Posterolateral Corner Injuries

Strategies for Treatment

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CU Sports Medicine Fall Symposium
September 22, 2017
Posterolateral Corner Injuries

• Majority are part of combined ligament tears (Knee dislocation)
• Bad injuries
• Relatively rare
• Heterogeneous group of knee injuries
  – High-energy vs Low-energy
  – Associated nerve / artery injury
  – Fractures

➤ Limited consensus on best treatment practices
Anatomy

• 3 main structures
  - Fibular collateral ligament (FCL)
  - Popliteus
  - Popliteofibular ligament (PFL)
Biomechanics

• Static stabilizers:
  - FCL
  - PFL
  - Posterolateral capsule

• Popliteus tendon
  - Dynamic and Static
Fibular Collateral Ligament

• Primary restraint to varus

• Proximal / posterior to femoral epicondyle

• Inserts on fibular head
Popliteofibular Ligament

- Static restraint to external rotation
- 2° varus restraint
- Posterior fibular styloid
- Muscle-tendon junction of popliteus
Popliteus

- Static / Dynamic restraint to external rotation
- Inserts at anterior fifth of popliteus sulcus
- 18.5 mm distance from FCL origin on femur
Physical Exam

• For high energy injuries
  - ATLS
  - Evaluate for associated injuries
  - Vascular injury to limb
    • Pulses
    • ABI < 0.9
    • Angiography
  - Compartment syndrome
Varus Stress Test

• Full extension

• 30° of flexion
External Rotation Recurvatum Test

• Extend knee by toes
• Recurvatum
• Varus and ER of tibia
Dial Test

- Ext Rotation at 30° / 90°
- Positive at 30° → PLC
- Positive at 90° → PLC + PCL

Veltri, Warren AJSM 1996
Posterolateral Spin Test

- ER stress at 90°
- Palpate step-off of lateral tibia
- Normal
  - Tibia anterior to femoral condyle
Imaging

• Plain radiographs
  – Stress radiographs
  – Full length alignment films (chronic injuries)

• MRI

• Vascular studies as needed
Treatment options

• Non-surgical treatment
  - Cast / Brace
  - External fixation
  - Consider when multiple co-morbid conditions / associated injuries

• Surgical treatment
  - Repair vs. Reconstruction
  - Reconstruction technique
  - Timing
Combined Injuries

• Isolated PL corner is uncommon (28%)

• Combined with another ligament (72%)
  - ACL or PCL or both
Surgical Techniques

- Larson (1996)
- Early anatomic – fibular based
- Semitendinosis allograft
Surgical Techniques

- Levy, Marx (2008)
- Fibular based reconstruction
- Achilles allograft
Surgical Techniques

- Stannard (2005)
- Modified two-tailed
- Tibia and fibula based
Surgical Techniques

• LaPrade, Engebretsen 2004

• Anatomic

• Tibia and fibula based

• 2 grafts
Surgical Techniques

• Numerous surgical techniques have been described
  - Fibular based
  - Anatomic (Tibial and fibular tunnels)

• No one surgical technique has been shown to be superior
  - Largely Level IV case series data
  - Much heterogeneity exists in the injury factors as well as in the treatment factors
  - Definitive conclusions or best practices lacking
Timing

• **Early (<3 weeks) vs Delayed Surgery**

• Remains controversial
  - Outcomes appear improved with Early treatment
  - ? Arthrofibrosis and stiffness with early surgery
  - More research needed → Randomized trial in the works
Timing

- Levy, Stannard et al. Arthroscopy 2009 –
- Systematic review of Acute vs. Chronic

Mean Lysholm Scores

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<th>Study</th>
<th>Early</th>
<th>Late</th>
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<td>82</td>
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### Timing

- **Levy, Stannard et al. Arthroscopy 2009** –

#### IKDC % Excellent/Good

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Repair vs Reconstruction

Stannard. AJSM, 2005

- N = 57 knees
  - 35 repaired
  - 22 reconstruction
- 77% multiligament injuries
- Repair group had delayed reconstruction of cruciates

Repair failure = 37%
Recon failure = 9%
Repair vs Reconstruction

Levy AJSM, 2010

- N = 28 knees
  - 10 repaired
  - 18 reconstruction

- PLC repair group had delayed reconstruction of cruciates

Repair failure = 40%
Recon failure = 6%
Conclusions

• Posterolateral corner injuries are very challenging

• Clinical outcomes vary widely

• Identify injured structures with good exam + imaging

• Associated injuries
  – Vascular and neurologic must be carefully assessed
Conclusions

• Often combined with other ligament injuries that need to be treated together

• Early surgery may improve outcomes

• Reconstruction may give better outcomes

• More research is needed
THANK YOU