

# Incidence of Graft Tear Based on Meniscal Treatment during Anterior Cruciate Ligament Reconstruction

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## INTRODUCTION:

Despite extensive study into predisposing factors for anterior cruciate ligament (ACL) graft ruptures, the incidence remains relatively high. Concomitant meniscal tears, at the initial ACL tear, have been identified as a potential risk factor for graft rupture, however, determining the impact of meniscus treatment on outcomes is unclear. The purpose of our study was to determine the impact of various meniscus treatment options on stability and retear rates following an ACL reconstruction. We hypothesized that patients with both menisci removed would have a higher mean KT-1000 manual maximum (man max) difference, but there would be no difference in retear rates between groups.

**METHODS:** From 1993-2021, 4,148 patients underwent primary ACL reconstruction with ipsilateral or contralateral bone-patellar tendon-bone graft and were enrolled into a long-term follow-up study. We excluded patients who had other concomitant ligament injuries or underwent knee arthroscopy within 2 years of their primary ACL reconstruction. Patients were divided into 7 groups based on meniscal treatment at the time of surgery: no meniscus tears (control), partial medial meniscectomy (PMM), partial lateral meniscectomy (PLM), partial bilateral meniscectomy (PBM), medial leave/repair (MLR), lateral leave/repair (LLR), and bilateral leave/repair (BLR). Patients in each group followed the same accelerated rehabilitation protocol after surgery, regardless of meniscus treatment. We recorded ACL graft tears within 2 years from surgery as well as KT-1000 man max difference at 2 months postoperative for each group.

## RESULTS:

The overall ACL graft tear rate was 3.2%, with patients  $\leq 18$  years old having the highest graft tear rate at 5.5% and those  $> 25$  years old having the lowest rate at 0.6% ( $p < 0.001$ ). When evaluating graft tear rates between meniscus treatment groups, the LLR group had a retear rate of 4.0% ( $n=668$ ), control group was 3.4% ( $n=1010$ ), MLR was 3.4% ( $n=559$ ), PMM was 3.2% ( $n=758$ ), PLM was 2.6% ( $n=577$ ), BLR was 2.6% ( $n=272$ ), and PBM was 2.3% ( $n=304$ ),  $p=0.745$ . The KT man max difference for the cohort was 1.79mm. When comparing stability across meniscus treatment groups, the groups were statistically significantly different with the PBM group having the largest difference (2.37mm), followed by PMM (2.04mm), BLR (1.86mm), PLM (1.73mm), LLR (1.69mm), MLR (1.61mm), and control group (1.61mm),  $p < 0.001$ . A post hoc analysis showed a statistically significant difference in stability for PBM (mean difference=0.76mm) and PMM (mean difference=0.43mm) when compared to the control group,  $p < 0.001$ .

## DISCUSSION AND CONCLUSION:

Patients that had a PMM, or combined PMM and PLM, during their ACL reconstruction had higher mean KT difference values when compared to patients with normal menisci. However, despite the higher KT values, the retear rate was similar among all groups, with a total incidence rate of 3.2%. Patients should be educated on how their meniscal treatment, at the time of an ACL reconstruction, can affect their ligament laxity, but not affect their incidence of retear within 2 years postoperative.