

Posterolateral Corner Reconstruction


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Advanced Concepts in Sports Medicine
Nov 6-8, 2015
Las Vegascourse.com




Disclosure/COI



- No disclosures or conflicts of interest relevant to the presentation
- The opinions expressed in this presentation are the author's own and do not reflect the view of the United States government



Overview



Superficial

- ITB
- Biceps femoris

Deep

- FCL
- Popliteus
- Popliteofibular ligament
- Lateral gastrocnemius tendon

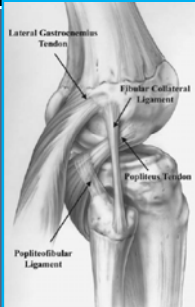




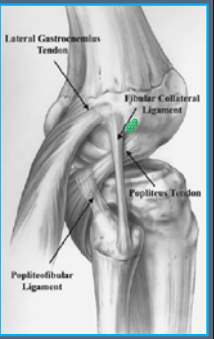
Image from
<https://www.jaapos.org/content/16/9/506/F6.expansion>





Fibular Collateral Ligament 

Origin

- Adjacent to lateral epicondyle
 - 1.4 mm proximal
 - 3.1 mm posterior

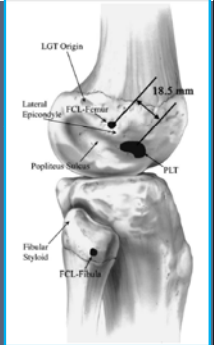






Fibular Collateral Ligament 

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- ~18 mm from popliteus insertion





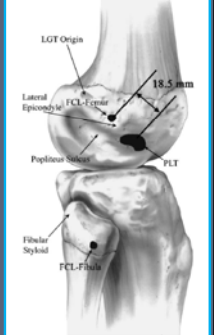
Fibular Collateral Ligament 


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Insertion

- Fibular head
 - Anterior aspect
 - 28 mm ant-inf to tip of styloid





Popliteofibular Ligament

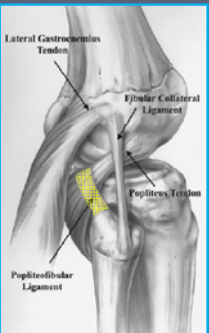
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Anatomy


- **Origin**
 - Popliteus myotendinous junction
- **Insertion**
 - Relatively broad
 - Posteromedial styloid process

Mechanics

- Static stabilizer against
 - Varus & ER
 - Post tibial translation



Popliteofibular Ligament

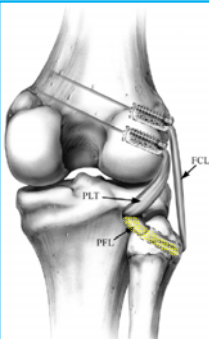
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Popliteus Complex

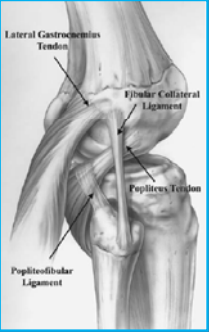
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Anatomy

- Posteromedial tibial metaphysis
- Tibial nerve
- Tendon
 - ~5.5cm in length
 - Intra-articular course
- Femoral Insertion
 - Ant 1/5 of popliteal sulcus
 - 18.5 mm from FCL origin

Mechanics

- **Dynamic internal tibial rotation**
- Stabilizer against rotation stress



PLC Reconstruction 

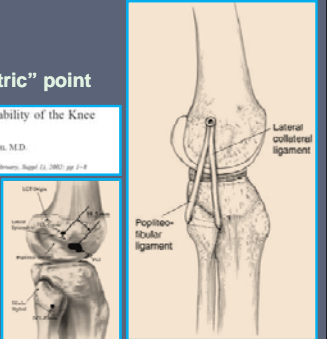
Larson

- Non-anatomic
- Describes “isometric” point

Practical Management of Posterolateral Instability of the Knee


Gregory C. Faerber, M.D., and Roger V. Larson, M.D.


Arthroscopy: The Journal of Arthroscopic and Related Surgery, Vol 18, No 2 (February), Suppl 1: 2002, pp 2-8



Lateral collateral ligament

Popliteo-fibular ligament



PLC Reconstruction 

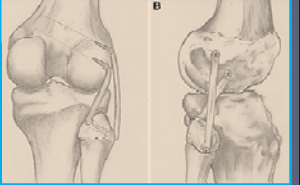

Fibular-Femoral Sling Technique (“Modified Larson”)


Jack Oshay Tsoukas, MD, PhD
DOI: 10.1007/s12018-009-0722-7

ARTHROSCOPY AND SPORTS MEDICINE

Posterolateral corner anatomy and its anatomical reconstruction with single fibula and double femoral sling method: anatomical study and surgical technique

Jin Goo Kim · Jong Gi Ha · Yong Seok Lee · Sang Jin Yang · Jun Eun Jung · Sun Jin Oh

