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: Preoperative Patient-centric Predictors of Postoperative Outcomes in Patients Undergoing Arthroscopic Meniscectomy

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Title: Preoperative patient-centric predictors of postoperative outcomes in patients undergoing arthroscopic meniscectomy

Authors: Sreten Franovic, Noah Kuhlmann, Alex Pietroski, Collin Schlosser, Luke Hessburg, Kelechi R. Okoroa, Vasilios Moutzouros, Eric Makhni

Background: The Patient-Reported Outcomes Measurement Information System (PROMIS) is a valid and efficient means of collecting patient outcomes in patients with meniscal tears. The studies purpose was to define the minimally clinical important difference (MCID) for PROMIS domains following meniscectomy procedures. Secondary aims included determining the role of pre-operative PROMIS computer adaptive test (CAT) scores in predicting achievement of MCID following meniscectomy.

Methods: Patients undergoing arthroscopic meniscectomy who completed PROMIS CAT forms for physical function (PROMIS-PF), pain interference (PROMIS-PI), and depression (PROMIS-D), from July 2017 to July 2019, at a single institution were utilized. MCID was calculated according to the distribution methodology, and receiver operating characteristics (ROC) were utilized to determine if pre-operative scores were predictive of post-operative outcomes.

Results: A total of 135 patients met inclusion criteria. Postoperative PROMIS-PF (45.6), PROMIS-PI (54.6), and PROMIS-D (44.1) significantly improved 3 months after surgery ($p < 0.01$). MCID values for PROMIS-PF, PROMIS-PI, and PROMIS-D were 3.5, 3.3, and 4.4, respectively. 62% of the entire cohort met MCID for PROMIS-PF, while 68% met MCID for PROMIS-PI, and 41% met MCID for PROMIS-D. Individuals with PROMIS-PF scores below 34.9 yielded an 82% probability of achieving MCID, while PROMIS-PI scores above 67.5

yielded an 86% probability of achieving MCID and a cutoff of 58.9 for PROMIS-D yielded a 60% probability of achieving MCID, with 90% specificity.

Conclusion: Significant portions of patients undergoing meniscectomy achieve MCID in PROMIS-PF, PROMIS-PI, and PROMIS-D, at the 3-month time point. In particular, patients with PROMIS-PF scores of <34.9 are far more likely to achieve MCID for physical function.

Keywords: PROMIS; physical function; meniscectomy; meniscus; MID; MCID; patient reported.