

SUBSPECIALTY PROCEDURES

POSTEROLATERAL CORNER RECONSTRUCTION

Surgical Technique and Postoperative Rehabilitation

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Published outcomes of this procedure can be found at: *J Bone Joint Surg Am.* 2011 Sep 21; 93(18):1672-83.

Investigation performed at Midwest Orthopaedics at Rush, Rush University Medical Center, Chicago, Illinois

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Abstract

Background: Anatomic posterolateral corner (PLC) reconstruction is utilized for ligamentous knee instability associated with PLC injury in patients who desire a return to active lifestyles^{1,2}. The fibular collateral ligament (FCL) and popliteal tendon (PLT) are reconstructed in anatomic fashion according to techniques described by LaPrade et al.³⁻⁷.

Description: Various PLC reconstruction techniques have been described; however, the preferred reconstruction technique of the senior author is the method developed by LaPrade et al. that restores the anatomy of the 3 primary stabilizers of the PLC, including the FCL, PLT, and popliteofibular ligament^{3,5,6}.

Alternatives: Alternative nonoperative treatments include knee immobilization for 4 weeks and physical therapy. Surgical alternatives include PLC repair, which involves repair of the lateral collateral ligament, PLT, and/or popliteofibular ligament if structures can be anatomically reduced to their attachment site. However, repair of acute grade-III PLC injuries with staged treatment of concurrent cruciate injuries is associated with a substantially higher postoperative PLC failure rate⁸⁻¹⁰.

Rationale: Clinical outcomes have demonstrated that primary repairs have significantly higher rates of reoperation compared with reconstruction; therefore, reconstruction is recommended. Treatment of grade-III PLC injuries with reconstruction of midsubstance tears and any associated cruciate ligament tears results in significantly improved objective stability¹¹. In addition, anatomic PLC reconstruction has demonstrated improved subjective and objective patient outcomes compared with nonsurgical treatment or repair^{5,11,12}.

Expected Outcomes: Reconstruction of the PLC offers excellent outcomes after surgery. Studies have shown that the fibular-based technique for treatment of a chronic isolated PLC injury showed good results in terms of clinical outcome, restoring knee varus and rotational stability¹³.

Important Tips:

- Patients with associated proximal tibiofibular joint instability will benefit from this reconstruction because this technique will add stability to the joint.

Disclosure: The Disclosure of Potential Conflicts of Interest forms are provided with the online version of the article (<http://links.lww.com/JBJSST/A356>).

- This surgical approach is technically demanding, requiring proficiency with surgical dissection.
- Damage to the common peroneal nerve can potentially occur. Careful dissection and placement of retractors should be observed.
- Risks include surgical failure due to unrecognized malalignment; especially in chronic cases, the patient should have a complete evaluation of the standing alignment and tibial slope¹².

Acronyms and Abbreviations:

- FCL = fibular collateral ligament
- PFL = popliteofibular ligament
- PLC = posterolateral corner
- IT = iliotibial
- IKDC = International Knee Documentation Committee
- ACL = anterior cruciate ligament
- PCL = posterior cruciate ligament
- PEEK = polyetheretherketone
- PROM = passive range of motion

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References

1. Chahla J, Moatshe G, Dean CS, LaPrade RF. Posterolateral Corner of the Knee: Current Concepts. *Arch Bone Jt Surg*. 2016 Apr;4(2):97-103.
2. Crespo B, James EW, Metsavaht L, LaPrade RF. Injuries to posterolateral corner of the knee: a comprehensive review from anatomy to surgical treatment. *Rev Bras Ortop*. 2014 Dec 24;50(4):363-70.
3. LaPrade RF, Bollom TS, Wentorf FA, Wills NJ, Meister K. Mechanical properties of the posterolateral structures of the knee. *Am J Sports Med*. 2005 Sep;33(9):1386-91.
4. LaPrade RF, Heikes C, Bakker AJ, Jakobsen RB. The reproducibility and repeatability of varus stress radiographs in the assessment of isolated fibular collateral ligament and grade-III posterolateral knee injuries. An in vitro biomechanical study. *J Bone Joint Surg Am*. 2008 Oct;90(10):2069-76.
5. LaPrade RF, Johansen S, Agel J, Risberg MA, Moksnes H, Engebretsen L. Outcomes of an anatomic posterolateral knee reconstruction. *J Bone Joint Surg Am*. 2010 Jan;92(1):16-22.
6. LaPrade RF, Johansen S, Wentorf FA, Engebretsen L, Esterberg JL, Tso A. An analysis of an anatomical posterolateral knee reconstruction: an in vitro biomechanical study and development of a surgical technique. *Am J Sports Med*. 2004 Sep;32(6):1405-14.
7. LaPrade RF, Ly TV, Wentorf FA, Engebretsen L. The posterolateral attachments of the knee: a qualitative and quantitative morphologic analysis of the fibular collateral ligament, popliteus tendon, popliteofibular ligament, and lateral gastrocnemius tendon. *Am J Sports Med*. 2003 Nov-Dec;31(6):854-60.
8. Geeslin AG, Moulton SG, LaPrade RF. A Systematic Review of the Outcomes of Posterolateral Corner Knee Injuries, Part 1: Surgical Treatment of Acute Injuries. *Am J Sports Med*. 2016 May;44(5):1336-42.
9. 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 Apr;38(4):804-9.
10. Noyes FR, Barber-Westin SD, Albright JC. An analysis of the causes of failure in 57 consecutive posterolateral operative procedures. *Am J Sports Med*. 2006 Sep;34(9):1419-30.

11. Geeslin AG, LaPrade RF. Outcomes of treatment of acute grade-III isolated and combined posterolateral knee injuries: a prospective case series and surgical technique. *J Bone Joint Surg Am.* 2011 Sep 21;93(18):1672-83.
12. Serra Cruz R, Mitchell JJ, Dean CS, Chahla J, Moatshe G, LaPrade RF. Anatomic Posterolateral Corner Reconstruction. *Arthrosc Tech.* 2016 Jun 6;5(3):e563-72.
13. Moulton SG, Geeslin AG, LaPrade RF. A Systematic Review of the Outcomes of Posterolateral Corner Knee Injuries, Part 2: Surgical Treatment of Chronic Injuries. *Am J Sports Med.* 2016 Jun;44(6):1616-23.
14. Gelber PE, Drager J, Maheshwer B, Leyes M, Barenus B, Robinson J, Pujol N, Tischer T, Margheritini F, Fritsch B, Frosh KH, Chahla J. Large variability exists in the management of posterolateral corner injuries in the global surgical community. *Knee Surg Sports Traumatol Arthrosc.* 2020 Jul;28(7):2116-23.
15. Maheshwer B, Drager J, John NS, Williams BT, LaPrade RF, Chahla J. Incidence of Intraoperative and Postoperative Complications After Posterolateral Corner Reconstruction or Repair: A Systematic Review of the Current Literature. *Am J Sports Med.* 2021 Oct;49(12):3443-52.