

Editorial Commentary: Repair or Reconstruct? Addressing Medial Patellofemoral Ligament Insufficiency in the Absence of Morphologic Abnormalities



Miho J. Tanaka, M.D., Editorial Board

Abstract: The role of medial patellofemoral ligament (MPFL) repair versus reconstruction in the treatment of patellar instability continues to undergo debate. Repair of the ligament can be technically less demanding with fewer risks of morbidity, whereas reconstruction carries concerns of graft malpositioning or over-tensioning as well as the risk of patellar fracture. Studies directly comparing the 2 procedures in the setting of recurrent patellar instability have consisted of small series or low levels of evidence that inevitably include patients with concurrent morphologic risk factors such as tuberosity malalignment or patella alta, which are known factors that can influence the biomechanical behavior of the MPFL. Heterogeneity in patient-related risk factors and surgical techniques continues to pose limitations in allowing for direct comparisons between procedures. For the treatment of recurrent patellar instability in the setting of no (or concurrently addressed) morphologic abnormalities, MPFL reconstruction has become a common procedure and generally preferred approach. The superior outcomes associated with reconstruction over repair, however, should be qualified with the fact that attention to the critical details of the technique, including graft position and tension, is paramount to success when performing this procedure.

See related article on page 1725

The medial patellofemoral ligament (MPFL) is known as the primary static restraint to lateral translation of the patella,¹ yet the role of its repair versus reconstruction in the treatment of patellar instability continues to undergo debate. Repair of the ligament can be technically less demanding with a lower risk of morbidity, whereas reconstruction carries concerns of graft malpositioning or over-tensioning as well as the risk of patellar fracture. Prior studies have shown mixed outcomes after MPFL repair with recurrence rates ranging from 17% to 46% at 2 to 4 years' follow-up.²⁻⁴ Studies directly comparing repair versus reconstruction have consisted of small series or low levels of evidence that inevitably included patients

with concurrent morphologic risk factors such as tuberosity malalignment or patella alta, which are known factors that can influence the biomechanical behavior of the MPFL.⁵⁻¹⁰

In their study "Recurrent Patellar Dislocations Without Untreated Predisposing Factors: Medial Patellofemoral Ligament Reconstruction Versus Other Medial Soft Tissue Surgical Techniques—A Meta-analysis," Previtali, Roumenov, Pagliuzzi, Filardo, Zaffagnini, and Candrian¹¹ aimed to address this issue by identifying studies that allowed for analysis of the comparative outcomes. They included 319 knees from 6 studies and reported no significant differences in rates of recurrent dislocation or minor complications at 2 to 5 years' follow-up. However, they reported significant differences in Kujala and Lysholm scores favoring reconstruction in both short- and long-term follow-up. They further reported on subgroup analyses isolating reconstruction techniques and selection of predisposing factors, with all functional outcomes with the exception of the Tegner score significantly favoring MPFL reconstruction over repair.

The presence of numerous permutations of morphologic risk factors in patients with patellar instability has

The author reports no conflicts of interest in the authorship and publication of this article. Full ICMJE author disclosure forms are available for this article online, as supplementary material.

Received February 17, 2020; accepted February 21, 2020.

© 2020 by the Arthroscopy Association of North America

0749-8063/20235/\$36.00

<https://doi.org/10.1016/j.arthro.2020.02.040>

made it difficult to isolate the clinical benefits of one procedure over another, even in high-volume centers. The careful compilation and analysis of comparable data by Previtali et al.¹¹ have shed light on the differences between the 2 procedures in the setting of relatively isolated MPFL insufficiency. Although great effort was taken to eliminate confounding factors in this study, it should be noted that 3 of the 6 studies included in this meta-analysis excluded subjects with these anatomic risk factors¹²⁻¹⁴ whereas the other 3 studies included some patients with concurrent tibial tuberosity osteotomy with medialization and/or distalization procedures to address malalignment or patella alta.¹⁵⁻¹⁷ Although the authors report that a subanalysis comparing patients with and without osteotomy confirmed the results, it is unknown whether corrected morphologic abnormalities and the native absence of such constitute the same risk profile in these patients, especially given the interrelatedness between anatomic risk factors in this condition.¹⁸

Heterogeneity within surgical techniques continues to be another limiting factor in allowing for direct comparison between procedures. In the current study, the MPFL repair group included plication, augmentation, imbrication, medial soft tissue plasty, and reefing.¹¹ The MPFL reconstruction group included variations in graft type and configurations. Although the use of concurrent osteotomy was algorithmically incorporated, such patients were not included in all studies. Despite these assumptions, however, the authors have produced one of the largest studies to answer the important question of whether suture repair or reconstruction with a graft is superior in restoring soft-tissue restraints during the treatment of recurrent patellar instability.

One of the important lessons that this study additionally highlights is that redislocation rates after surgical treatment serve only as an extreme measure that may not adequately capture the “success” of a procedure such as patellar stabilization. Magnussen et al.¹⁹ have reported on this regarding function after primary patellar dislocation with conservative management, emphasizing that functional scores provide “a more complete picture of the patient’s outcome” than dislocation rates alone. In analyzing authors’ reports, as well as our own patient outcomes, paying particular attention to this measure is an important consideration in truly understanding the roles these procedures play in the course of treatment of this condition.

