

Long-Term Outcomes of Multiligament Knee Injuries

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Purpose: Multiligament knee injuries (MLKIs) can be challenging to treat and may result in lifelong functional impairment. However, there are very little data regarding long-term outcomes of MLKIs. Our hypothesis was that MLKIs would have poor long-term outcomes.

Methods: This was a retrospective clinical follow-up study of a previously published series of 106 MLKIs (102 patients) treated at a single Level I trauma center between March 2000 and December 2008. Six patients had died, 4 had amputations, and 1 had a total knee replacement. Remaining patients were solicited, and 20 knees (18 patients) were evaluated at a mean follow-up of 13.1 years (range, 11-15 years) with patient-reported outcome measures (PROs). The mean age at follow-up was 44 years (range, 29-62) and 14 were male. The primary outcome measure was the Internal Knee Documentation Committee (IKDC) score. 16 knees (14 patients) also had physical examination and bilateral knee radiographs assessed with the Kellgren-Lawrence (KL) arthritis score. Data were analyzed with Wilcoxon signed-rank test using JMP Pro v13.

Results: The mean IKDC score was 56, which was significantly worse than the age-matched normative value of 77 ($P = 0.004$) and exceeds the minimum clinically important difference of 12. Secondary mean PRO scores were significantly worse than normative population values, including Lysholm knee score (61 vs 94, $P < 0.001$), Tegner activity score (3.8 vs 5.7, $P = 0.001$), Marx activity score, (2.6 vs 12.2, $P < 0.001$), PROMIS (Patient-Reported Outcomes Management Information System) Physical Function (48 vs 59.7, $P < 0.001$) and PROMIS Pain Interference (52.7 vs 43.6, $P = 0.002$). Mean knee extension was 1.7° of flexion and mean flexion was 106° . Arthritis was present in all MLKIs that had radiographs (six KL2, seven KL3, and three KL4 knees). Comparing the MLKI to noninvolved knee in the 12 patients with unilateral injury, KL scores were significantly worse in the MLKI (1.6 vs 2.9, $P = 0.04$). Comparing those MLKIs that underwent ligament repair/reconstruction ($n = 11$) to those that did not ($n = 9$), there was no statistically significant differences in physical examination, imaging, or PROs except for better Short Form-36 Social Functioning (89 vs 63, $P = 0.02$) and Tegner activity score (4.5 vs 2.9, $P = 0.05$) in the surgical group.

Conclusion: This study is the first to report the average long-term outcomes of MLKIs and demonstrates that outcomes are generally poor even with modern treatment techniques. Posttraumatic arthritis appears to be universal. Clinicians should be aware of these results when counseling patients.