Doug Elenz is a paid Consultant/Advisor for the Biomet Manufacturing Corporation.

**Question?**

“Anterior knee pain is one of the more difficult (and frustrating!) problems to treat in my clinical practice”

**Patellofemoral Joint**

- Patellofemoral Pain Syndrome (PFPS)
  - Anterior Knee Pain
  - Chondromalacia Patella
- Patellofemoral Instability (PFI)
  - Patellar dislocation
  - Patellar Subluxation

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**Patellofemoral Joint**

- Anatomy – Bone/Cartilage
  - Patella
  - Femoral Trochlear Groove (TG)

- Anatomy – Soft Tissue
  - Ligaments
    - Medial PF ligament
  - Tendons
    - Quadriceps, Patellar
  - Muscles
    - VMO
  - Other
    - Lateral Retinaculum

**FUNCTION**

- Function
  - Increases knee extension power
  - Benefits from normal patellar tracking

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### Patellofemoral Joint

**Motion – Normal Patellar Tracking**
- Patella tracks in TG with knee motion
- Tracking dependent on...
  - Static
  - Dynamic
  - Osseous

### Patellofemoral Joint

**Motion – Abnormal Patellar Tracking**

### Patellofemoral Joint

**Results in ...**
- Efficient and painless motion.
- Maintenance of Joint “Homeostasis”.

### Patellofemoral Joint

**Causes of Abnormal Patellar Tracking**
- Abnormal Joint Geometry
  - Patella Alta
  - Trochlear Dysplasia

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Patellofemoral Joint

- Causes of Abnormal Patellar Tracking
- Soft Tissue Deficiencies/Tightness
  - Deficient MPFL
  - Tight Lateral retinaculum

Patellofemoral Joint

- Causes of Abnormal Patellar Tracking
- The surrounding joints affect patellar tracking!
  - “The Hip bone is connected to the Knee bone and the ...”

Patellofemoral Joint

- Causes of Abnormal Patellar Tracking
- Limb Malalignment
  - Femoral Internal Rotation
  - Tibial External Rotation
  - Knee and Hind foot Valgus

Patellofemoral Joint

- Causes of Abnormal Patellar Tracking
- Muscle Weakness
  - VMO
  - Hip Abd/Ext Rotators
  - Trunk and Pelvis

Abnormal Patellar Tracking

- Contributes to ...
  - Patellofemoral Pain Syndrome (PFPS)
    - Subchondal bone and soft tissue overload, injury (ischemia), and pain.

- Results in ...
  - Patellofemoral Instability (PFI)
    - Subluxation, dislocation of the patella.

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Patellofemoral Pain Syndrome (PFPS)

- History
  - Demographics
  - Pain, worsened by . . .
  - No Hx of Trauma/Instability

Patellofemoral Instability (PFI)

- History (PFI)
  - # of Events
  - Position of knee

Patellofemoral Joint

- Exam
  - Observation: stand, walk, and step up
  - Alignment
    - Hip inversion?
    - Knee valgus?
    - Ankle?

Patellofemoral Joint

- Exam (Q Angle)
  - Direction of Action of quadriceps and patellar tendon not parallel
  - Represents degree of lateral pull of the patella by the quadriceps and patella tendon.
  - Increased angle results in increased PFJ overload and instability.

Patellofemoral Joint

- Exam
  - Moving Patella Apprehension Test
    - Manual lateral and then medial translation of the patella with knee motion.
    - Apprehension or quadriceps contraction with lateral translation is positive.

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Patellofemoral Joint
- Imaging – Radiographs
  - AP, Lateral, and Axial

Patellofemoral Joint
- Imaging – MRI
  - TT-TG Ratio (Q angle)

Patellofemoral Joint
- Imaging – MRI
  - Articular Cartilage
  - Patella Tilt

Patellofemoral Joint Pain Syndrome (PFPS)
- Patellofemoral Pain Syndrome (PFPS)
  - Frequent Dx, poorly understood
  - Demographics
  - Treatment can be elusive!

TREATMENT
- Patellofemoral Pain Syndrome (PFPS)
  - Treatment – Pharmacotherapy
    - NSAID
    - Steroids
    - Supplements

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Patellofemoral Pain Syndrome (PFPS)
- Treatment:
  - Bracing/Taping

Patellofemoral Pain Syndrome (PFPS)
- Treatment:
  - Physical Therapy

Patellofemoral Pain Syndrome (PFPS)
- Treatment:
  - Activity modification
  - Sports modification

Patellofemoral Pain Syndrome (PFPS)
- Treatment:
  - Psychology
    - Confirmation
      - “you’re not crazy”
    - Reassurance
      - “you’re going to be fine ... give you the tools to manage ... going to be a long battle”
    - Self Control
      - “You be in control of your knee, don’t let your knee be in control of you!”

Patellofemoral Pain Syndrome (PFPS)
- Treatment:
  - Surgical
    - Rare
    - Persistent pain > 6 months
    - Scenario
      - Evidence Discrete Chondral lesion
      - Lateral patella overload d/t tilt
      - Distal Patella overload d/t alta

Patellofemoral Pain Syndrome (PFPS)
- Treatment:
  - Surgical Algorithm

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Patellofemoral Instability (PFI)

Treatment
- If first time dislocation* and no or few predisposing factors for abnormal tracking
  *unless complete medial soft tissue disruption
- Treat nonsurgical
  - Limitation of motion
  - Bracing
  - Physical Therapy
  - Orthotics
- Bracing
- Physical Therapy
- Orthotics

Patellofemoral Instability (PFI)

Treatment - Surgical
- Predisposing factors don’t usually occur in an isolated fashion.
- Some factors easier to address and can compensate for other deficiencies.

Patellofemoral Instability (PFI)

Treatment - Surgical Algorithm

Patellofemoral Instability (PFI)

Treatment
- MPFL deficiency: Reconstruction

Patellofemoral Instability (PFI)

Treatment:
- Patella Alta: Distalization osteotomy

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Patellofemoral Instability (PFI)

- Treatment
  - Trochlear Dysplasia: Osteotomy

CONCLUSION (PFPS)

- Nonsurgical treatment is successful in treating the majority of patients with PFPS even if they have patellar maltracking and/or articular cartilage pathology.

CONCLUSION (PFI)

- PFI can be successfully managed nonsurgically unless patients have multiple instability episodes and have predisposing factors that make redislocation high.
- If surgery is planned to address PFI use an algorithmic approach to address all possible predisposing factors that are causing instability.

Thank You

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