Risks and Complications of Posterior Cruciate Ligament Surgery

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Complications

In addition to standard risks associated with all orthopedic surgical procedures, posterior cruciate ligament (PCL) reconstruction poses some relatively unique potential complications. These complications arise from a combination of several factors:

- the relative infrequency of PCL injuries,
- the lack of knowledge and experience in treating them,
- the proximity of neurovascular structures to the PCL,
- and the technically demanding nature of reconstructive procedures

Surgical complications

- Neurovascular injuries
- Osteonecrosis
- Fractures
- Compartmental syndrome

Neurovascular injuries

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Neurovascular Injury

- Most feared complication
- Especially in revision surgery
- Popliteal Artery: laceration, occlusion, spasm
- Mostly caused by guide pin and drill during the tibial tibial procedure, sometimes while doing posteromedial approach or capsule manipulation

Neurovascular Injury

- Proximity between artery and nerve and PCL
- Distance 7 - 9 mm between PCL tibial insertion and popliteal artery
- the distance increases significantly to 9 -10 mm at 100° of flexion

Neurovascular Injury

- Posterior capsule release

Neurovascular Injury

- Posterior capsule release
How to minimize the NV risk?

Leg position

- 100°
- Tourniquet
- Arthro-pump

Postero-medial approach

- Spinal needle, transillumination
- Thin canula (6 mm)
- Cautious use motorized instruments, arthrosurface and curettes
- Instruments must always be oriented anteriorly
- Limited distal posterior capsule release

Instrumentation

- Specific curved instruments in order to protect the neurovascular area

Tibial tunnel procedure

- Specific guide
- Protection of the vessels
- Cautious drilling under visual control
- 100° of flexion
Fluoroscopy?

Keller Tum

Inlay procedure?

Oliviero et al.

Revision

Fanelli’s trick
  - Posteromedial safety incision


Neurovascular Injury

- Fanelli's trick
  - Posteromedial safety incision

Osteonecrosis: medial condyle

- Rare
- Less power blood supply than the lateral condyle
- Avoid trauma to the subchondral blood supply by accurate femoral tunnel placement 8 to 10 mm from the articular surface and limit soft tissue dissection
- Double bundle repair: Higher risk?

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Fractures

- Tibia or femur
  - tunnels
  - Divergence
  - Hammering staples
- Patella
  - 0.2% to 2.3% incidence for ACL with BTB
  - Bone harvest
  - Quadriceps graft

Zawodny et al.
Compartment Syndrome

- Fluid extravasation into the leg compartments through a rent in the capsule
  - First femoral tunnel, then tibial tunnel

Conclusion

- Yes, PCL reconstruction is a more dangerous procedure than ACL reconstruction
  - anatomic
  - less experience