Abstract Title:
A Comparison of Anatomic Double and Single-bundle Techniques for Anterior Cruciate Ligament Reconstruction, A Prospective Randomized Study with a 5-year Follow-up

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Objectives: The purpose of this study was to compare the mid-term outcome after arthroscopic anterior cruciate ligament (ACL) reconstruction with either the anatomic double-bundle (DB) or anatomic single-bundle (SB) technique using hamstring tendon autografts in an unselected group of patients.

Methods: 103 patients (33 women, 70 men; median age, 27 years; range, 18-52 years) were randomized and underwent ACL reconstruction (DB group; n=53 and SB group; n=50). All reconstructions were performed anatomically, identifying the ACL footprints, using the anteromedial portal for the femoral tunnel drilling and utilizing interference screw for tibial and femoral fixation. One blinded observer examined the patients both preoperatively and at follow-up (median, 64 months; range, 55-75 months). Radiographic evaluation of OA was performed using the Ahlbäck, Kellgren-Lawrence and Fairbanks grading systems in the early postoperative period and at follow up.

Results: Preoperatively, no differences were found between the study groups apart from the pre-injury Tegner activity level, which was lower in the DB group (p=0.02). Eighty-seven patients (83%) were available for examination at 5-year follow-up. There were no significant differences between the groups in terms of the pivot-shift test, KT-1000 arthrometer laxity measurements, manual Lachman test, One-leg-hop test, Square-hop test, range of motion, Lysholm knee scoring scale, Tegner activity scale and Knee Injury and Osteoarthritis Outcome Score (KOOS). Correspondingly, no differences were found between the groups regarding the presence of OA at follow-up. Both DB and SB groups improved significantly at follow-up compared with the preoperative assessment.

Conclusion: At mid-term follow-up of an unselected group of patients, anatomic DB reconstruction was not superior to anatomic SB reconstruction in terms of the pivot-shift test or subjective and objective outcome variables, as seen in this prospective randomized study. Furthermore, there was no difference in terms of the presence of OA at follow-up.