

## **Save the Meniscus! Incidence of Osteoarthritis Diagnosis Greatest following Partial Meniscectomy, Either Isolated or in Combination with Anterior Cruciate Ligament Reconstruction**

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**INTRODUCTION:** The purpose of this study was to compare the incidence of subsequent osteoarthritis (OA) diagnosis between isolated anterior cruciate ligament (ACL) reconstruction, isolated meniscal procedures (meniscus repair (MR) or partial meniscectomy (PM)), and ACL reconstruction with meniscus involvement (ACL+MR or ACL+PM). We hypothesized that meniscus injury in combination with ACL injury would have increased OA prevalence.

**METHODS:** A large insurance database was used in this study which contains insurance claims information on more than 91 million orthopaedic patients. Five cohorts were identified for this study using Current Procedural Terminology (CPT) codes and included those between the ages of 16 and 60 that underwent isolated ACL reconstruction, isolated MR, ACL+MR, isolated APM, or ACL+APM repair. Groups were matched by patient age, sex, and presence of diagnosis codes for obesity and morbid obesity with each group consisting of 10,125 patients (4,685 females and 5,440 males). The incidence of subsequent knee OA diagnosis within five years of the index surgical procedure was recorded. OA prevalence and odds ratio were compared against isolated ACL reconstruction.

**RESULTS:** A significantly greater proportion of APM and ACL+APM patients were diagnosed with knee OA within five years of surgery when compared to isolated ACL patients (APM= 735/10,125 (7.3%) and ACL+APM= 459 (4.5%) vs. ACL= 338 (3.3%),  $p < 0.0001$  for both comparisons). The odds of knee OA were also greater in APM and ACL+APM patients when compared to isolated ACL patients (Odds Ratio: APM= 2.27 and ACL+APM= 1.38). Patients undergoing isolated MR also demonstrated a slight, yet still statistically significant, increase in OA prevalence and odds within five years of surgery (MR= 396 (3.9%), Odds Ratio= 1.18,  $p = 0.03$ ). Patients undergoing ACL+MR showed a decrease in prevalence of OA when compared to isolated ACL reconstruction (ACL+MR= 254 (2.5%), odds ratio= 0.75,  $p = 0.0005$ ).

**DISCUSSION AND CONCLUSION:** Our results support the hypothesis that meniscus injury significantly increases the risk of developing diagnosed OA within five years after arthroscopic treatment. APM, whether isolated or combined with ACL reconstruction, demonstrated the greatest incidence of OA within 5 years when compared to matched groups of patients that underwent ACL reconstruction and/or meniscus repair. These "big data" results confirm previous reports from prospective ACL cohorts, and further support efforts to repair the menisci whenever possible. Interestingly, the lowest incidence of subsequent OA diagnosis was in the group that underwent combined ACL reconstruction and meniscus repair. Future research is needed to better understand the biological and biomechanical mechanisms that contribute to the potentially protective effect of combined ACL reconstruction and meniscus repair.