ACLR with Multiligament Involvement Can Yield Similar Outcomes to Those with Isolated ACL Tears

Scot Bauman¹, K Donald Shelbourne¹, Rodney W Benner, William Claussen, Adam Norris², Deepak V Patel ¹Shelbourne Knee Center, ²Community East Hospital/Shelbourne Knee Center

INTRODUCTION:

Acute single-stage surgery for multiligament knee injuries (MLKI) can restore stability but can also result in high rates of complications including arthrofibrosis. Medial collateral ligament (MCL), posterior cruciate ligament (PCL) and lateral side repair/reconstructions in combination with anterior cruciate ligament reconstruction (ACLR) may be better addressed as a staged procedure or simply treated nonoperatively. The purpose of this study was to compare the outcomes following ACLR for MLKIs to isolated ACLRs. Our hypothesis was that, with the proposed treatment, all MLKI would have similar outcomes to isolated ACLRs.

METHODS:

Between 1982 and 2021, 5419 patients having an ACLR using a patellar tendon graft and minimum two year follow up were retrospectively reviewed. Patients were excluded with revision surgery, osteoarthritis at the time of surgery, and bilateral procedures. Patients were divided into three groups based on the structures involved: isolated ACL, ACL/medial side, and ACL/lateral side. All MCL injuries were treated nonoperatively and, when necessary, casted in 20° of flexion for 1-2 weeks to allow the MCL to heal prior to the ACLR. Lateral side injuries were treated with acute en masse repair of the torn lateral capsule prior to the ACLR. All PCL tears were treated nonoperatively. Regardless of the concomitant injuries and treatment before the ACLR, each patient went through a similar postoperative rehabilitation program focused on immediate weight bearing and the immediate restoration of preoperative normal range of motion (ROM). Outcomes compared between groups included postoperative stability measured as the KT-1000 manual maximum difference side to side at three months, knee extension and flexion ROM difference side to side at one year, International Knee Documentation Committee (IKDC) score at a minimum two years, rate of return to preinjury level at one year, scar resection rates, and graft tear rates.

RESULTS:

For the 5419 patients meeting criteria (isolated ACL=5001, ACL/medial side=387, ACL/lateral side=31), mean age was 23.4 years and 61.3% were male. Postoperative stability failed to show a difference among the groups, with a cohort mean difference of 1.9 mm side to side, p=0.123. Extension and flexion ROM failed to show a difference between groups with a cohort mean difference for extension at 0° and 2° for flexion, p=0.205 and p=0.690, respectively. Minimum two year IKDC scores between groups were significantly different with the isolated ACL group at 86, ACL/medial side 84, and ACL/lateral side 87, p=0.041. Post hoc analysis revealed a difference between the isolated ACL group and the ACL/medial side group with a mean difference of 2.4 points, p=0.030. Overall, the rate of return to preinjury level was 80% and this was not different among the groups, p=0.108. Scar resection and graft tear rates were not different between groups with an overall cohort rate of 2.3% for scar resections and 6.1% for graft tears, p=0.652 and p=0.274, respectively. DISCUSSION AND CONCLUSION:

For MLKIs, when the MCL is treated nonoperatively and the lateral side is acutely repaired prior to the ACLR, the results following the subsequent ACLR are similar to isolated ACLRs in terms of stability, ROM, subjective scores, return to sport, scar resections, and graft tear rate. The results indicate that acute surgery for MCL/PCL tears and single stage ACLR with lateral side repair may not be necessary. Following this treatment philosophy would allow the collaterals to adequately heal before the ACLR and reduce complications that accompany acute surgery with MLKIs.