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Early versus Delayed Surgery Results in Similar Outcomes following Multiligament Knee Injury: A Prospective Cohort

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Summary:
Early versus delayed surgery results in similar outcomes following multiligament knee injury; a prospective cohort

Abstract:

Introduction

Multiligament knee injuries (MLKI's) are rare, but life-altering injuries that have significant implications on patients' functional status, quality of life and return to work and sport. While the treatment of these injuries is far from standardized, there exists good evidence to support operative intervention. Unfortunately there are no guidelines to indicate the ideal timing of surgery after injury to optimize clinical outcomes and patient satisfaction. With that in mind, the aim of this study was to assess injury specific functional outcomes following surgery for MKLIs and identify advantages to early versus delayed surgery.

Methods

Between 2006-2017, adults with MLKIs were identified. Patients were enrolled in prospective data collection and followed routinely after surgery. Study participants were stratified into early (<45 days from injury) and delayed surgical intervention (>45 days from injury). The primary analysis was patient reported outcomes in the form of a specific and validated score (MLQOL) to compare early vs delayed surgical intervention. We secondarily analyzed associations between age, gender, BMI, injury severity (Schenck classification), associated nerve injuries, and reoperation rates to our primary outcome measure.

Results

A total of 152 patients were identified, with 85 patients in the early group and 67 in the delayed. The mean time to surgery was 16.7 ± 7.9 days in the early group versus 253 ± 132.6 days in the delayed. Average follow-up was 46.7 months. There was no significant difference between groups with respect to age, gender distribution, BMI, injury mechanism, nor severity. The early surgery group was found to include more patients with lateral sided injuries (p=0.010) as well as nerve injuries at initial presentation (p=0.002). The delayed group was found to have more patients with PCL involvement compared to early surgery (P=0.003). We did not identify a significant difference in pain, stiffness, or instability patient reported outcome scores between the early and delayed surgical groups. 49 of the 152 patients underwent a repeat operation (32%) including manipulation under anesthesia, arthroscopic debridement, removal of hardware, revision and/or conversion to total knee arthroplasty. No significant difference was found in reoperation rates between the two groups. In our primary outcome, we did not identify any relationship between early or late surgery and MLQOL scores. In our secondary analysis, using a linear regression model, we determined older age to be independently predictive of poor outcomes with respect to pain (p=0.018),

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stiffness (p=0.048) and instability (p=0.004) as assessed through MLQOL questionnaire.

Conclusion

In our analysis, stratifying patients to early vs delayed surgery had no effect patient reported outcomes following MLKI reconstruction. In the secondary outcome measures, we identified that regardless of time from injury to surgical intervention, older age was independently predictive of poor pain, stiffness, and instability scores in the MLQOL questionnaire. To our knowledge this is the largest prospectively collected dataset of injury specific outcomes in MLKIs. This analysis will allow for an evidence based approach to guide discussion, manage expectations, and predict outcomes of MLKI patients as well as provide the framework for how surgeons manage these significant injuries.