ORTHOVERSE · HIGH-YIELD CARD

PCL Tunnel Placement

Interactive simulator
orthoverse.org/simulators/pcl-tunnel/

HIGH-YIELD

- Femoral tunnel position matters more than tibial; errors in proximal-distal direction are ~3x worse than anterior-posterior errors.
- ALB center sits 7.9 mm from the distal articular cartilage on the lateral surface of the medial condyle.
- Arthroscopic isometric point: 8 mm proximal to articular cartilage, 1 o'clock in right knee, 11 o'clock in left knee.
- Femoral guide pin should enter 5-10 mm from intra-articular cartilage; 1-2 mm of bone remains at articular margin after reaming.
- Anterior-distal femoral tunnel: graft tight in flexion, 10-20 degrees of flexion lost.
- Posterior-proximal femoral tunnel: graft lax in flexion, posterior sag and drawer persist.
- Tibial guide angled approximately 60 degrees to the articular surface; more perpendicular angle causes killer turn abrasion.
- Fix at 90 degrees with anterior drawer, or 70-80 degrees with 10 lb; never fix in full extension without load.
- Popliteal artery is 7-10 mm posterior to the PCL; drill at 90 degrees flexion with a curette protecting posterior structures.
- Extension deficit after PCL reconstruction is usually from prolonged immobilization in flexion, not tunnel malposition.

PITFALLS

- Anterior-distal femoral tunnel tightens the graft in flexion; expect 10-20 degrees of flexion loss on the board exam.
- Fixing in full extension without load overconstrains the knee with high graft forces; fix at 90 degrees with an anterior drawer, or at 70-80 degrees with 10 lb (Harner).
- Extension deficit after PCL reconstruction signals prolonged immobilization in flexion, not a malpositioned tunnel.

NUMBERS TO KNOW

ALB center distance from distal articular cartilage	7.9 mm
Arthroscopic isometric point distance from articular cartilage	8 mm
Femoral pin distance from intra-articular cartilage (target)	5-10 mm
Popliteal artery anterior wall distance from PCL	7-10 mm
Tibial guide angle to articular surface	~60 degrees
Residual posterior laxity threshold on stress view	>4 mm
Complete rupture on stress view	>=8 mm
Grade III posterior drawer threshold	>10 mm

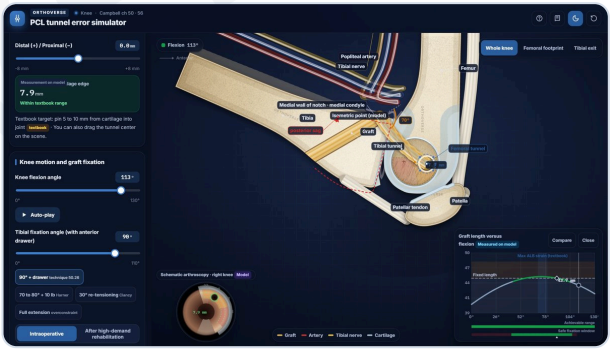


Figure. Center of the ALB: the graft is tightest near 70 to 80 degrees, like the native anterolateral bundle.

FURTHER READING

Campbell's Operative Orthopaedics, 15th edition (2026): Knee Injuries, ch 50 (PCL anatomy, reconstruction techniques, fixation and complications).
Campbell's Operative Orthopaedics, 15th edition (2026): ch 56 (arthroscopic PCL technique).

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