Outcomes of an Anatomic Posterolateral Knee Reconstruction with Autografts

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Introduction

Non-Anatomic PLC Rec

Larson & Fanelli, 2002

Bicos & Arciero, 2006

Anatomic PLC Rec

LaPrade et al., 2004
# Introduction

## Non-Anatomic versus Anatomic PLC Reconstructions

<table>
<thead>
<tr>
<th>No differences</th>
<th>Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Biomechanic:</strong></td>
<td><strong>Biomechanic:</strong></td>
</tr>
<tr>
<td>Nau et al., 2005</td>
<td>Suda et al., 2000</td>
</tr>
<tr>
<td>Markolf et al., 2007</td>
<td>McCarthy et al., 2010</td>
</tr>
<tr>
<td>Apsingi et al., 2009</td>
<td>Miyatake et al., 2011</td>
</tr>
<tr>
<td>Rauh et al., 2010</td>
<td>Kang et al., 2017</td>
</tr>
<tr>
<td>Kim et al., 2010</td>
<td></td>
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<tr>
<td><strong>Clinic:</strong></td>
<td><strong>Clinic:</strong></td>
</tr>
<tr>
<td>Jung et al., 2008</td>
<td>Yoon et al., 2006</td>
</tr>
<tr>
<td>(Grade 2 Lesions)</td>
<td>Kim et al., 2011</td>
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<tr>
<td>Yoon et al., 2011</td>
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</tbody>
</table>

*FAVORS ANATOMIC*
Introduction

Indications for Anatomic Reconstruction:

• Grade 3 PLC lesions
• Important hyperextension
• Important external rotation
• Concomitant PCL lesion
• Proximal tibio-fibular instability

Differences

Biomechanic:
- Suda et al., 2000
- McCarthy et al., 2010
- Miyatake et al., 2011
- Kang et al., 2017

Clinic:
- Yoon et al., 2006
- Kim et al., 2011

FAVORS ANATOMIC

Franciozi et al., 2018
Objective

To report the subjective outcomes and objective stability in a series of chronically grade III posterolateral injured knees treated with an anatomic PLC reconstruction technique using autografts.

The technique relies just on a semitendinosus and a gracilis autografts, augmented by a strip of the biceps, when necessary, avoiding the need of contra-lateral side knee autografts or allografts.
Methods

• Therapeutic case series (Level IV)
• 33 patients with chronic (> 4 weeks) complete tear of all ligamentous structures of the PLC:
  ➢ >5mm of varus gapping at 30°
  ➢ ≥10° of external tibial rotation during the dial test
  ➢ ≥4mm of increased lateral compartment opening during varus stress radiographs
• Subjective evaluation: Lysholm, IKDC, Tegner
• Objective evaluation:
  ➢ Varus stress radiographs at 20° of knee flexion (in comparison to the uninjured knee)
  ➢ IKDC objective scores (A for normal, B for nearly normal, C for abnormal, and D for severely abnormal)
  ➢ Recurvatum evaluation (A: <3°; B: 3°-5°; C: 6°-10°; D: >10°)
Methods

Anatomic posterolateral corner reconstruction with autologous hamstring and biceps augmentation.
## Results

<table>
<thead>
<tr>
<th></th>
<th>PREOP</th>
<th>POSTOP</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patients</strong></td>
<td>33</td>
<td>29 (23 M / 6 F)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• PLC+PCL: 12</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• PLC+ACL: 11</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• PLC+PCL+ACL+MCL: 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age (years)</strong></td>
<td>27.6 (20-41)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Follow-up (months)</strong></td>
<td>31.9 (24-59)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Time interval between injury and surgery (months)</strong></td>
<td>8.8 (1.5-60)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lysholm</strong></td>
<td>49.7 (25-73)</td>
<td>81.2 (48-100)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td><strong>IKDC</strong></td>
<td>36.7 (22-63)</td>
<td>70.4 (35-100)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td><strong>Tegner</strong></td>
<td>6.6 (5-10)</td>
<td>5.5 (2-10)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td><strong>Varus stress X-Ray (mm)</strong></td>
<td>7.1 (3-13)</td>
<td>1.8 (-2-6)</td>
<td>*1 failure</td>
</tr>
</tbody>
</table>
Results

IKDC objective scores, knee motion and recurvatum.
*Pre= preoperative, Post= postoperative
## Results

Recurvatum according to ligament injury combination

<table>
<thead>
<tr>
<th>Variable</th>
<th>Categories</th>
<th>PCL + PCL Injury (N = 12)</th>
<th>PLC + PCL + ACL (with or without MCL) Injury (N = 6)</th>
<th>PLC + ACL Injury (N = 11)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recurvatum</td>
<td>Low grade</td>
<td>100</td>
<td>33.3</td>
<td>9.1</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td></td>
<td>High Grade</td>
<td>0</td>
<td>66.7</td>
<td>90.9</td>
<td></td>
</tr>
<tr>
<td>Preoperative</td>
<td></td>
<td>Total</td>
<td>100</td>
<td>100</td>
<td></td>
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</table>

**Recurvatum Postoperative: 100% low grade, p<0.001**
Conclusion

The presented anatomic PLC reconstruction, concomitant to other surgical procedures and ligament reconstructions, is a valid technique in a multi-ligamentous knee injury involving the PLC, improving subjective outcomes and objective stability in patients with a chronic PLC knee injury.
References

- Accepted at: *Arthroscopy- Outcomes of an Anatomic Posterolateral Knee Reconstruction with Autografts*. Franciozi et al.