Clinical Outcomes After Revision Anterior Cruciate Ligament Reconstruction

Daisuke Araki, Takehiko Matsushita, Yuichi Hoshino, Noriyuki Kanzaki, Ryosuke Kuroda.

Department of Orthopaedic Surgery
Kobe University Graduate School of Medicine, Kobe, Japan
I have nothing to disclose in relation to this presentation.
ACL reconstruction

- Successful long-term results are achieved in 75% to 95%.


Re-injury after ACL reconstruction

- 2%-10% have unsatisfactory results due to recurrent instability or graft failure.

Purpose

To investigate the clinical outcomes after revision ACL reconstruction based on the cause of failure.
Patient profile

Revision ACL reconstruction: 80 cases (2002-16)

- Minimum follow-up period: 2 years

<table>
<thead>
<tr>
<th>Patient profile</th>
<th>Revision ACL reconstruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case</td>
<td>80</td>
</tr>
<tr>
<td>Sex (Female / Male)</td>
<td>31 / 49</td>
</tr>
<tr>
<td>Ave. age at revision ACL surgery (y. o.)</td>
<td>24.3 (14-45)</td>
</tr>
<tr>
<td>Primary surgery (other / our hosp.)</td>
<td>16 / 9</td>
</tr>
</tbody>
</table>
Evaluation

- Period from primary ACL reconstruction to re-injury
- Mechanism of re-injury
- Graft type in the primary and revision ACL reconstruction
- Clinical outcomes before and after revision ACL reconstruction

① Side-to-side difference of KT-1000 measurements
② Lysholm score
③ Tegner activity level

Cause of failure

Trauma (+) vs Trauma (-)

① Side-to-side dif. of KT-1000 measurements
② Lysholm score
③ Tegner activity level
Revision ACL surgery

- Average period from primary ACL reconstruction to re-injury:
  - 41.5 months (4-150 months)

- Graft type at primary ACL reconstruction:
  - Hamstrings tendon: 85% (68/80)
  - BTB: 14% (11/80)
  - Artificial Ligament: 1% (1/80)

- Graft types at revision ACL reconstruction:
  - BTB: 46% (37/80)
  - Hamstrings tendon: 54% (43/80)
Clinical outcomes after revision ACL reconstruction

At the 2-year follow up after revision ACL reconstruction,

- The average KT-1000 measurements were recovered from 6.5 mm to 1.9 mm.
- The mean Lysholm score was 85.7.
- Tegner activity level was significantly lower than before the re-injury from 7.0 to 5.5.
Based on the cause of failure, the patients were divided into 2 groups, Group T and Group N.

- The KT-1000 measurement of Group N was significantly larger than that of Group T.
- The Lysholm score of Group N was significantly lower than that of Group T.
- The Tegner activity level of Group N was also significantly lower than that of Group T.

* $p < 0.05$
Factors of failure in ACL reconstruction

The cause of failure in ACL reconstruction is multifactorial.

Appropriate revision ACL reconstruction techniques are important such as anatomical bone tunnel position, graft selection, postoperative rehabilitation protocol, staged surgery, or concomitant ligament reconstruction.

The good clinical outcomes after revision ACL reconstruction have been reported, less clinical results are also considered than the primary ACL reconstruction.
From the results of this study

- 71 cases (80%) Trauma (+)
- 9 cases (11%) Trauma (-)

No obvious re-injury history was observed in 9 cases, whereas 71 cases did.

Large side-to-side difference in KT-1000 measurements, low Lysholm score, and low Tegner activity level were observed in non-trauma group.

The cases, which had no obvious re-injuries, had lower clinical outcomes.
Summary

- Revision ACL surgery could restore knee instability with fairly good clinical results.
- The activity level tended to decrease before re-injury.
- In particular, the cases, which had no clear re-injuries, had lower clinical outcomes.
References