

Effect of Graft Size on the Clinical Outcome of the Anatomic Double-Bundle Anterior Cruciate Ligament Reconstruction

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Summary:

The objective of this study was to determine the effect of graft size on clinical outcome of the anatomic double-bundle ACL reconstruction. This study showed that small graft size did not affect the clinical result or the postoperative side-to-side anterior laxity in double-bundle ACL reconstruction.

Abstract:

OBJECTIVE

The objective of this study was to determine the effect of graft size on clinical outcome of the anatomic double-bundle anterior cruciate ligament (ACL) reconstruction.

MATERIALS & METHODS

Between 2009 and 2010, 468 patients underwent primary double-bundle ACL reconstruction and were retrospectively reviewed. Follow-up was limited to a minimum of 12 month. Two hundred thirty-four patients (116 male, 118 female) satisfied the inclusion criteria and were available for follow-up. Anatomic double-bundle ACL reconstruction was performed using hamstring tendon autografts with transtibial technique. The harvested semitendinosus (or semitendinosus and gracilis) was cut in half. The bigger half of the graft was used for the antero-medial (AM) bundle, and another half was used for postero-lateral (PL) bundle. Diameter of each graft measured using a graft size tube when the surgery was performed, and the total graft area was calculated using the following formula: Total graft area (mm²) = (AM diameter/2)² × 3.14 + (PL diameter/2)² × 3.14. The patients were divided into 2 groups based on gender, furthermore, these groups were divided into 3 groups based on measurement of the total graft area, respectively: small size group or middle size group or large size group. Clinical result was evaluated by use of Lysholm score, and anterior tibial translation was measured with KT-2000 arthrometer.

RESULTS

There were 39, 38 and 39 patients in small, middle and large size group of male, respectively. There were 43, 37 and 38 patients in small, middle and large size group of female, respectively.

The diameter of AM and PL graft were 6.2 mm and 5.7 mm in small size group of male, 6.5 mm and 5.9 mm in middle size group of male, 6.8 mm and 6.3 mm in large size group of male, respectively. The diameter of AM and PL graft were 6.0 mm and 5.5 mm in small size group of female, 6.3 mm and 5.7 mm in middle size group of female, 6.6 mm and 6.0 mm in large size group of female, respectively.

The postoperative side-to-side anterior laxity measured with the KT-2000 arthrometer averaged 1.6 mm, 2.2 mm and 1.7 mm in small, middle and large size group of male, respectively. There was no significant difference between these

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groups. The postoperative side-to-side anterior laxity measured with the KT-2000 arthrometer averaged 2.1 mm, 2.2 mm and 2.1 mm in small, middle and large size group of female, respectively. There was no significant difference between these groups.

The mean Lysholm scores were 98.1, 95.4 and 95.1 points in small, middle and large size group of male, respectively. There was no significant difference between these groups. The mean Lysholm scores were 96.6, 96.7, 95.4 points in small, middle and large size group of female, respectively. There was no significant difference between these groups.

CONCLUSION

This study showed that small graft size did not worsen the clinical result or the postoperative side-to-side anterior laxity in double-bundle ACL reconstruction.