In summary, for the treatment of recurrent patellar instability in the setting of no (or concurrently addressed) morphologic abnormalities, MPFL reconstruction has become a common procedure, and the current study supports this approach.¹¹ The superior outcomes associated with reconstruction over repair, however, should be qualified with the fact that attention to the critical details of the technique, including

graft position and tension, is paramount to success when performing this procedure. Current investigations aim to better understand the respective procedures in the setting of acute first-time dislocations, and the thresholds for which concurrent procedures are needed in the setting of bony abnormalities continue to be defined. As we continue to develop and improve on existing surgical techniques, collaboratively working toward a standardized method of reporting our algorithms and findings can help our progress toward optimizing outcomes in the treatment of patellar instability.

References

1. Conlan T, Garth WP Jr, Lemons JE. Evaluation of the medial soft-tissue restraints of the extensor mechanism of the knee. *J Bone Joint Surg Am* 1993;75:682-693.
2. Arendt EA, Moeller A, Agel J. Clinical outcomes of medial patellofemoral ligament repair in recurrent (chronic) lateral patella dislocations. *Knee Surg Sports Traumatol Arthrosc* 2011;19:1909-1914.
3. Camp CL, Krych AJ, Dahm DL, Levy BA, Stuart MJ. Medial patellofemoral ligament repair for recurrent patellar dislocation. *Am J Sports Med* 2010;38:2248-2254.
4. Christiansen SE, Jakobsen BW, Lund B, Lind M. Isolated repair of the medial patellofemoral ligament in primary dislocation of the patella: A prospective randomized study. *Arthroscopy* 2008;24:881-887.
5. Stephen JM, Dodds AL, Lumpaopong P, Kader D, Williams A, Amis AA. The ability of medial patellofemoral ligament reconstruction to correct patellar kinematics and contact mechanics in the presence of a lateralized tibial tubercle. *Am J Sports Med* 2015;43:2198-2207.
6. Redler LH, Meyers KN, Brady JM, et al. Anisometry of medial patellofemoral ligament reconstruction in the setting of increased tibial tubercle-trochlear groove distance and patella alta. *Arthroscopy* 2018;34:502-510.
7. Matic GT, Magnussen RA, Kolovich GP, Flanigan DC. Return to activity after medial patellofemoral ligament repair or reconstruction. *Arthroscopy* 2014;30:1018-1025.
8. Song JG, Kang SB, Oh SH, et al. Medial soft-tissue realignment versus medial patellofemoral ligament reconstruction for recurrent patellar dislocation: Systematic review. *Arthroscopy* 2016;32:507-516.
9. Lee DY, Park YJ, Song SY, et al. Which technique is better for treating patellar dislocation? A systematic review and meta-analysis. *Arthroscopy* 2018;34:3082-3093.e1.
10. Puzitiello RN, Waterman B, Agarwalla A, et al. Primary medial patellofemoral ligament repair versus reconstruction: Rates and risk factors for instability recurrence in a young, active patient population. *Arthroscopy* 2019;35:2909-2915.
11. Previtali D, Roumenov S, Pagliuzzi G, Filardo G, Zaffagnini S, Candrian C. Recurrent patellar dislocations without untreated predisposing factors: MPFL reconstruction vs other medial soft tissue surgical techniques—A meta-analysis. *Arthroscopy* 2020;36:1725-1734.
12. Du H, Tian XX, Guo FQ, et al. Evaluation of different surgical methods in treating recurrent patella dislocation

- after three-dimensional reconstruction. *Int Orthop* 2017;41:2517-2524.
13. Niu C, Fu K, Lu J, et al. A medium-term follow-up outcome of medial retinaculum plasty versus double-bundle anatomical medial patellofemoral ligament reconstruction for recurrent patellar dislocation in adults. *Int J Clin Exp Med* 2016;9:9064-9072.
 14. Ma LF, Wang F, Chen BC, Wang CH, Zhou JW, Wang HY. Medial retinaculum plasty versus medial patellofemoral ligament reconstruction for recurrent patellar instability in adults: A randomized controlled trial. *Arthroscopy* 2013;29:891-897.
 15. Zhao J, Huangfu X, He Y. The role of medial retinaculum plication versus medial patellofemoral ligament reconstruction in combined procedures for recurrent patellar instability in adults. *Am J Sports Med* 2012;40:1355-1364.
 16. Harle D, Smith TO, Loveday D, Donell ST. Medial reefing versus medial patellofemoral ligament reconstruction for patellar instability. *Eur J Orthop Surg Traumatol* 2010;20:547-551.
 17. Tompkins MA, Arendt EA. Patellar instability factors in isolated medial patellofemoral ligament reconstructions—What does the literature tell us? A systematic review. *Am J Sports Med* 2015;43:2318-2327.
 18. Ferlic PW, Runer A, Dammerer D, et al. Patella height correlates with trochlear dysplasia: A computed tomography image analysis. *Arthroscopy* 2018;34:1921-1928.
 19. Magnussen RA, Verlage M, Stock E, et al. Primary patellar dislocations without surgical stabilization or recurrence: How well are these patients really doing? *Knee Surg Sports Traumatol Arthrosc* 2017;25:2352-2356.