Racial Disparity in Rates of Concomitant Meniscus Surgery Associated with Anterior Cruciate Ligament Reconstruction among Black Patients

Ian D. Engler, Audrey Y. Chang, Sahil Dadoo, William T. Li, Robert Tisherman, Volker Musahl

UPMC LIFE CHANGING MEDICINE

Department of Orthopaedic Surgery

University of Pittsburgh

Disclosures

Author	Organization
Volker Musahl	Smith & Nephew Plc - educational grants, consulting fees, speaking fees Arthrex - educational grants DePuy Synthes - educational grants International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine (ISAKOS) - board member Knee Surgery, Sports Traumatology, Arthroscopy (KSSTA) - deputy editor-in-chief

Introduction

- There are few studies investigating the role or race / ethnicity in concomitant procedures and revision rate following ACL reconstruction [1]
    - Some studies have shown race to affect decision of surgical vs non-surgical intervention after anterior cruciate ligament (ACL) injury [2]
    - Lack of literature on race / ethnicity on surgical and post-surgical course

- Especially limited exploration of differential confounding variables (namely socioeconomic status and area deprivation index)
    - Area deprivation index shown to affect surgical outcomes and cost [3]

Purpose

- Purpose:
    - To compare the concomitant procedure and revision surgery rate following ACLR based on race and area deprivation index (ADI)

- Hypothesis:
    - Race will have no association with rate of concomitant meniscus surgery or revision following ACLR

Methods

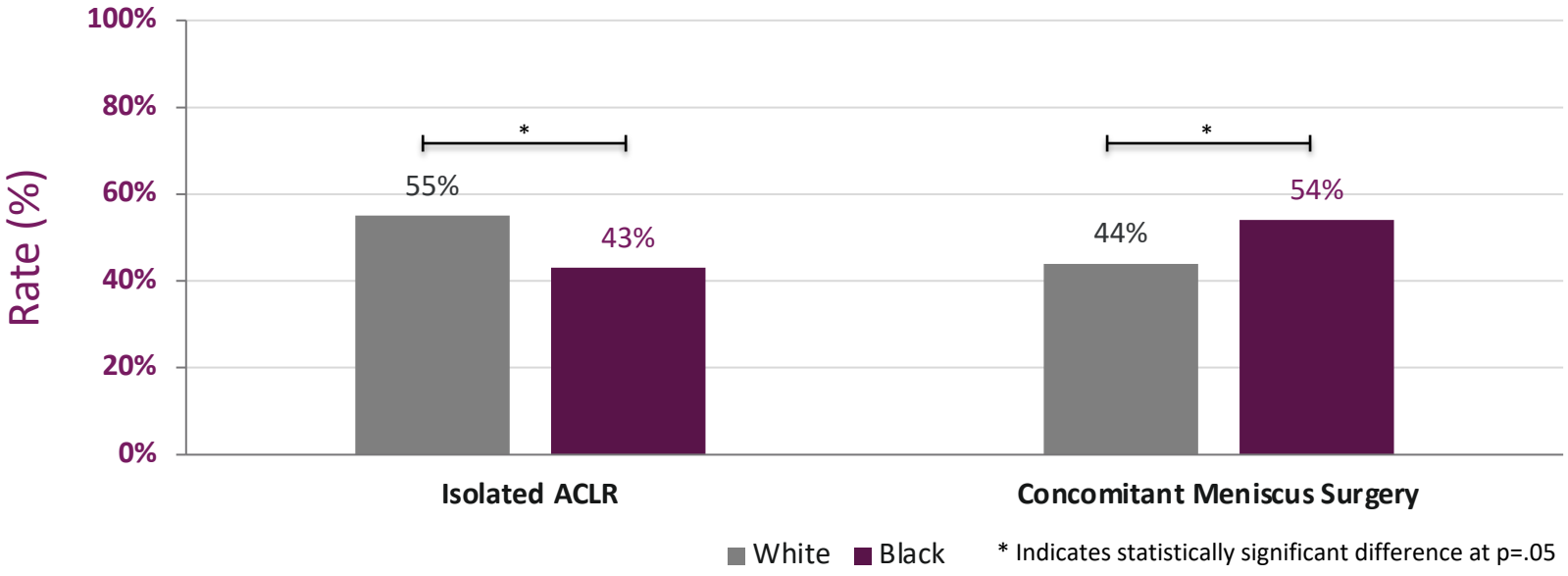
- All primary ACL reconstructions at a single large healthcare network between 2015-2020 with minimum two-year follow-up
    - Patient demographics, surgical details, and return to operating room were retrospectively collected
- Patients stratified by race and ADI
    - ADI is an evaluation of a region's socioeconomic conditions, linked to health outcomes (scored 0-100%, with 100% demarking most disadvantaged) [4]

- Primary outcome: isolated ACLR, concomitant meniscus surgery, ipsilateral revision ACLR
- Secondary outcome: ACL surgery on either knee (ipsilateral or contralateral)

