

Outcomes Following Anterior Cruciate Ligament Repair for Women on Oral Contraceptive Therapy: A Retrospective Database Analysis

Kimberly Larson, Jackson Grant Woodrow, Arjun Vohra, Anup A Shah

INTRODUCTION:

Anterior cruciate ligament (ACL) injuries are more prevalent in active females compared to their male counterparts. Hormonal influences, particularly that of estrogen, are hypothesized to contribute to increased injury risk. Oral contraceptives (OCPs) alter endogenous hormone levels, potentially influencing ligament integrity and healing. While prior research suggests that OCPs may reduce primary ACL tear risk, their effects on post-surgical outcomes remain largely unknown.

METHODS: This retrospective cohort study utilized the PearlDiver claims database to assess the association between OCP use and complications following ACL reconstruction. Females aged 15-40 who underwent primary ACL reconstruction were identified and stratified into matched cohorts of OCP users and non-users. Patient demographics, comorbidities, and postoperative complications were analyzed using multivariate logistic regression and Kaplan-Meier survival curves.

RESULTS: Among 7,511 OCP users and 7,511 matched non-users, there was no significant difference in ACL graft rupture rates (5.83% vs. 6.08%; OR: 0.96, 95% CI: 0.83-1.10). However, postoperative stiffness was more prevalent in the OCP group (6.43% vs. 5.25%, $p < 0.001$). No differences in infection, deep vein thrombosis, or pulmonary embolism rates between groups were observed.

DISCUSSION AND CONCLUSION: Oral contraceptive use did not significantly increase ACL graft rupture risk, suggesting that their impact on graft survival is minimal. However, an increased incidence of postoperative stiffness in OCP users raises questions about hormonal influences on intraarticular healing and fibrosis. Future studies should explore the mechanisms underlying these findings to optimize postoperative rehabilitation strategies for females undergoing ACL reconstruction.