MANAGEMENT OF FIRST TIME DISLOCATOR

P.J. Erasmus and Kyung Cho
Knee Clinic
Stellenbosch
South Africa
MPML
- 8% - 38% medial resistance

MPTL
- 0% - 24% medial resistance
- Stability 0° - 10°

MPFL
- 50% - 60% medial stability
- Stability 0° - 30°

Betina Bremer Hinckel et al
Medial patellotibial ligament and medial patellomeniscal ligament: anatomy, imaging, biomechanics, and clinical review
Knee Surg Sports Traumatol Arthrosc 2017
- 90% MPFL tear
  - Patella
  - Femur
  - Inter substance
  - Combination
- Possible damage to MPTL and MPML
- Chondral damage to medial facet and lateral condyle
Injury patterns

Seeley

- 31% Patellar insertion
- 14% Femoral insertion
- 37% Diffuse
- 33 % osteochondral fracture mostly medial facet

Injury patterns

Petri et al

- 27.5% Patella insertion
  - younger group
- 45% Femoral insertion
  - older group
  - Larger TT-TG
- 22.5% Diffuse
- Incomplete rupture had a lower patella
Injury patterns

Kang et al

- Proximal MPF – “overlap” region (Less isometric)
  - Attached to the VMO
  - Non surgical treatment

- Distal MPFL – “non overlap” region (More isometric)
  - No muscular attachment
  - Need surgical treatment
    - Suturing?
    - Reconstruction?
Risk Factors – for recurrent dislocation

- Trochlea dysplasia
- Increased TT=TG
- Patella Alta
- < 18 years
- Female

Tyson C. Christensen,* MD, Thomas L. Sanders et al, American Journal of Sports Medicine, Vol. XX, No. X 2017
Natural History

- Non Operative Treatment
  - 38.4% overall recurrence
  - 69% recurrence in skeletally immature + trochlea dysplasia
  - 70% recurrence if sport related

* TT-TG and Limb alignment not done

Lewallen, McIntosh, Dahm, AJSM Vol 14 No3 2013
In recurrent group
- 60% within first year
- 90% within 3 years
- Age, sex BMI and Patella Alta no effect

Lewallen, McIntosh, Dahm, AJSM Vol 14 No3 2013
<table>
<thead>
<tr>
<th></th>
<th>Normal Knee</th>
<th>Single dislocation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>KOOS - sport</strong></td>
<td>85</td>
<td>72</td>
</tr>
<tr>
<td><strong>KOOS - QOL</strong></td>
<td>85</td>
<td>63</td>
</tr>
</tbody>
</table>
MPFL non isometric; tension difference between the different bundles

Victor et al Am J Sport M Vol 37 2009
Non Surgical

Immobilisation
  Full Extension
  40° Flexion

Immediate mobilisation

MPFL tight patella out of the trochlea
Non Surgical

Immobilisation

- Full Extension
- 40° Flexion

Immediate mobilisation

- Non Isometric Ligament
  - Restrict last 40° of knee extension
  - Ligament lax
  - Patella stable in trochlea
  - Allow full flexion
  - Weight bear on flexed knee safe
Non Surgical

Immobilisation
  Full Extension
  40° Flexion

Immediate mobilisation
Primary Surgery

Surgical Treatment

Direct Repair
- Open
- Arthroscopic
- Augmented Repair

Primary Reconstruction
- MPFL reconstruction
- MPFL + MPTL
- Tubercle Osteotomy
- Grammont Procedure

- Normal Strength
  - 208N (26mm lengthening)
- Inter - substance suture
  - 37N
- Bone Anchor suture
  - 42N
- Reconstruction 7mm tendon
  - 195N

Amis et.al
JBJS (B) VOL. 87-B, No. 1, JANUARY 2005
Primary Surgery

Surgical Treatment

Direct Repair
- Open
- Arthroscopic
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Primary Reconstruction
- MPFL reconstruction
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Primary Surgery

Surgical Treatment

Direct Repair
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Primary Reconstruction
- MPFL reconstruction
- MPFL + MPTL
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- Grammont Procedure

P. P. Mariani; L. Liguori; G. Cerullo; G. Iannella; L. Floris
Primary Surgery

Surgical Treatment

Direct Repair
- Open
- Arthroscopic
Augmented Repair
Primary Reconstruction
- MPFL reconstruction
- MPFL + MPTL
- Tubercle Osteotomy
- Grammont Procedure

Only 5 knees
- 3 excellent
- 1 fair
- 2 poor

Eiki Nomura Motoyasu Inoue Natsuya Osada
- **Primary repair**
  - Randomized trail
    - 71 patients < 16 years
      - 28 non surgical
      - 36 operative
      - Primary repair + LLR in 34
    - 2 year FU
      - Non surgical 71% re-dislocation
      - Operative 67% re-dislocation

- **Primary Repair**
  - 19% redislocation
  - 11.5% subluxation

- **Non Surgical**
  - 23% redislocation
  - 22% subluxation

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Primary repair
No difference from non surgical treatment
Does not compensate for underlying predisposing factors
Repaired ligament at best as strong as before – probably weaker
Augmented repair
  Bigger incision
  More dissection
  Doubtful result
  Why not primary reconstruction?
Primary Surgery

Surgical Treatment

Direct Repair
  Open
  Arthroscopic
  Augmented Repair

Primary Reconstruction
  MPFL reconstruction
  MPFL + MPTL
  Tubercle Osteotomy
  Grammont Procedure
Open Growth Plate
Primary Surgery

Surgical Treatment

Direct Repair
  Open
  Arthroscopic
  Augmented Repair

Primary Reconstruction
  MPFL reconstruction
  MPFL + MPTL
  Tubercle Osteotomy
  Grammont Procedure

Betina Bremer Hinckel et al
Knee Surg Sports Traumatol Arthrosc 2017
Primary Surgery

Surgical Treatment

Direct Repair
- Open
- Arthroscopic
- Augmented Repair

Primary Reconstruction
- MPFL reconstruction
- MPFL + MPTL
- Tubercle Osteotomy
- Grammont Procedure

Soft Tissue attachment maintained
4 x Small fragment OA Cancellous Screws
No brace
Immediate FWB
Primary Surgery

Surgical Treatment

Direct Repair
- Open
- Arthroscopic
- Augmented Repair

Primary Reconstruction
- MPFL reconstruction
- MPFL + MPTL
- Tubercle Osteotomy
- Grammont Procedure