

Anterior Cruciate Ligament Reconstruction using Remnant Preservation and Femoral Tensioning: Clinical and MRI Results

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INTRODUCTION

At the time of anterior cruciate ligament (ACL) reconstruction, preservation and augmentation with the remnant original ACL tissue might be preferable in terms of preservation of mechano-receptors and vascularity. However, there are some concerns of cyclops lesion or incorrect tibial tunnel formation. Furthermore, it is technically demanding procedure to preserve the remnant tissue during ACL reconstruction. The purpose of this study is to report the preliminary clinical results of ACLR using preservation and femoral tensioning of remnant ACL described previously. Furthermore, the continuity of graft and the presence of Cyclops like mass lesion in front of the graft in postoperative MRI were evaluated.

Materials and Methods

From July 2007 to May 2008, fifty-four consecutive ACL reconstructions were performed. After exclusion of no remnant tissue to preserve, revision surgery, severe arthritic change, and concomitant other ligaments surgery, 49 patients were included in this study. Among them 43 patients were followed and evaluated clinically and using MRI with a mean 15.7 ($\pm 12\sim 23$) months of follow-up. Clinically, side-to-side difference in KT-2000 arthrometer, pivot-shift and Lachman test, extension limitation, Lysholm knee scale, Hospital for Special Surgery (HSS) score, and International Knee Documentation Committee (IKDC) subjective and objective knee form was evaluated. Follow-up MRI at 6 months after surgery was obtained in 36 patients for evaluation of graft continuity, the presence of Cyclops like mass lesion in front of ACL graft. Tunnel enlargement at last follow-up visit was measured.

Results

There were 36 men and 7 women with a mean age of 32.2 years (17~54). The

mean time from injury to surgery was 28.2 months (1~156). The mean Lysholm score, HSS score, and IKDC subjective scores were improved from 56.2 (± 18.2), 79.5 (± 12.3), and 59.1 (± 16.9) to 92.8 (± 5.9), 98.8 (± 2.0), and 87.6 (± 10.6), respectively ($p < 0.0001$). Lachman and pivot shift test showed negative results in 40 of 43 patients and the mean side-to-side difference in KT-2000 arthrometer was 1.8 (± 2.1) mm. Among the 36 patients in which postoperative MRI was available, one complete graft failure and one partial tear was observed. Total of 9 cyclops like mass lesion was observed in MRI but none of them showed extension limitation or pain at extension. Tibial bone tunnel at last clinical visit was enlarged by 2.2 (± 1.5) mm compared to original tunnel diameter.

Conclusion

Arthroscopic ACL reconstruction with the preservation and femoral tensioning of remnant tissue results in good clinical results without the concerns of extension limitation at minimum 12 months after surgery.