Clinical Results Following Distalization of the Tibial Tubercle for Patellar Stabilization

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I have no financial conflicts to disclose.
I am a consultant with Smith & Nephew.
Introduction

• Patella alta is a known anatomic risk factor for lateral patella dislocation (LPD).

• When present, reducing patella height by distalization of the tibial tubercle (TT) is recommended.

• The purpose of this study is to evaluate the clinical outcomes of TT distalization
Methods

• Retrospectively review of patients tibial tubercle (TT) distalization w/ MPFL reconstruction for recurrent lateral patella dislocation (LPD)

• Performed by a single surgeon (2009-2015)

• Data collected included:
  – demographics, pre / post-operative imaging measurements related to patella alta and trochlear dysplasia on MRI and plain radiographs
  – outcomes including recurrent LPD, knee stiffness needing a manipulation, and patient reported outcomes
Surgical Goal

• Distalize to achieve:
  – C/D 1.1 -1.2
  – PTI (patellar engagement) : 25%

• Medialize to achieve:
  – Tubercle sulcus angle (TSA) <5°
Results

• 89 patients: 68 (76%) female / 21 (24%) males

• Mean (range): age 21 (13-45), BMI 25.9 (17-44.6)

• Pre-operative imaging: mean (range)
  – I/S ratio 1.5 (1.18-2.06)
  – C/D ratio 1.4 (1.05-1.93)
  – TT-TG 18.5 mm (8-28)
  – PTI 28% (5-70)
  – Crossing sign 92%
Results

- Post op CD: 1.09 (0.92-1.67)
- mm distalization: 9.8mm (range 4 to 15)
- 76/89 (86%): patella height normalization (C/D ≤ 1.2)
- no post op baja (< 0.9)

- 5 patients (6%) had frank recurrent dislocation
  - 2 w/in first year (5, 8, 16,17,32,37 months): 4F/1M, average age 15.6
  - Post op patella alta in the dislocation group: 1.11 (1.02 -1.25)
  - All re-dislocators had the high grade trochlear dysplasia as judges by sulcus angles (146º -172 º)
Results

• 20% (18/89) had Distal TTO alone without Medial translation

• In 75% (53/71), Distal Translation (mm) > Medial Translation (mm)

• When Distal Translation (DT) was <7 mm, Medial Translation (MT) mm ≥ DT (8%)

Therefore Medial TTO was the primary surgical TTO translation in only 8% of the patients.
Results

- Arthrofibrosis requiring manipulation: 12 patients (13%)
  - mean distalization was 11.8 mm (9-15mm)
  - This distance was significantly different (p=0.012) from those patients not requiring manipulation.
Results

• 72% had post operative PROM (KOOS)

• Minimum Meaningful Difference (10 points) achieved between pre and post op scores in all categories

• Largest improvement in :
  – Sports (30 pts)  Quality of Life (30 pts)

• Final KOOS :
  – ADL’s (82)  Sports (58)
  – Pain (76)  Symptoms (50)
  – QOL (50)
Tibial Tubercle Distalization combined w/ MPFL reconstruction:

- leads to a high rate of normalization of patellar height
- Has good clinical outcomes with 93% patella stabilization
- All redislocators had high grade trochlear dysplasia
Discussion

• Patient reported outcomes show improvement in all categories, especially in sports & QOL.

• However, the absolute scores are not normal; despite functional gains, this population continues significant dysfunction as measured by KOOS, especially in symptoms and QOL.
Gracias

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