Introduction

Knee arthrofibrosis is a serious complication following anterior cruciate ligament reconstruction (ACLr), associated with pain, reduced function, early osteoarthritis, and the potential need for revision surgery or arthroplasty. As ACLr procedures increase in frequency across the United States, risk stratification becomes increasingly important. While African American and non-White race have been identified as risk factors for manipulation under anesthesia (MUA) due to arthrofibrosis after total knee arthroplasty (TKA), there is limited evidence examining these disparities following ACL reconstruction.

Methods

A retrospective analysis of a national database (2015–2023) was conducted to compare rates of arthrofibrosis development between Black (N=7,558) and White (N=46,205) patients undergoing ACLr. Propensity score matching was used to control for confounders. Intracohort comparisons of primary and secondary outcomes were performed using hazard ratios (HR) and odds ratios (OR). A p-value of <0.05 was considered statistically significant.

Results

There was no significant difference in systemic comorbidity burden between the White and Black cohorts. White patients demonstrated a significantly lower risk of developing arthrofibrosis (HR = 0.598, 95% CI: 0.521–0.685, $p < 0.05$). Male sex was also associated with a decreased risk (HR = 0.555, 95% CI: 0.501–0.616, $p < 0.05$). No significant differences were observed in age at index surgery or BMI between patients who developed arthrofibrosis and those who did not.

Conclusion

Black and female patients undergoing ACL reconstruction are at increased risk for developing arthrofibrosis. Further investigation is warranted to explore potential contributing factors, including injury mechanisms, socioeconomic status, biomechanical differences, and genetic predispositions to fibrotic response.