

Tips and tricks to avoid interference between tunnels and hardwares

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Introduction

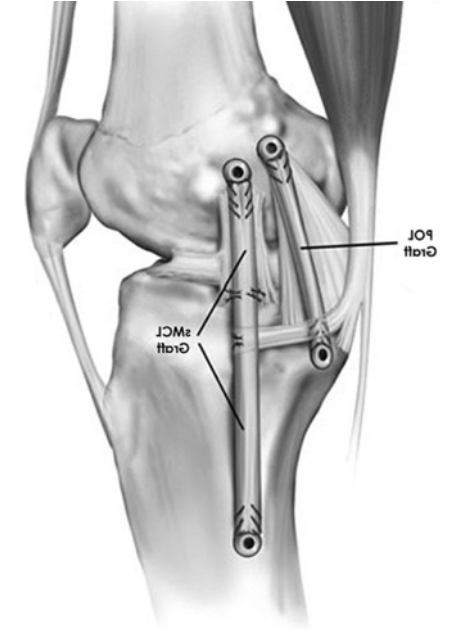
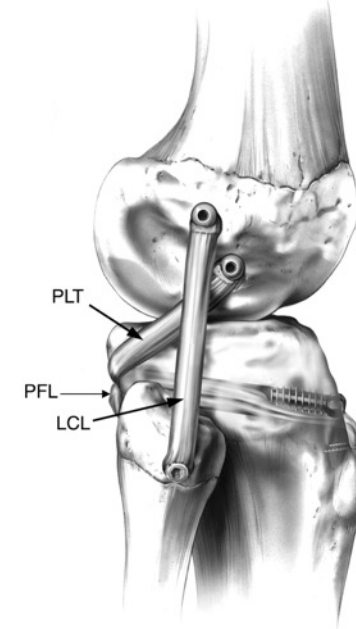
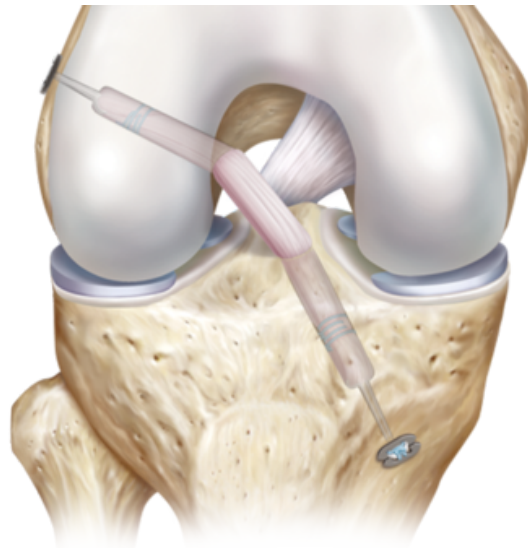
- In the setting of multiligament injuries, reconstruction of the torn ligaments is recommended.
- Tunnels for grafts and tunnels for interference fixation

Potential tunnels

- ACL

- PCL

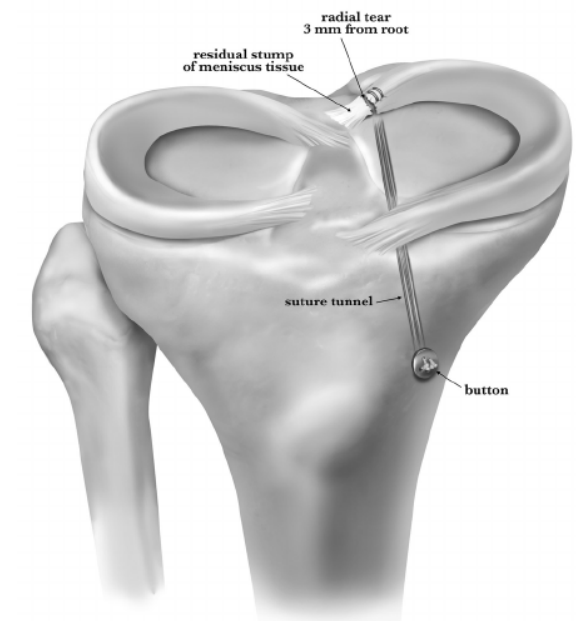
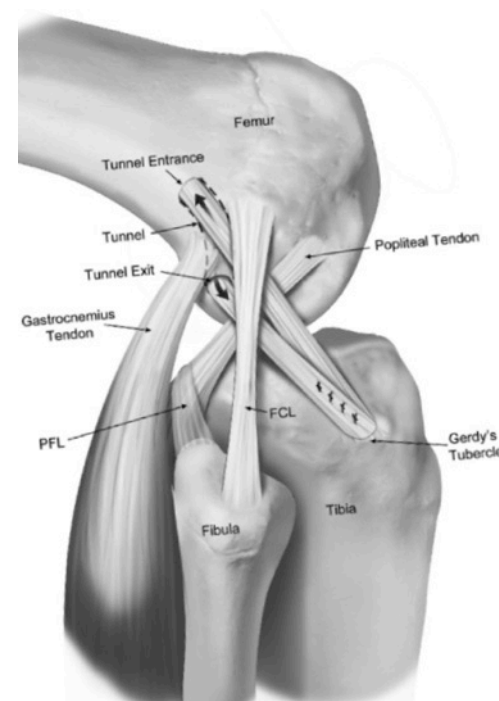
- PLC



