Arthroscopic Patella Realignment: Indications & Technique

AANA Annual Course 2006
Hollywood, Fla.
Jeffrey Halbrecht MD
San Francisco, CA
Patella Instability:

"I think you dislocated your kneecap. ... It's not supposed to be over here."
Definitions:

- **Causes of Patella Instability**
  - Proximal soft tissue disruption (MPFL)
  - Structural Dysplasia
    - Ext tib torsion (high “Q” angle)
    - Femoral anteversion
  - Other
    - Trochlea dysplasia
    - Associated deg OA

- **Treatment Options**
  - Proximal (soft tissue) realignment
    - Repair
      - Open
      - Arthroscopic
    - Reconstruction
  - Structural Realignment
    - Medialization of tubercle
    - Femoral osteotomy (rare)
    - Trochleaplasty (rare)
    - Anteromedialization
Arthroscopic Patella Realignment: Indications:

Patella Instability where a soft tissue realignment is indicated

- Dislocation
  - recurrent
  - primary (with residual radiographic subluxation)

- Subluxation
  - Recurrent (with failure of conservative treatment)
Proximal Realignment: What are we talking about?

- **In favor**
  - Anatomic repair / reefing of MPFL
  - Open and Arthroscopic techniques

- **Out of favor**
  - Isolated Lateral release (↑ instability)
  - Transfers (ST, PT, ) (↑ PF contact force)
  - VMO adv (Insall)
Why Anatomic Repair?
The Medial Patellofemoral Ligament (MPFL) is the Primary Stabilizer

**Laboratory Studies**

- Hautamaa/Fithian: cadaver serial sectioning
  MPFL 50%  Orthop 1998

- Desio:
  - MPFL 60%, MPML 13%
(MPFL) is the Primary Stabilizer

Clinical Studies

Patella Dislocation and MPFL Tear

- **Nomura: 27 pts**
  - Knee. 2002 May;9(2):139-43
  - Surgery: 96%
  - MRI: 81%

- **Sanders: 14 pts**
  - J Comput Assist Tomogr 2001
  - Surgery: 100% (7 ptl)
  - MRI: 85%

- **Sallay: 23 pts**
  - Surgery: 94%
  - MRI: 87%
How Does Arthroscopic Patella Realignment Work?

- Tightening of MPFL
- MPFL heals, but elongated (similar to MCL, MGHL)
- Arthroscopic plication of redundant tissue..... (similar to capsulloraphy of shoulder)
What are the Benefits of “Arthroscopic” Realignment?:

- Avoid incision
- Protect VMO
- Less post op pain
- Visualize realignment (fine tune)
- Avoid over-tightening
- Lower risk of complications
- Lower risk of p-op stiffness, scar tissue
- Easier rehabilitation
- More cosmetic
Identifying the Appropriate Candidate:

Patient Evaluation

- **History**
  - Documented lateral dislocation
  - Recurring subluxation
  - Failed conservative Rx
**Patient Evaluation**

- **Physical Examination**
  - Q angle < 20
  - Lateral translation > 50%
  - J sign +
  - Patella tilt +

*Thanks to Tony Schepsis for the videos!*
Patient Evaluation

- **Diagnostic Imaging**
  - X-ray
    - Merchant view
      - (congruence angle, translation, tilt)
    - Lateral
      - no sig patella alta,
      - trochlea depth normal
  - MRI
    - MPFL injury
    - No deg OA
  - CT
    - ATT-TG distance < 20mm
Arthroscopic Realignment: Options

- Suture hooks: (Ahmad)
  - difficult angle
  - Limited amount of tissue
- Suture anchors into patella (Fukushima)
  - Unnecessary (hardware)
- Thermal shrinkage (Coons, Barber)
  - Stretch out?
  - Amount of correction?
- Arthroscopically assisted (Small, Glogeau)
  - Still requires medial incision
- Touhey needle technique (Halbrecht)
Arthroscopic All Inside Technique

Percutaneous insertion using Touhy needle

Partial Withdrawal and reinsertion of Touhy needle

Arthroscopic knot tying for All Inside Technique
Example: Arthroscopic Proximal Realignment

Pre-op

Post-op
Arthroscopic Patella Realignment: Technique

Video
Technical Pearls:

- Tuohy needle (Rusch, Duluth, GA) ruschinc.com
- Take big bites!
- Average # sutures: 4 (3-6)
- Practice arthroscopic knot tying
- Stimulate healing response along retinaculum
- Insert sutures prior to lateral release
- Lateral release prior to tying knots
- Tie from superolateral portal
- Avoid extravasation (speed!)
- Puckering (PDS, Med portal release)
- Careful post operative rehab
Post Op Rehab:

- **Immediate:**
  - WBAT with brace locked 0 degrees
  - Quad sets, SLR

- **Week 1**
  - ROM 0-30 degrees
  - Begin PT, e-stim, patella mob’s to prevent scarring lat ret.

- **Week 3**
  - increase ROM to 90
  - D/C brace

- **Week 6**
  - increase ROM to full
  - progress strengthening
Arthroscopic Patella Realignment

Clinical Results
Define Study

- 45 knees (41 patients)
- 29 available for study
- 23 dislocators/6 subluxators
- Avg. f/u: 20 months
- Avg. age: 30

Halbrecht J: Arthroscopy 2001
Subjective Rating: Overall

- significantly improved: 27 (93%)*
- unchanged: 1 (3%)
- worse: 1 (3%)

* (p < 0.05)
Lysholm Score:

- Pre-op 49.5
- Post op 71.3* (p < 0.05)
Subjective Rating:

10 (severe symptoms) - 0 (no symptoms)

<table>
<thead>
<tr>
<th></th>
<th>Pre op</th>
<th>Post op</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain</td>
<td>7.1</td>
<td>2.4*</td>
<td>(p &lt; 0.05)</td>
</tr>
<tr>
<td>Swelling</td>
<td>6.0</td>
<td>0.8*</td>
<td>(p &lt; 0.05)</td>
</tr>
<tr>
<td>Instability</td>
<td>8.2</td>
<td>0.8*</td>
<td>(p &lt; 0.05)</td>
</tr>
<tr>
<td>Crepitus</td>
<td>6.6</td>
<td>2.5*</td>
<td>(p &lt; 0.05)</td>
</tr>
</tbody>
</table>
Average Congruence Angle: (degrees)

**Pre op**

+30.7

**Post op**

+8.2* (p< 0.05)
Average Lateral Patellofemoral Angle: (degrees)

Pre op: -3
Post op: +9.4* (p< 0.05)
Average Lateral Translation: (mm’s)

<table>
<thead>
<tr>
<th></th>
<th>Pre op</th>
<th>Post op</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+ 8.0</td>
<td>+1.2*</td>
</tr>
</tbody>
</table>

* (p< 0.05)
Summary: Arthroscopic Patella Realignment

- Excellent clinical and radiographic stability
- No complications
- Excellent relief of pain and crepitus
Conclusion

Arthroscopic patella realignment is a safe and effective procedure for correction of patella instability when a proximal realignment is indicated.
Thank You