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
  - (sprint or knee immobilizer)
- NPO

Fractures

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

- Emergent
- Immobilize
  - (sprint or knee immobilizer)
- NPO

Fractures

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

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

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

Emergent

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**

- Osgood-Schlatter
- SLJ Syndrome
- PLICA Syndrome
- Patellar Tendonitis
- Pes Anserin Bursitis

- 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

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%

ACL Tear

Non-Operative Management in Young Patients

– Meniscal damage
– Damage to articular cartilage
– Worsening instability
– Compromised knee function
– Earlier evidence of degeneration in the knee
Pediatric-Adolescent ACL Reconstruction

ACL Tear

Physiologic and Skeletal Age

Skeletally Mature

< 3 years of Growth Remaining

3 years of Growth Remaining

Autograft

Harvesting Autograft with extraphyseal fixation

Physeal-Sparing

Pediatric-Adolescent ACL Reconstruction

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!
Tibial Spine Fractures

- Myers/McKeever 1970
  - Most common Mechanism
    - Bicycle Accident
  - Non Contact
  - Hyperextension
  - ACL equivalent

Patellar Dislocation...not a knee dislocation

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 joint 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
<table>
<thead>
<tr>
<th>Osteochondritis Dissecans</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>– Subchondral osteonecrosis +/- Trauma</td>
<td></td>
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<tr>
<td>– 2:1 male</td>
<td></td>
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<tr>
<td>– 25% Bilateral</td>
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| Activity Related Pain |  |
| – Possible Mechanical Popping |  |
| – “notch” Radiographic view helpful for DX |  |

| 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

**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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