- Medial / POL

- ALL / LT

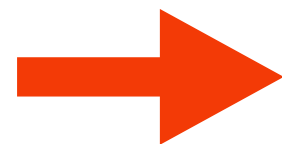
- Meniscal root repair





Avoid tunnel convergence

- Damage to the reconstruction grafts
- Loss of bone between tunnels
- Risk of fracture
- Fixation devices damage or failure
- Graft incorporation

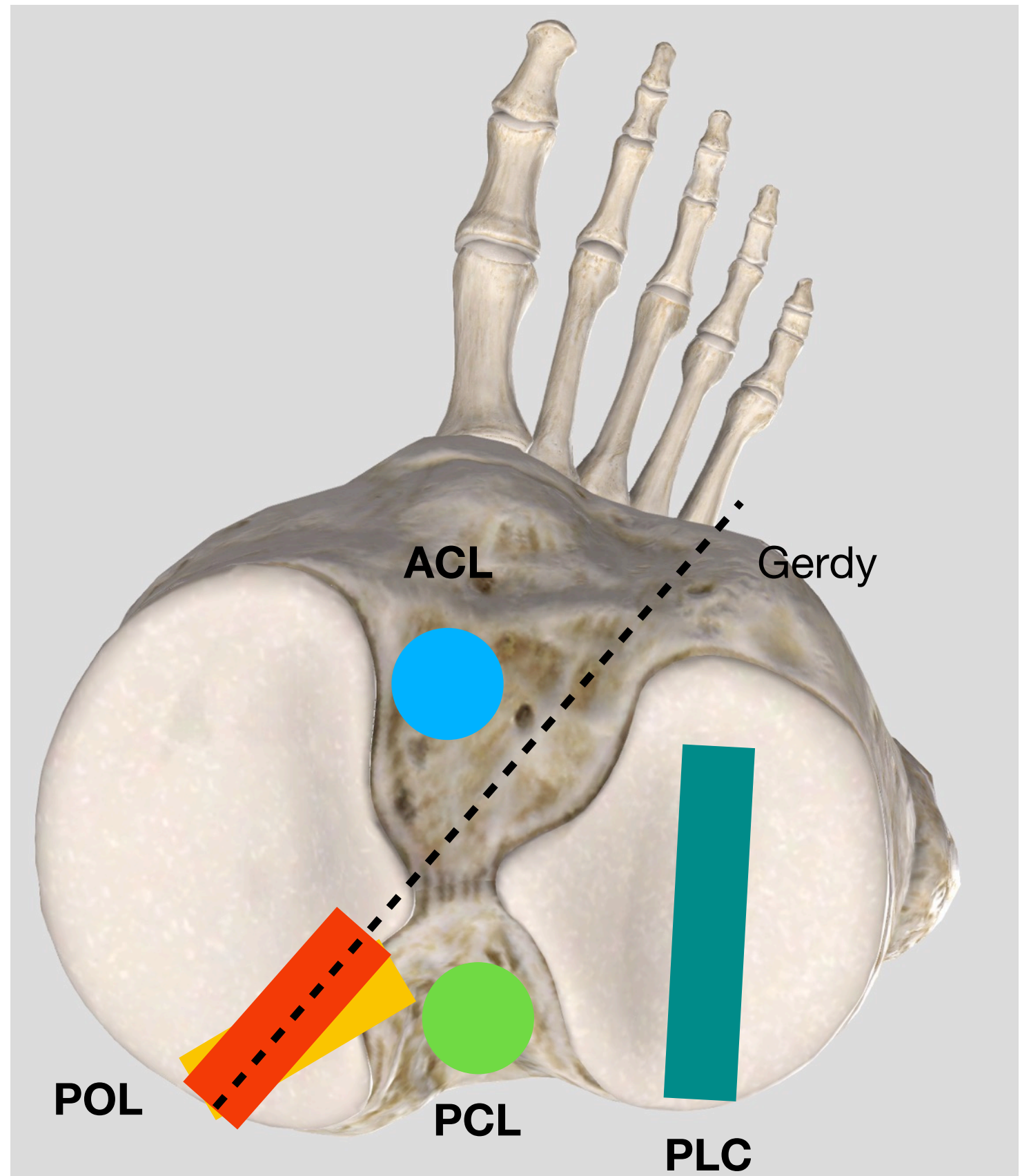


Increase the risk of graft failure

