The Clinical Outcomes with Second-Look Evaluation after Arthroscopic Medial Meniscal Repair at the Time of Anatomic Double Bundle ACL Reconstruction

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Disclosure

No Conflicts of Interest

Main Presenter: Riku Hayashi
The incidence of medial meniscal (MM) tears

- Increases in patients with ACL-rupture knees and chronic ACL-deficient knees
  

- Partial menisectomcy for meniscal tears
  - It leads to articular cartilage damage and osteoarthritis
    
    *Melton JT et al. Arthroscopy, 2011*
Our strategy for the treatment of meniscal tears

- Meniscal repair for torn meniscus as possible at the timing of ACL reconstruction (ACLR)
The rate of meniscal repair failures of combined ACLR was reported with the range from 0 to 29% 


It is necessary to investigate the influence of re-rupture of meniscus on clinical outcomes with ACLR.
Purpose

- The aim of this study
  - to evaluate the clinical outcomes with clinical evaluation of MM repair at the time of ACLR with the healing condition by arthroscopic findings
Materials & Methods

- Sixty one patients
  - Mean age: 24 year-old
  - 39 female and 22 male
  - Both of primary anatomic double bundle ACLR and MM repair between February 2013 and December 2016
  - The removal of the double spike plates (DSPs) and screws on the tibia and the second-look arthroscopic examination since more than 1 year after ACLR, from August 2014 to January 2018
Surgical Technique (ACLR)

- Anatomic double bundle ACLR

Wire navigator

guide wire

The aperture of AMB

The aperture of PLB

Bone tunnel formation

Reconstructed ACL
Surgical Technique (Meniscal repair)

- MM repair (61 patients)
  - Using FASTFIX360® (FF) reverse curved needles: 55 patients
  - All-inside technique with suture-hook (SH) through posteromedial portal as working portal: 4/61 patients
  - Combined these techniques: 2/61 patients

MM tear ➔ Sutured with FF ➔ Ramp lesion (+) ➔ Sutured with SH

FASTFIX360®  
Suture hook
Materials & Methods

<table>
<thead>
<tr>
<th>Group</th>
<th>MM condition at the metal removal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>Complete healing</td>
</tr>
<tr>
<td>Group B</td>
<td>Incomplete healing</td>
</tr>
<tr>
<td>Group C</td>
<td>Re-rupture (Failed)</td>
</tr>
</tbody>
</table>

- Clinical evaluation
  - The second-look arthroscopic examination
  - The side-to-side anterior laxity
  - The Lysholm knee scoring scale
  - The IKDC evaluation
Results (Arthroscopic findings)

Arthroscopic evaluation at second-look

<table>
<thead>
<tr>
<th>Group</th>
<th>n (%)</th>
<th>ICRS classification ≥ Grade 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>39 (63.9)</td>
<td>2 (Grade 2, each knee)</td>
</tr>
<tr>
<td>B</td>
<td>13 (21.3)</td>
<td>0</td>
</tr>
<tr>
<td>C</td>
<td>9 (14.8)</td>
<td>1 (Grade 3)</td>
</tr>
</tbody>
</table>

A: Complete healing  B: Incomplete healing  C: Re-rupture (Failed)
The side-to-side anterior translation of the knee @ 30° (KNEELAX3@)

P > 0.05 (No significant difference)

Group A: 0.3 ± 1.5
Group B: 1.1 ± 1.9
Group C: 0.9 ± 2.0
The Lysholm knee scoring scale

Group A: 98.8 ± 2.4
Group B: 96.6 ± 4.5
Group C: 94.8 ± 5.0

P < 0.05*
# The IKDC evaluation

<table>
<thead>
<tr>
<th>IKDC</th>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>34</td>
<td>7</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>4</td>
<td>6</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>(Patients)</td>
<td></td>
</tr>
<tr>
<td>A+B</td>
<td>97.4%</td>
<td>100%</td>
<td>100%</td>
<td>N. S.</td>
<td></td>
</tr>
<tr>
<td>Pivot shift (+)</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>(Patients)</td>
<td></td>
</tr>
</tbody>
</table>
Our study

- evaluated the relevance between MM repair failure and postoperative clinical outcomes
- No significant differences between each group in anterior laxity and the IKDC evaluation except for Lysholm knee scoring scale
Discussion (2) However…

- Seon JK et al. demonstrated that ACLR with subtotal medial meniscectomy could not restore anterior translation and lateral tibial translation to the intact knee level in cadaveric study
  
  *Seon JK et al. Arthroscopy, 2009*

- Arno S et al. revealed partial medial meniscectomy of the posterior horn significantly altered the Anterior-posterior position of the medial femoral condyle and also increased laxity in cadaveric study
  
  *Arno S et al. AJSM, 2012*

- These studies demonstrated that it would be necessary to preserve medial meniscus for saving knee kinematics
Recent studies of long-term failure of combined ACLR and meniscal repair range from 0 to 29%


Westermann RW et al. reported that medial meniscal repair failure rate was 13.6% at 6 years follow-up

Westermann RW et al. AJSM, 2014
Our study

- demonstrated that the failure rate 14.8% of MM repair combined with ACLR at second-look arthroscopic examination
  - Not worse although the follow-up was not longer

- However
  - Lysholm knee scoring scale in the MM repair failure group was less than the complete healing group
  - Occasionally, reoperation would be necessary for these patients in failure group

- Therefore, we expect that further technique will be discovered to raise the successful rate of meniscal repair
Conclusions

1. Our study reported the clinical outcomes with clinical evaluation of medial meniscal repair at the time of ACLR with the healing condition by arthroscopic findings.
2. Our study demonstrated the failure rate 14.8% of MM repair combined with ACLR at second-look arthroscopy.
3. There were not significant differences between the complete healing group and re-rupture group in clinical evaluations except for Lysholm knee scoring scale.