Disclosures

I, Robert F. LaPrade, have relevant financial relationships to be discussed, directly or indirectly, referred to or illustrated with or without recognition within the presentation as follows:

- Editorial Boards for AJSM & KSSTA
- AOSSM Board
- Chair, AOSSM Research Committee
- Consultant: Arthrex, Smith & Nephew
- AOSSM Research Grant
- ORIF Career Development Grant; ORIF Clinical Research Award 2013
- Health East Norway Research Grant
- Minnesota Medical Foundation Grants
- AOSSM: Chair, Research Committee, AOSSM Board

The Steadman Philippon Research Institute is a 501(c)(3) non-profit institution supported financially by private donations and corporate support from the following entities:

- Smith & Nephew
- Arthrex, Inc.
- Siemens Medical Solutions USA, Inc.
- ConMed Linvatec
- Ossur Americas
- Orthonanex, Inc.
- AANA
- University of Oslo
- The Steadman Clinic
- Vail Valley Medical Center
Preoperative Planning

- Identify injury pattern (exam, MRI)
- Try to operate within first 2-3 weeks
- ID peroneal nerve injuries
- Address all torn structures
- Pearl: surgical approach prior to fluid extravascular

PLC Case

- 16 year old male
- Wrestling varus contact
- ACL | PLC | Nerve out
Exam Under Anesthesia

- Posterolateral drawer test
- Varus stress test
- External rotation recurvatum test

Identify Fibular and Tibial Attachment Injuries

- Proximal release of avulsed biceps
- Identify common peroneal nerve
- Identify FCL, PFL and meniscotibial lateral capsule

Identify Femoral Attachment Sites

- Split superficial layer of iliotibial band
- Identify FCL and popliteus attachments
- Separate out underlying lateral capsule
**Arthroscopy**

- Reconstruct ACL, fix in femoral tunnel
- Lateral drive through sign
- Popliteomeniscal fascicles torn

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**Systematic Repair / Reconstruction Method**

1. Femoral attachments
2. Meniscal attachments
3. Tibial attachments
4. Fibular attachments

*Same stepwise Rx almost every case*

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**Avulsions Off Femur**

- Popliteus avulsion – recess procedure
  (Jakob, 1982; LaPrade, 1997)
- FCL avulsion – recess procedure
  - Transfemoral eyelet pin
  - Ream 1 cm tunnel
  - Pull sutures across femur, tie over medial button
Meniscal-Based Tears
- Coronary ligament of posterior horn of meniscus - direct repair
- Popliteomeniscal fascicle tears - direct repair if lateral meniscus unstable

Repair Lateral Capsule
- Anchors at joint line
- Suture into undersurface LM

Avulsion Off Fibular Head / Styloid
- Popliteofibular ligament – suture anchor
- Biceps femoris – suture anchors
- FCL – suture anchor
- Allow for secure repair / early ROM
Avulsion Of Fibular Head / Styloid

- Arcuate avulsion fracture
  - cerclage suture fixation
  - hard to secure with hardware

Midsubstance Tears of FCL or Popliteus Tendon

- Consider augmentation (biceps femoris, ITB, hamstrings)
- Anatomic reconstructions

Identify Fibular FCL / PFL Attachments

- Enter biceps bursa
- ID attachment of FCL
PLCR Fibular Tunnel

Guide pin placement:
- Enter fibula at FCL attachment
- Exit at PFL attachment
- 7 mm reamer

Tibial Tunnel

- Tibial tunnel (9 mm)
  - AP from Gerdy’s to popliteus musculotendinous junction

PLCR Tibial Tunnel

Guide pin placement:
- Enter at Gerdy’s flat spot
- Exit at popliteus musculotendinous junction
- Ream 9 mm tunnel
Iliotibial Band Split
(Terry and LaPrade, 1997)

• Split iliotibial band in line with its fibers (Gerdy’s tubercle and proximal)

• ID FCL and PLT femoral attachments (18.5 mm apart) (LaPrade 2003)

PLCR Femoral Tunnels

• Eyelet pins through femoral attachments of FCL & PLT
  – FCL - slightly proximal and posterior to lateral epicondyle
  – PLT on anterior fifth of popliteus sulcus
  – 18.5 mm between attachment sites
  – Ream (9 mm) over beath pins (20 mm deep)

Graft Preparation
(LaPrade AJSM 2004)

• Split Achilles tendon into 2 grafts
• Bone blocks : 9 x 20 mm
• Tubularize remaining tendon
• Leave thicker for native tendon lengths
  – FCL = 70 mm
  – PLT = 60 mm
Pass Grafts Into Femur

- Eyelet pins
- Secure with interference screws

Popliteus Tendon Graft Passage - Hiatus

- PLT graft
  - Pass graft through the popliteal hiatus

FCL Graft Passage

- Pass FCL graft under superficial layer of ITB and long head biceps, then through fibular head
- Fix FCL graft in fibular head at 20°, neutral rotation, and valgus force
PLT and PFL Graft Passage - Tibia

- Pass PFL & PLT grafts anterior through tibial tunnel
- Fix on tibia with 9 mm screw

Determine “Safe Zone” of Knee Motion

- Full extension a must
- Amount of safe flexion

Close Incisions
Rehab of Acute PLC

- NWB 6 weeks
- ROM
  - “Safe Zone” POB # 1
  - Stress full extension
  - 0 - 120° by 6 weeks
- Avoid isolated hamstring exercises for 4 months

Outcomes of Acute Hybrid Repairs/Reconstructions

- Early identification and treatment Important!
- Geeslin, LaPrade (JBJS, 2011)
  - 30 Knees, 2.4 yr F/U
  - IKDC Preop = 29.1, Postop = 81.5
  - Varus Stress Preop = 6.2 mm, Postop = 0.1 mm
  - 8 isolated, 22 combined

Conclusions

- Early identification and treatment important
- Restore normal anatomy
- Allow for secure and early knee motion