Tibia

**Aiming the POL
tunnel 15-20° medial
to the Gerdy**

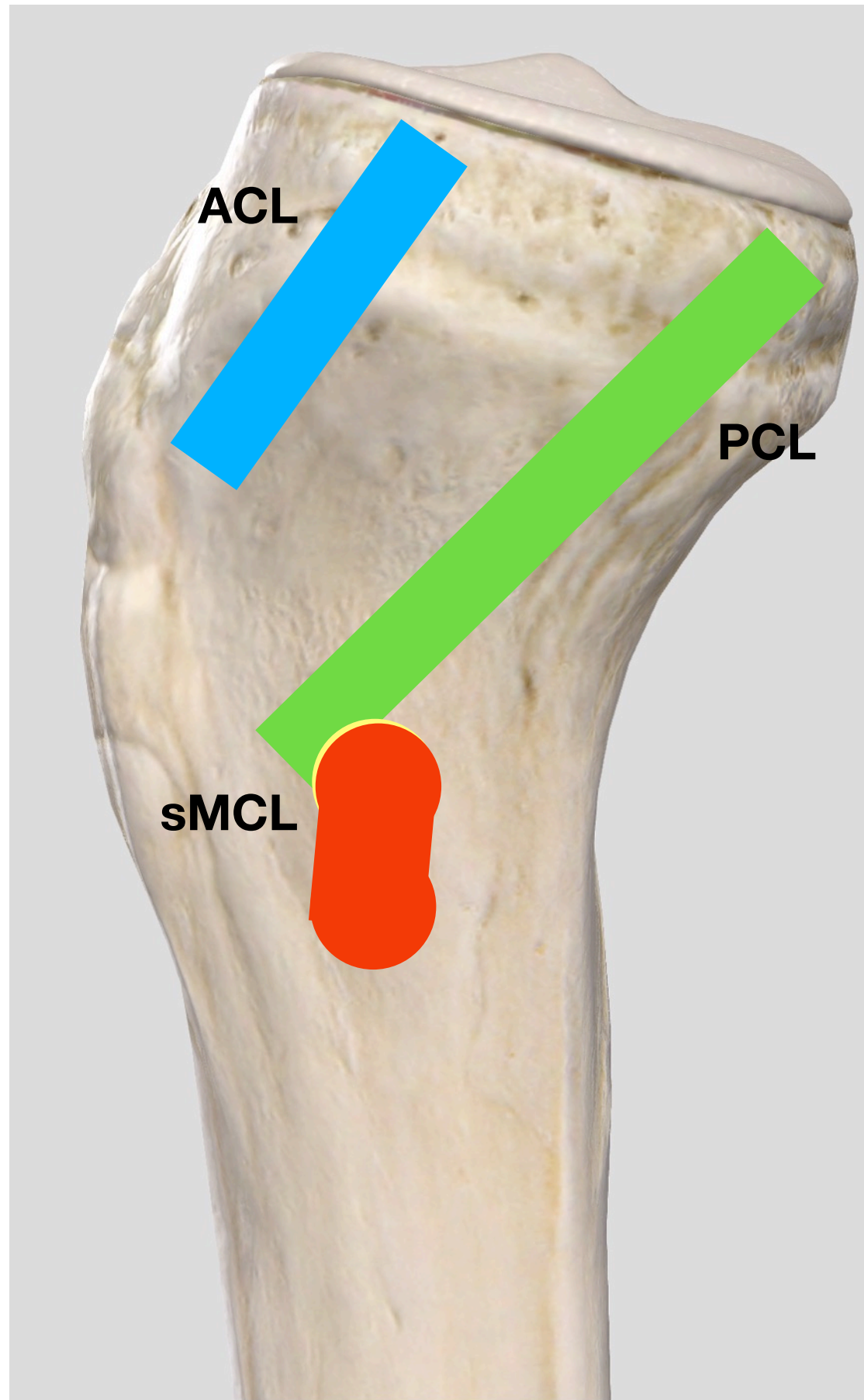
Moatshe G, Slette EL, Engebretsen L,
LaPrade RF. Intertunnel Relationships in
the Tibia During Reconstruction of Multiple
Knee Ligaments: How to Avoid Tunnel
Convergence. Am J Sports Med. 2016 Nov;
44(11):2864-2869.



