Anterior Knee Pain in Children

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Goals and Objectives

To learn how to care for patients with chronic knee pain

To be able to
• Take an appropriate history
• Perform a focused examination
• Get appropriate imaging
• Start appropriate rehabilitation
What are We Looking For? (Most Common)

- Patellofemoral dysfunction
- Patellar tendonitis
- Iliotibial Band Syndrome
- Knee Apophysitis
  - Sindig-Larsen-Johanssen
  - Osgood Schlatter
- Pes Anserine Tendonitis/ Bursitis
Acute Injury that Waited and Now is Chronic

- Anterior Cruciate Ligament
- Posterior Cruciate Ligament
- Fat pad impingement
- Fracture
- Medial Collateral Ligament
- Patellar Dislocation
- Meniscus tear
What You Are Always Worried About

• Cancer
• Juvenile Rheumatoid Arthritis
• Hip pathology
• Infection
• Neurologic
• Osteochondritis Dissecans
• Plica
# Historical Points

<table>
<thead>
<tr>
<th>ACUTE</th>
<th>CHRONIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distinct event</td>
<td>Insidious onset</td>
</tr>
<tr>
<td>Audible pop</td>
<td>Non-painful popping</td>
</tr>
<tr>
<td>Sharp pain</td>
<td>Dull ache and pain</td>
</tr>
<tr>
<td>Inability to continue</td>
<td>Usually can continue</td>
</tr>
<tr>
<td>Marked swelling</td>
<td>Minimal swelling</td>
</tr>
<tr>
<td>Instability</td>
<td>Giving way</td>
</tr>
<tr>
<td>Mechanical locking</td>
<td>Theater sign</td>
</tr>
<tr>
<td></td>
<td>Activity related</td>
</tr>
<tr>
<td></td>
<td>Stiffness</td>
</tr>
</tbody>
</table>
What Are Red Flags That Require Further Evaluation?

- Systemic symptoms
  - Malaise, Fatigue
  - Fever
  - Weight loss
- Morning symptoms or symptoms that awaken from sleep
- Multiple joint complaints

- Concerning medical history
- Pain that you cannot reproduce
- Limp or NWB
- Antecedent infection

- STI symptoms
- Skin changes or joint swelling
- Neurovascular complaints
- No mechanism of injury or relationship to activity
Chorley’s Oversimplification Slide

LOOK FOR BADNESS

BIOMECHANICS TRAINING ERROR

GET THEM ACTIVE
Etiology of Knee Pain

- Overuse
  - Too much, too soon, too often, too intense
- Growth spurt-clumsy teenager
- Inflexibility
- Weakness-quads, hips
- Agonist-anatagonist relationships

- Lack of control
- Kinetic chain
  - Foot
  - Hip
- Specific activities
  - Jumping
  - Weights
Lateral Patellar Translation

- Increased Q angle
- Decreased VMO strength
- Tight lateral retinaculum
Weak Hip Result in Knee Valgus
Too Much Quad and Not Enough Hip and Core
Exam-Inspection

- Swelling
- Body habitus
- Alignment
- Skin color
What Is the Diagnosis?
Exam-Palpation

- Effusion
- Pes Anserine
- Gerdy’s tubercle
- Lateral femoral condyle
- Tibial tubercle
- Patellar tendon
- Patella
  - Inferior and superior poles
  - Medial and lateral aspect
Passive Range of Motion Flexibility

- Quads (prone)
- Hamstrings (popliteal angle)
- Iliotibial Band (Ober’s test)
- Hip Flexors (modified Thomas test)
- Hip IR/ER
- Patellar glide
Resisted Range of Motion – Strength

• VMO bulk and tone
• Glut medius strength
Functional Testing

• Single leg stance
• Single leg squat
• Step down

https://www.youtube.com/watch?v=t63QH2mv1CM
What to Image?

• Physical exam that is not consistent with history

• Unable to bear weight or worsening limp

• Red flags
Deep Knee Pain That Does Not Hurt with Palpation with Mechanical Sensations

- Avascular necrosis of the subchondral bone
- Most commonly in the knee
- Lateral aspect of the medial femoral condyle
- Graded by the degree of displacement
13-year-old Female with Knee Pain

Drill team member with 4 weeks of knee pain. Pain when she would drop to her knees from the standing position without brace

- TTP over the medial peripatellar area
- Quad tone and bulk was better on the affected side
Treat the Etiology

P  Protection from instability
R  Relative rest from overuse
I  Ice
C  Compression
E  Elevation
M  Medications
M  Modalities
M  Motion from inflexibility
S  Strength from imbalances and deficits
Treat the Etiology

- Biomechanics
- Shoe modification
- Braces
- Proper Coaching

- Hip strength
- Flexibility
- Proprioception
Important Points

• Goals of treatment
• Clinical course
• Focused rehab
• Is this doing permanent damage?
Summary Points

• Chronic Knee Pain is a detective story
• Primarily treat the underlying etiology not the irritation
• Always consider systemic etiologies
• Treat each patient as an individual
• The knee is often the victim of hip and foot pathology