Clinical Evaluation of Anatomical Double-Bundle ACL Reconstruction Using Hamstring Tendon in Comparison With One-Bundle Reconstruction

- 2 bundle v.s 1bundle -

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Purpose

- Anatomical double bundle v.s Single bundle -

• The aim of this study is to clinically assess the outcomes of our anatomical double-bundle ACL reconstruction, to compare these outcomes with our single-bundle ACL reconstruction performed during the same period in the hands of the same surgeons.
Femoral tunnel placement was follow the procedure of Yasuda et al (2003). For graft fixation, a spring tensiometer was attached at the double spike plate and simultaneously applied a tension of 30N and secured onto the anteromedial aspect of the tibia.
### Methods

This is a prospective clinical study from 2003 to 2006.

- Anatomical double-bundle ACL reconstruction (A group)
- Single-bundle ACL reconstruction (S group)

#### Patient Profiles

<table>
<thead>
<tr>
<th>A group (n=24)</th>
<th>V.S</th>
<th>S group (n=25)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(males 15 : 10)</td>
<td></td>
<td>(females 9 : 15)</td>
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<tr>
<td>average age 26.3 y.o : 30.6 y.o</td>
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<td>average f/u period 30.7 m.s : 30.1 m.s</td>
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#### Evaluation Methods

- Manual knee laxity test (Lachman test, ADT, Pivot shift)
- KT-2000 (manual maximum)
- Lysholm score
The results of the Lachman test, A group was significantly superior to S group. In the Anterior Drawer test, A group tended to be superior to the S group, although no statistical significance could be calculated.
The results of the pivot-shift test, A group was significantly superior to S group. And this study also showed that A group was superior to S group, concerning restoration of the anterior knee instability measured with the KT-2000.
In the Lysholm score, A group tended to be superior to the S group, although no statistical significance could be calculated.
Basic research reported that anatomic double-bundle reconstruction restores knee kinematics, stability and the internal rotation of the tibia closer to normal than single-bundle reconstruction.”


There were little reports that comparing the clinical outcome between the anatomic double-bundle procedure and single-bundle procedure.


To establish the clinical utility of the anatomic double bundle ACL reconstion for the ACL-deficient knee, further clinical studies are needed to examine the effects on rotatory stability, long-term survival of the graft functions, and comparisons with other procedures involving the reconstruction with the bone-patella tendon-bone graft.
Conclusion

1. This prospective comparative cohort study compared the approximately 30-months clinical results after ACL reconstruction between the anatomic double-bundle procedure and the single-bundle procedure.

2. This study showed that the postoperative anterior laxity was significantly less after the anatomic double-bundle reconstruction than after the single-bundle reconstruction.
REFERENCES


