Posterolateral Corner Injuries of the Knee: Pearls and Pitfalls

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I (and/or my co-authors) have something to disclose.

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Incidence of PLC Injuries with ACL Tears

Fanelli, 1995
- 12% (148 ACL tears)

LaPrade, 1997
- 11% (100 ACL tears)

O’Brien, 1991
- 15% ACLR failed: unrecognized PLC injury
Mechanism of Posterolateral Knee Injuries

Historically - blow to anteromedial knee (Towne, 1971; DeLee, 1983)
71 Pts (LaPrade & Terry, 1996)

- Twisting 30%
- Non-contact hyperextension 21%
- Contact hyperextension 16%
- Anterior blow / flexed knee 10%
Combined > Isolated Injuries

71 Patients
*(LaPrade & Terry, 1996)*

Isolated 28%

Combined 72%

- PLC/PCL
- PLC/ACL
- PLC/ACL/MCL
- PLC/MCL
- PLC/PCL/MCL
Fibular Collateral Ligament

1° varus stabilizer
Proximal / posterior to lateral epicondyle
Midway along fibular head
Popliteus Complex

Stabilizer to posterolateral rotation

- Popliteus femoral attachment
- Popliteomeniscal fascicles
- Popliteofibular ligament
- Popliteal aponeurosis to lateral meniscus
Posterolateral Corner Exam

Physical exam
Gross standing alignment

**Gait: varus thrust**
Don’t forget about palpation!
attachment sites for MCL
LCL, Popliteofib lig.
PCL/PLC- Exam

Varus/valgus opening at 30 deg:
- Collateral lig
- Collateral + cruciate lig

Varus/valgus opening @ 0 deg:
- PLC only- rare

Increased ER of tibia @ 30 deg:
- PLC only- rare

Increased ER of tibia @ 90 deg:
- PCL+ PLC
PCL Exam
Posterior Drawer

Performed @ 90 deg.
assess tibial step-off

GR. I: 0-5 mm
Gr. II: 5-10mm
Gr. III: 10-12 mm

*** > 12 mm = PLC + PCL
Pitfall:
Inadequate Radiographic exam
Failure to Dx. malalignment

Chronics, prior surgery
PA flexed view
Standing hip to ankle

Case #1:
37 yo failed 2 ACL’s and one PLC recon.
Combined Medial Opening Wedge HTO, PLC

Varus correction
  ACL/PLC graft forces

Sagittal plane
  Slope will reduce anterior translation
  Slope reduce posterior translation
Caveat: Address Malalignment 1st

ACL, PLC
PCL, PLC
ACL, PCL, PLC
Arthroscopic Evaluation
(LaPrade, 1997; Noyes 1993)

“Drive-through sign”
> 1cm of lateral joint line opening
Assists with surgical incision placement
Femoral or tibial based lesions
Chronic PLC deficiency

Options:

Delayed primary repair

Advancement of popliteus,
LCL, gastroc/arcuate complex

Both require excellent tissue quality

Free graft reconstruction
PLC reconstructions: PCL forces

*Fig. of 8* (Larson)

LaPrade Technique
Posterolateral Corner Reconstruction of the Knee

Evaluation of a Technique With Clinical Outcomes and Stress Radiography

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From the University of Connecticut Health Center, Farmington, Connecticut
Subjective Evaluation

24 patients (28)

ACL/PLC
PCL/PLC
ACL/PCL/PLC

- Lysholm
- Tegner
- IKDC
- ACL-QOL
- SF-12

Rios, Arciero et al AJSM 2010
Objective Evaluation

Telos stress radiographs
- Varus
- ± Posterior
- Reliability testing
- Independent observer

KT arthrometry
Single leg hop
Results:

Objective

- Clinical exam
  - ROM – 100% normal or near normal
  - 8/10 normal or near normal Lachman
  - 14/15 normal or near normal Posterior drawer
  - 100% normal or near normal Varus laxity
  - 100% normal or near normal Tibial ER
- KT
  - Mean 1.5 mm STS difference
- Single Leg Hop
  - Mean hop quotient 90.4%
  - (20/24 normal or near normal)
Telos Stress Radiographs

- Varus mean 0.2mm STS diff. (<3mm in 22/24 knees)
- Posterior mean 3.6mm STS diff. (<5mm in 21/24 knees)
Biomechanical and clinical efficacy:

Nau et al, AJSM 2005 Dec.:1838-45
Feeley et al Arthroscopy 2010 Aug.:1088-95
Ho et al, Arthroscopy 2011 Jan.: 89-96

Rios, Arciero: AJSM 2010 Aug.:1564-74
- clinical series with stress radiography
Nau et al 2005 AJSM
External Rotation at 90°

Nau et al AJSM 2005
Comparison of Posterolateral Corner Reconstructions Using Computer-Assisted Navigation

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Comparison of 2 Surgical Techniques for Reconstructing Posterolateral Corner of the Knee: A Cadaveric Study Evaluated by Navigation System

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Postoperative Care

Brace in extension
prevent posterior sag

*Much slower*

Restrict WB 6-8 weeks
Start flexion 3-4 weeks
Avoid Hamstring for 3 mos.
Thank You!!