

Higher Odds of Meniscectomy versus Meniscus Repair for Isolated Meniscus Tears among Younger Patients with Increased Neighborhood Disadvantage

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INTRODUCTION: Recent literature demonstrates increasing rates of meniscus repair versus meniscectomy for the treatment of isolated meniscus tears in younger patients, yet it remains unknown how patient- and surgeon-related factors impact the management of isolated meniscus tears. The purpose of this study was to determine the impact of patient demographic and socioeconomic factors on rates of meniscectomy versus meniscus repair for isolated meniscus tears in young patients. The secondary purpose was to identify trends in rates of meniscectomy and meniscus repair based on performing surgeon volume.

METHODS:

All patients aged 14-44 years old who underwent surgical management for an isolated meniscus tear from 2016-2022 at a single large healthcare system were analyzed. Patient age, sex, race, insurance status, and area deprivation index (ADI) were recorded for analysis. The ADI is a novel validated metric representing social disadvantage of communities by Census Block Group, and is scored from 0 to 100, with a higher ADI indicating increased neighborhood disadvantage. Surgeon volume was additionally obtained and defined as >35 annual total meniscus procedures and >15 annual meniscus repairs for high-volume surgeons, and failure to meet one or both criteria for low-volume surgeons. Patient demographic and socioeconomic variables were analyzed between low-volume and high-volume surgeon groups, as well as meniscectomy versus meniscus repair groups. Rates of meniscectomy and meniscus repair were then assessed between low-volume and high-volume surgeons for each year of the study period. Univariate analysis was used to determine associations between variables and treatment groups, and binary logistic regression was performed to calculate odds ratios (OR) and 95% confidence intervals (95% CI) for all significant factors.

RESULTS:

A total of 1,552 patients (mean age: 31.2 +/- 9.7 years, 29.6% female) treated by 84 orthopaedic surgeons were included, comprising 1,208 (77.8%) meniscectomies and 344 (22.2%) meniscus repairs. Age ≥30 years (OR: 2.22, 95% CI: 1.78-2.77, p <0.001), non-private insurance (OR: 1.73, 95% CI: 1.32-2.27, p <0.001), and ADI >25th percentile (OR: 2.09, 95% CI: 1.62-2.68, p <0.001) were independently associated with increased odds of undergoing operative treatment by a low-volume surgeon. Age ≥30 years old (OR: 3.81, 95% CI: 2.93-4.94; p <0.001) and ADI >25th percentile (OR: 1.54, 95% CI: 1.16-2.03; p = 0.003) were additionally associated with increased odds of receiving a meniscectomy versus meniscus repair. High-volume surgeons performed significantly higher rates of meniscus repair versus meniscectomy compared to low-volume surgeons, while low-volume surgeons had a 24% increase in rates of meniscus repair from 2016 to 2022. When controlling for surgeon volume in a logistic regression, ADI >25th percentile remained a significant predictor of undergoing meniscectomy versus meniscus repair (OR: 1.34, 95% CI: 1.01-1.77; p = 0.042).

DISCUSSION AND CONCLUSION: Demographic and socioeconomic factors were significantly associated with the surgical management of isolated meniscus tears in younger patients, with older age and increasing neighborhood disadvantage favoring treatment by a low-volume surgeon as well as meniscectomy over repair. While high-volume surgeons are more likely to perform meniscus repair versus meniscectomy for isolated meniscus tears, a trend towards increasing rates of meniscus repair over recent years was observed among low-volume surgeons. With the increasing push towards meniscus preservation for the longevity of the knee joint, the results of this study may benefit patients when choosing the appropriate surgeon, insurance plan, and approach to managing their meniscus tears.