Results

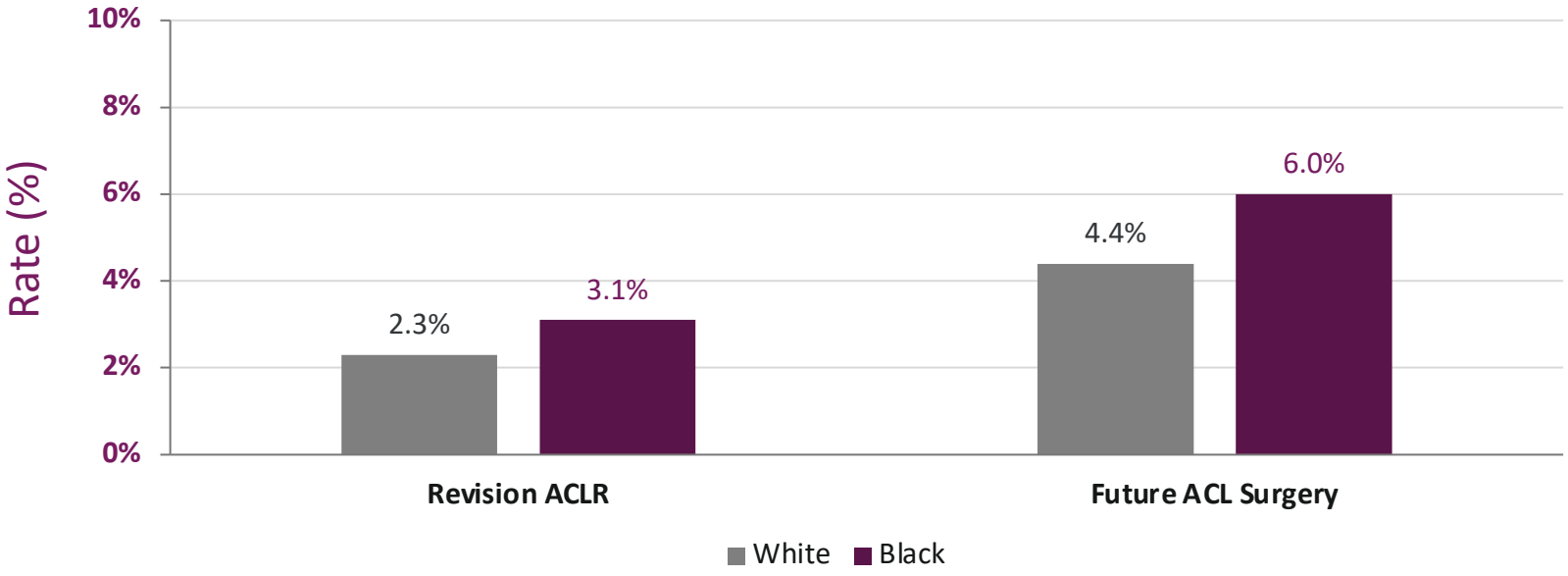
Variable	White (n=2,832)	Black (n=351)	P-value
Age (years)	26.4 ± 12.0	23.1 ± 9.2	<0.001
Average ADI	60	72	<0.001
Isolated ACL reconstruction (%)	55%	43%	<0.001
ACL reconstruction w/ concomitant meniscus surgery (%)	44%	54%	<0.001
Revision ACL reconstruction (%)	2.3%	3.1%	0.355
Future ACL surgery (%)	4.4%	6.0%	0.197

Results *(Cont'd)*



Black patients had a lower rate of isolated ACLR and higher rate of concomitant meniscus surgery compared to White patients ($p<0.001$)

Results *(Cont'd)*



No difference in revision ACL reconstruction (p=0.355) or future ACL surgery (p=0.197).

Conclusion

- Higher rate of concomitant meniscus surgery in Black versus White patients
- Higher ADI in Black patients indicating increased disadvantage
    - May impact access to care causing delays in surgery and thus increased meniscus injury
- There was no detected difference in the rate of revision ACL reconstruction between Black and White patients at two-year follow-up
- The substantial difference in ADI between races highlights the continued need to address social disparities between Black and White patients

References

1. Collins JE, Katz JN, Donnell-Fink LA, Martin SD, Losina E. Cumulative incidence of ACL reconstruction after ACL injury in adults. Am J Sports Med. 2013;41:544–9.

2. Devana SK, Solorzano C, Nwachukwu B. Disparities in ACL Reconstruction: the Influence of Gender and Race on Incidence, Treatment, and Outcomes. Curr Rev Musculoskelet Med. 2022;15:1–9.

3. Michaels AD, Meneveau MO, Hawkins RB, Charles EJ, Mehaffey JH. Socioeconomic risk-adjustment with the Area Deprivation Index predicts surgical morbidity and cost. Surgery. 2021, 170-5:1495-1500.

4. Maroko AR, Doan TM, Arno PS, Hubel M, Yi S, Viola D. Integrating Social Determinants of Health With Treatment and Prevention: A New Tool to Assess Local Area Deprivation. Prev Chronic Dis 2016;13:160221.