Tibia: distal

**Aiming the sMCL
tunnel transversely
and directing 30°
distally**

Moatshe G, Slette EL, Engebretsen L,
LaPrade RF. Intertunnel Relationships in
the Tibia During Reconstruction of Multiple
Knee Ligaments: How to Avoid Tunnel
Convergence. Am J Sports Med. 2016 Nov;
44(11):2864-2869.



Tibia

**Meniscus root
repair**



Tibia

**Meniscus root
repair**

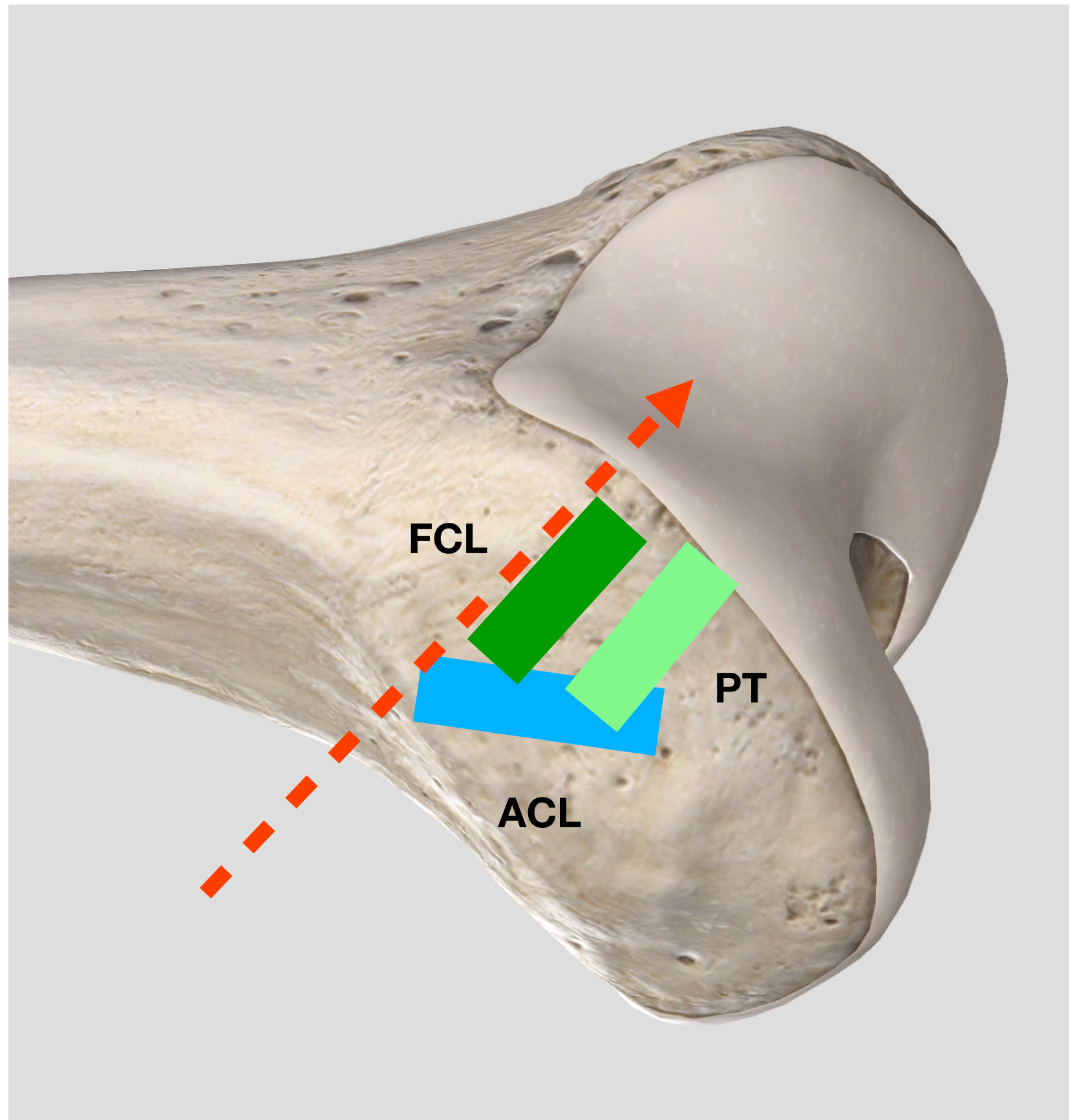


Femur

**Aiming FCL tunnel
35° anteriorly**

Moatshe G, Brady AW, Slette EL, Chahla J, Turnbull TL, Engebretsen L, LaPrade RF. Multiple Ligament Reconstruction Femoral Tunnels: Intertunnel Relationships and Guidelines to Avoid Convergence. Am J Sports Med. 2017 Mar;45(3):563-569.

