

Editorial Commentary: Is Medial-Side Repair Indicated in the Treatment of Multiligament Knee Injuries?



Abstract: Multiligament knee injuries are heterogenous and demand individualized treatment. In addition to the complexity of the injury, factors such as the timing and type of surgery are also crucial to patient outcomes. In a case series, patients who underwent medial-side repair had inferior patient-reported outcomes compared with those who had medial reconstruction or lateral surgery. Interestingly, patients with common peroneal nerve injury did not have inferior outcomes, probably because of the lack of sensitivity of rating scales to measure nerve-related disability. In view of the complexity and heterogeneity of these injuries, the above-mentioned findings may not be generalizable to all patients.

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Multiligament knee injuries are complex and can lead to severe disability and even loss of limb.¹ The pathoanatomy, mechanism of injury, and patient-related factors vary widely among individuals. In view of these issues, individualized treatment for each patient is indicated to maximize functional outcome while minimizing the risk of treatment-related complications. King et al.² reviewed their extensive experience with these injuries to determine factors associated with inferior patient-reported outcomes.

Multiligament knee injuries involving the lateral side were found to have higher rates of revision surgery in series reported by both Stannard et al.³ and Levy et al.⁴ when lateral repair was performed as opposed to reconstruction. This is likely due to the fact that the tissue is not sufficiently robust to provide stability following these injuries, and augmentation with a tendon graft is indicated. Interestingly, on the medial side, the evidence to date for repair versus reconstruction in the setting of a multiligament knee injury has been more controversial. A systematic review of Level IV studies showed that results were comparable with repair and with reconstruction.⁵ However, a comparative series reported by Stannard et al.⁶ demonstrated a much lower rate of revision after reconstruction of the medial side than isolated repair. These conflicting data are likely a reflection of the heterogeneity of the injuries and patients. Timing of surgery is also an important and controversial issue, because early

surgery allows for better identification of the anatomic structures, which facilitates repair in a manner that is not possible in the chronic setting. Nevertheless, early surgery has a higher risk of arthrofibrosis.⁷

King et al.² found inferior patient-reported outcomes in patients who had medial repair without reconstruction. Along with Stannard et al.'s data,^{4,6} this may suggest that isolated medial repair is not indicated in the setting of a bicruciate/medial-side injury. Furthermore, acute surgical treatment of medial-side injuries is potentially complicated by heterotopic ossification, which can be very severe.

Although, in my opinion, the most clinically important finding of the study is that medial-sided reconstruction is generally superior to repair, another interesting finding is that in patients with lateral-sided injury associated with peroneal nerve palsy, patient-reported outcome was not affected. The latter finding is likely due to the lack of sensitivity of the rating scales used in this study, the Lysholm and International Knee Documentation Committee scores, because peroneal nerve palsy is generally very disabling. The Multiligament Quality of Life questionnaire⁸ may be more sensitive to associated common peroneal nerve injury in knee dislocation patients, and the results of this study with a more specific instrument may have led to different conclusions. In my experience, peroneal nerve injury results in significant patient-reported disability.

In summary, multiligament knee injuries are very heterogeneous in that they can occur in patients of varying ages, they can be the result of high- or low-velocity trauma and involve widely varying pathoanatomy on either, or both of the medial and lateral sides, with or without neurovascular injury.⁹ Isolated

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repair for acute medial-side ligament injuries in multiligament-injured knees is probably not appropriate for most cases. Nevertheless, there are situations where an excellent outcome can be obtained for the patient with medial repair, such as in cases where tissue quality is excellent, which can occur in proximal or distal avulsions. Lastly, decision making must be individualized for each patient, taking all factors into account. Definitive rules regarding management of these complex ligament injuries should not be applied to all.

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References

1. Levy BA, Marx RG. Outcome after knee dislocation. *Knee Surg Sports Traumatol Arthrosc* 2009;17:1011-1012.
2. King AH, Krych AJ, Prince MR, Pareek A, Stuart MJ, Levy BA. Surgical outcomes of medial versus lateral multiligament-injured, dislocated knees. *Arthroscopy* 2016;32:1814-1819.
3. Levy BA, Dajani KA, Morgan JA, Shah JP, Dahm DL, Stuart MJ. Repair versus reconstruction of the fibular collateral ligament and posterolateral corner in the multiligament-injured knee. *Am J Sports Med* 2010;38:804-809.
4. Stannard JP, Brown SL, Farris RC, McGwin G, Volgas DA. The posterolateral corner of the knee: Repair versus reconstruction. *Am J Sports Med* 2005;33:881-888.
5. Kovachevich R, Shah JP, Arens AM, Stuart MJ, Dahm DL, Levy BA. Operative management of the medial collateral ligament in the multi-ligament injured knee: An evidence-based systematic review. *Knee Surg Sports Traumatol Arthrosc* 2009;17:823-829.
6. Stannard JP, Black BS, Azbell C, Volgas DA. Posteromedial corner injury in knee dislocations. *J Knee Surg* 2012;25:429-434.
7. Mook WR, Miller MD, Diduch DR, Hertel J, Boachie-Adjei Y, Hart JM. Multiple-ligament knee injuries: A systematic review of the timing of operative intervention and postoperative rehabilitation. *J Bone Joint Surg Am* 2009;91:2946-2957.
8. Chahal J, Whelan DB, Jaglal SB, et al. The Multiligament Quality of Life Questionnaire: Development and evaluation of test-retest reliability and validity in patients with multiligament knee injuries. *Am J Sports Med* 2014;42:2906-2916.
9. Levy BA, Dajani KA, Whelan DB, et al. Decision making in the multiligament-injured knee: An evidence-based systematic review. *Arthroscopy* 2009;25:430-438.