

# One-Stage Anatomical Revision Anterior Cruciate Ligament Reconstruction: Results According to Tunnel Overlaps

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**INTRODUCTION:** To present clinical results according to tunnel overlap in 1-stage anatomical revision anterior cruciate ligament reconstruction (ACLR).

**METHODS:** Methods: All patients who underwent revision ACLR performed by a single surgeon (J.H.A.) from 2012 to 2017 and were followed up for >24 months were retrospectively evaluated. The exclusion criteria were concomitant ligament injury, including medial collateral ligament injury, modified Outerbridge grade  $\geq 3$  cartilage lesion, and severe meniscus defects. Tunnel overlap was measured on 3-dimensionally reconstructed computed tomography images. Patients in the nonoverlapped femoral tunnel group (group NO, n = 52) were treated with new tunnel drilling that completely avoided previous tunnels, and those in the overlapped femoral tunnel group (group O, n = 41) were treated with a new tunnel that overlapped with previous tunnels. Clinical outcomes were evaluated using the subjective International Knee Documentation Committee (IKDC) and Lysholm scores. Knee joint stability was measured using the Lachman and pivot shift tests. Patients with femoral tunnel widening of  $\geq 14$  mm underwent 2-stage ACLR.

**RESULTS:** The mean follow-up duration of 93 patients was 46.9 months (range, 24-97 months). All preoperative subjective and objective IKDC ( $P < 0.001$ ) and Telos stress test scores ( $P = .016$ ) were significantly improved at the last follow-up. Forty-one patients had overlapping femoral tunnels, whereas 87 had overlapping tibial tunnels. At the last follow-up, subjective IKDC and Lysholm scores ( $73.6 \pm 15.3$  vs  $74.9 \pm 12.1$ ,  $P = .799$  and  $80.0 \pm 19.2$  vs  $81.44 \pm 13.5$ ,  $P = .505$ , respectively) and objective pivot shift (IKDC grade) in the Lachman test ( $P = .183$  and  $P = .450$ , respectively) did not differ significantly between groups NO and O, respectively.

## DISCUSSION AND CONCLUSION:

One-stage anatomical revision ACLR significantly improved the clinical results. Most tibial tunnels (94%) and approximately one-half (44%) of the femoral tunnels overlapped. The overlapped femoral tunnel group did not show inferior outcomes or stability.