Camarda L, D'Arienzo M, Patera GP, Filosto L, LaPrade RF. Avoiding tunnel collisions between fibular collateral ligament and ACL posterolateral bundle reconstruction. Knee Surg Sports Traumatol Arthrosc. 2011 Apr;19(4):598-603.

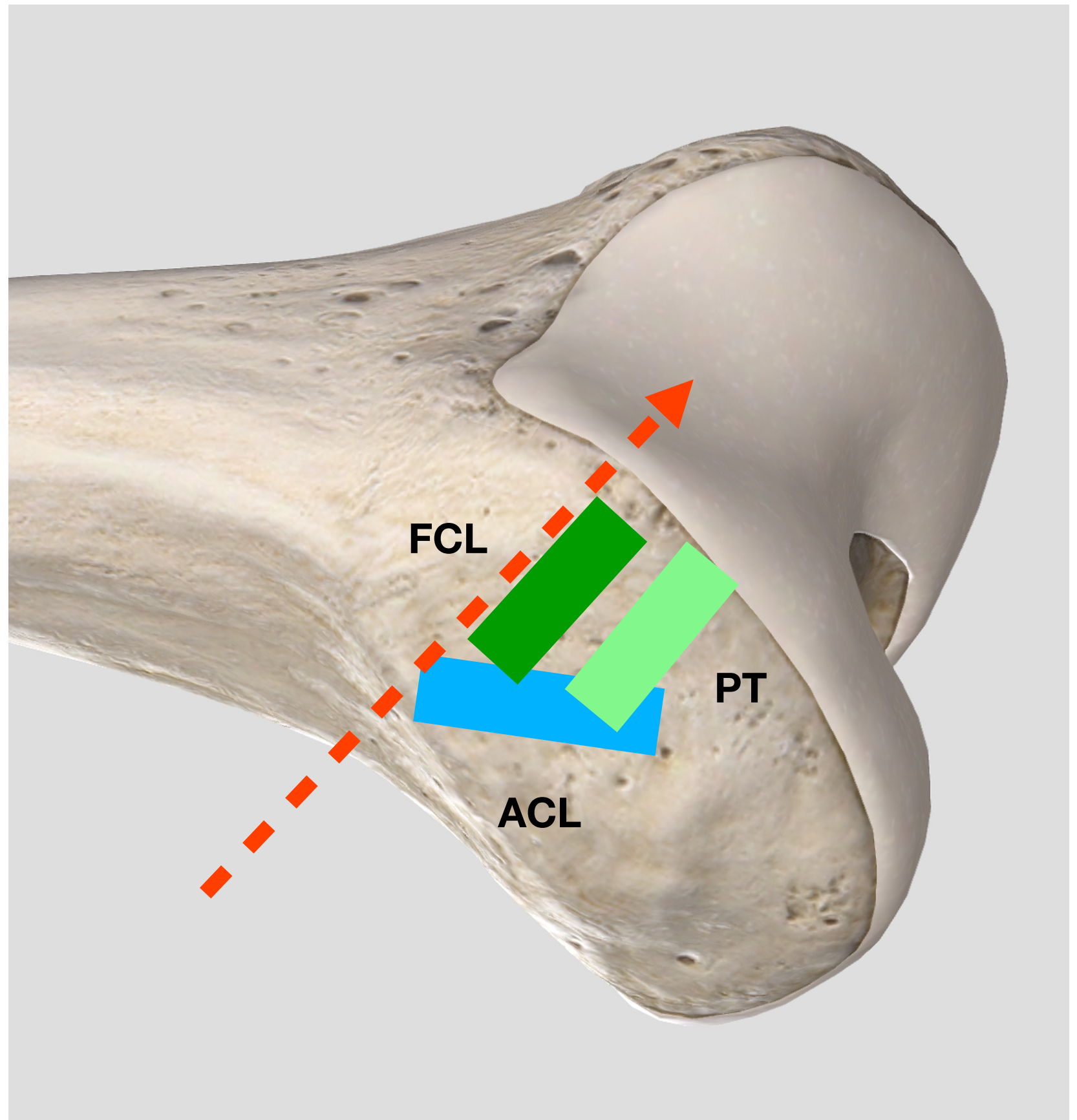


Femur

**Aiming FCL tunnel
and PT tunnels 20°