PLC Reconstruction 

“Anatomic” FCL, PFL, Popliteus Reconstruction


- Robert LaPrade, MD, PhD
- 4 tunnels
- 2 grafts

An Analysis of an Anatomical Posterolateral Knee Reconstruction

An In Vitro Biomechanical Study and Development of a Surgical Technique

Robert F. LaPrade,¹ MD, PhD, Steinar Johansen,¹ MD, Fred A. Wentorf,¹ MS, Lars Engebretsen,¹ MD, PhD, Justin L. Esterberg,¹ MD, and Andy Tso,¹ MS
From the ¹Department of Orthopaedic Surgery, University of Minnesota, Minneapolis, Minnesota, and the ²Department of Orthopaedic Surgery, Ullevaal Hospital, University of Oslo, Oslo, Norway

154 Arthroscopy: The Journal of Arthroscopic and Related Surgery, Vol. 20, No. 4, pp. 527-537, August 2004
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PLC Reconstruction

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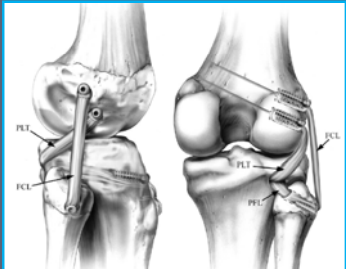


Diagram illustrating the reconstruction of the PLC (Posterior Lateral Complex) ligaments (FCL, PFL, Popliteus) using two grafts and four tunnels. The diagrams show the anterior and posterior views of the knee joint with the grafts and tunnels in place.

PLC Reconstruction

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"Anatomic" FCL, PFL, Popliteus Reconstruction

- Robert LaPrade, MD, PhD
- 4 tunnels
- 2 grafts
- FCL/PFL

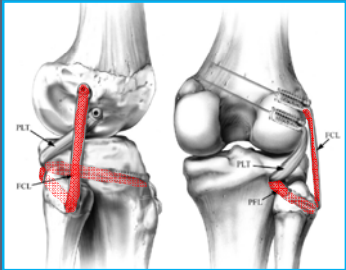


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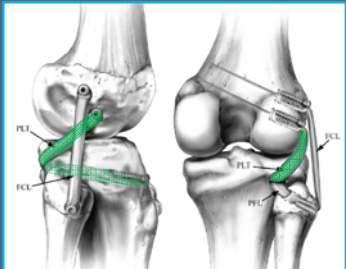


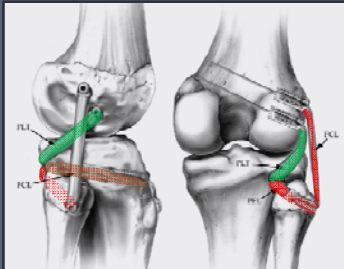
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PLC Reconstruction

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“Anatomic” FCL, PFL, Popliteus Reconstruction

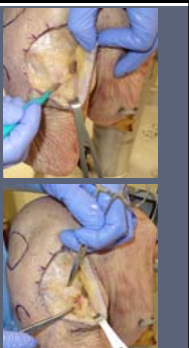
- Robert LaPrade, MD, PhD
- 4 tunnels
- 2 grafts
 - FCL/PFL
 - Popliteus



PLC Technique

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- Identify peroneal nerve
 - Posterior to biceps
 - Fibular neck
- Tie vessel loop around nerve and retract posteriorly



PLC Technique

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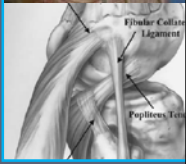
- Incise posterior to fibula to expose posterior fibular head
- Drill guide pin across the widest portion of the fibula at 45 degree angle
 - Ream 6mm tunnel
- Incise just proximal to fibula and place tag suture in LCL



PLC Technique

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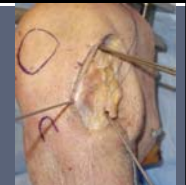

- Follow LCL to insertion site
- Split ITB
- Drill guide pin into insertion site
 - If femoral avulsion reference off lateral epicondyle
 - 3mm posterior, 1mm proximal
- Drill popliteus guide pin 18mm
 - Distal and anterior

PLC Technique

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- Drill guide pin for tibial tunnel
 - Gerdys to popliteus sulcus
 - Palpate it just medial to tib/fib joint
 - Freehand or ACL drill guide
 - Ream large tunnel (10mm) – 2 grafts
- Suture passer to place passing suture through tibial tunnel


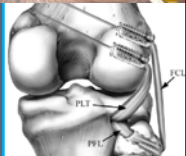



PLC Technique

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Graft Passage


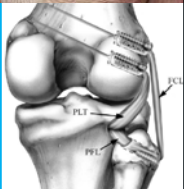

- Graft 1 (White)
 - Pass graft through fibula
 - Deep to ITB and into FCL socket
- Graft 2 (Blue)
 - Into popliteus socket and deep to FCL and into space behind fibula

PLC Technique

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- Grafts 1 and 2
 - Pass both grafts through tibial socket
 - Ensure both grafts fit easily into whatever size you drill tibial tunnel (10)
- Fixation with interference screws in fibula, two in femur, and one in tibia



Final Thoughts

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- Not difficult – just several tunnels and longer OR
 - Prepare grafts while patient is getting positioned
 - Cover grafts with **antibiotic impregnated sponge** until implantation
- ACL/PCL/PLC/MCL
 - Up to **13 tunnels** depending on reconstruction methods selected
- Preoperative Exam - Look at recurvatum
 - If no **recurvatum** and tib/fib joint stable –may be able to “get away with” Larson type fibular based reconstruction
 - 90% of instructors at AANA Masters course only did Larson type PLC



Questions

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