Pain x 6 months
- Palpable Mass
- Infection?
- OCD Lesion
When **NOT TO** Get an MRI on an Athlete

- **Anterior Knee pain < 6 months**
  - No mechanical symptoms
  - Soft tissue swelling

- **Extra-articular soft tissue swelling**
  - Tibia Tubercle
  - Patellar Tendon
  - MCL
Thank you

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