anteriorly**

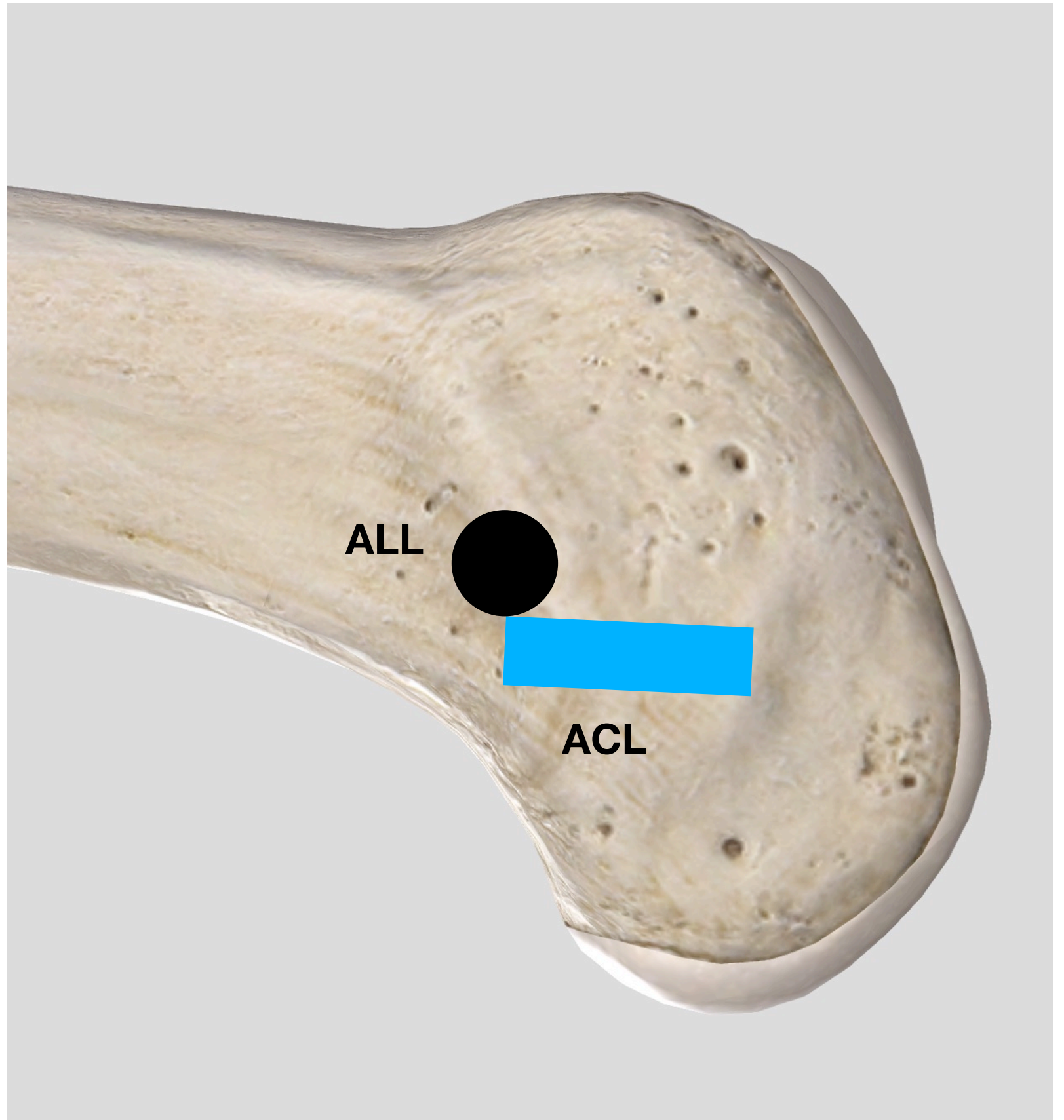
Kim SJ, Chang CB, Choi CH, Yoo YS,
Kim SH, Ko JH, Park KK. Intertunnel
relationships in combined anterior
cruciate ligament and posterolateral
corner

reconstruction: an in vivo 3-
dimensional anatomic study. Am J
Sports Med. 2013
Apr;41(4):849-57.



