Surgeon Factors Explain More of the Variation in Recommended Treatment Strategy for Patients with Multiligament Knee Injury than Patient Factors

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Purpose: Multiligament knee injuries are notorious for high complication rates and poor treatment outcomes. There is little consensus on the timing, staging, and treatment modality, and there is a current gap in evidence on how patient and surgeon factors affect each of these variables. We asked: are there any factors associated with surgeon recommendations for (1) timing of treatment, (2) operative treatment, and (3) open versus arthroscopic surgery.

Methods: 85 surgeons reviewed 15 randomized patient scenarios and were asked to recommend operative treatment or nonoperative treatment. For cases that were treated operatively, surgeons were asked for the ideal timing of operative intervention and the modality (arthroscopic vs open and arthroscopic). The following patient variables were randomized: age (35 vs 55 years), time from injury (1 week vs 1 month), preexisting arthritis, insurance type (commercial vs safety net), fracture of contralateral leg, Schenck Classification, and history of knee dislocation. We sought patient and surgeon factors associated with a recommendation for operative treatment and treatment type with (mixed multilevel) logistic regressions and timing of treatment with (mixed multilevel) linear regressions.

Results: Having a contralateral fracture was associated with longer time to operative treatment, while disruption of anterior cruciate ligament (ACL), posterior cruciate ligament (PCL), and medial collateral ligament (MCL) was associated with shorter time. Surgeons who do not supervise trainees and practice outside the United States and Europe recommended shorter time to surgery. Older patients and those with preexisting osteoarthritis had lower odds of receiving operative treatment, while knee dislocation, disruption of ACL, PCL, and posterolateral corner (PLC), and disruption of ACL, PCL, MCL, and PLC were associated with higher odds. Surgeon factors explained 7.6% of the variation in timing to operative treatment, while patient variables explained 1.6% of the variation.

Conclusion: There is substantial provider-level variation in timing to surgery for patients with multiligamentous knee injuries, and surgeon factors were more predictive of time to operative treatment than patient factors. Future studies may identify subgroups of patients who stand to benefit most from ligament reconstruction, and quality improvement efforts may help address surgeon-to-surgeon variation in timing and staging of operative interventions.