

U-Dos Double-Bundle Allograft Anterior Cruciate Ligament Reconstruction: Clinical Outcomes and Rotational Stability

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INTRODUCTION: Anterior cruciate ligament (ACL) injuries are common among athletes and often lead to meniscal and cartilage damage if untreated. While single-bundle (SB) ACL reconstruction is widely used, concerns persist regarding residual rotational instability. The U-Dos double-bundle (DB) technique, utilizing a looped tibialis tendon allograft, aims to restore anatomical and biomechanical stability while reducing costs and complications. This study compares the clinical outcomes, failure rates, and rotational stability of the U-Dos DB technique versus traditional SB reconstruction.

METHODS: A prospective randomized study was conducted with 72 patients (36 DB, 36 SB) diagnosed with acute ACL injuries. All patients underwent arthroscopic reconstruction using anterior tibialis tendon allografts. The DB group received the U-Dos technique, featuring two femoral tunnels and a looped tibial fixation without implants, while the SB group received standard single-tunnel reconstruction. Follow-ups at 2, 4, 6, 12, and 24 months assessed functional outcomes (Tegner-Lysholm, IKDC scales), and anteroposterior (AP) stability (KT-1000 arthrometer). Statistical analysis included t-tests and chi-square tests ($p < 0.05$).

RESULTS:

The DB group demonstrated superior outcomes:

Failure Rates: 0% reinterventions (DB) vs. 11% (SB).

Meniscal Reoperations: 3% (DB) vs. 14% (SB).

Functional Scores: At 24 months, DB patients achieved higher IKDC (94 vs. 80) and Tegner-Lysholm scores (97 vs. 85) ($p < 0.01$).

Stability: DB patients showed better AP stability (KT-1000: 3.0 mm vs. 4.3 mm residual displacement).

DISCUSSION AND CONCLUSION:

The U-Dos DB technique significantly improves rotational stability, reduces reintervention rates, and enhances functional outcomes compared to SB reconstruction. Its cost-effective, allograft-based design avoids donor-site morbidity and simplifies tibial fixation. These results support its adoption as a primary option for ACL reconstruction, particularly for athletes requiring high rotational stability.

This study aligns with AAOS goals by advancing evidence-based surgical techniques, emphasizing anatomical restoration, and improving long-term joint preservation. Future research should explore long-term osteoarthritis prevention and broader athlete populations.