Femur

ALL reconstruction

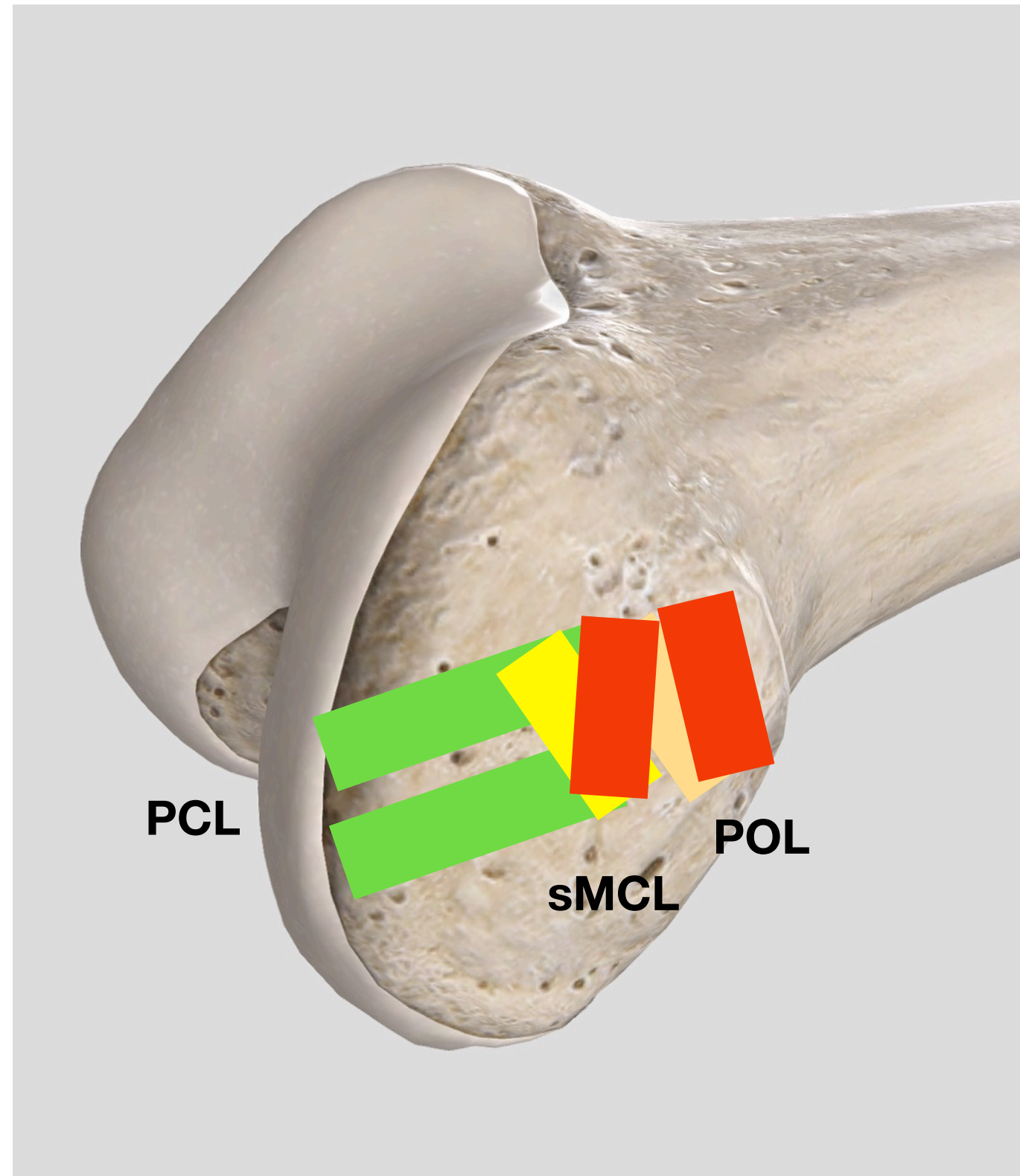


Femur

**Aiming superficial
MCL tunnel 40°
anteriorly and
proximally**

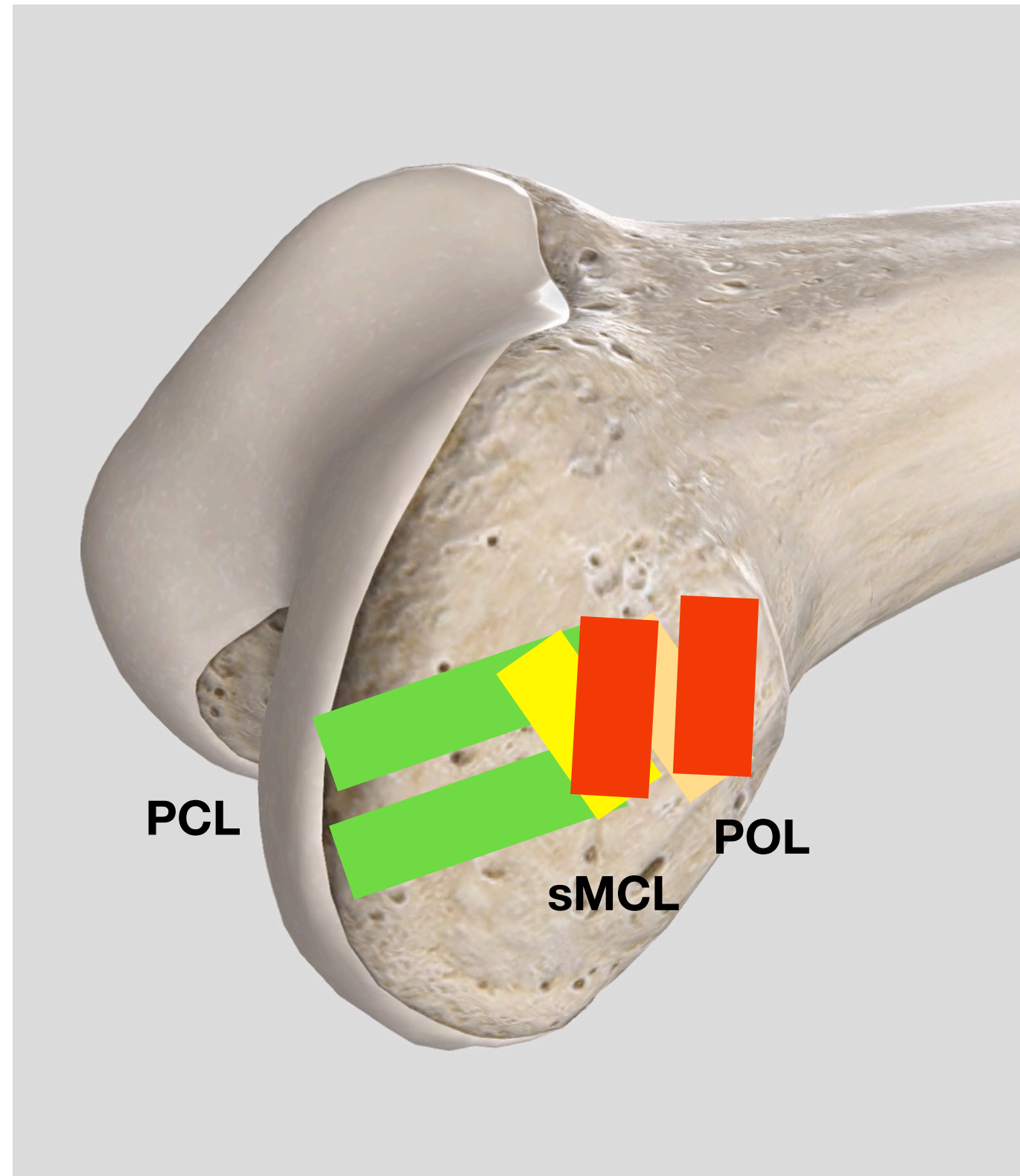
**Aiming POL tunnel
20° anteriorly and
proximally**

Moatshe G, Brady AW, Slette EL,
Chahla J, Turnbull TL,
Engelbrechtsen L, LaPrade
RF. Multiple Ligament
Reconstruction Femoral Tunnels:
Intertunnel Relationships
and Guidelines to Avoid
Convergence. Am J Sports Med.
2017 Mar;45(3):563-569.



Femur

**Both superficial
MCL and POL
anteriorly and
proximally at both
30 axial and 30
coronal
angulations**



Gelber PE, Masferrer-Pino À, Erquicia JI,
Abat F, Pelfort X, Rodriguez-Baeza
A, Monllau JC. Femoral Tunnel Drilling
Angles for Posteromedial Corner
Reconstructions of the Knee.
Arthroscopy. 2015 Sep;31(9):1764-71.

Conclusion

- No compromission with anatomical landmarks.
- Therefore only orientation of the tunnels can be changed.

Conclusion

- **PCL tunnels** on tibial and femoral side: convergence with POL tunnel and sMCL

PCL

Medial

- **ACL tunnel on tibial side**: no big issue
- **ACL tunnel on femoral side**: FCL +/- PT
+/- ALL

ACL

Lateral

Thank you