Identifying the best graft tensioning sequence to preserve knee function during multiligament reconstruction

Gilbert Moatshe, Jorge Chahla, Alex Brady, Grant J. Dornan, Kyle J. Muckenhirn, Bradley Kruckeberg, Mark E. Cinque, Travis Lee Turnbull, Lars Engebretsen, Robert F. LaPrade

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Research Square

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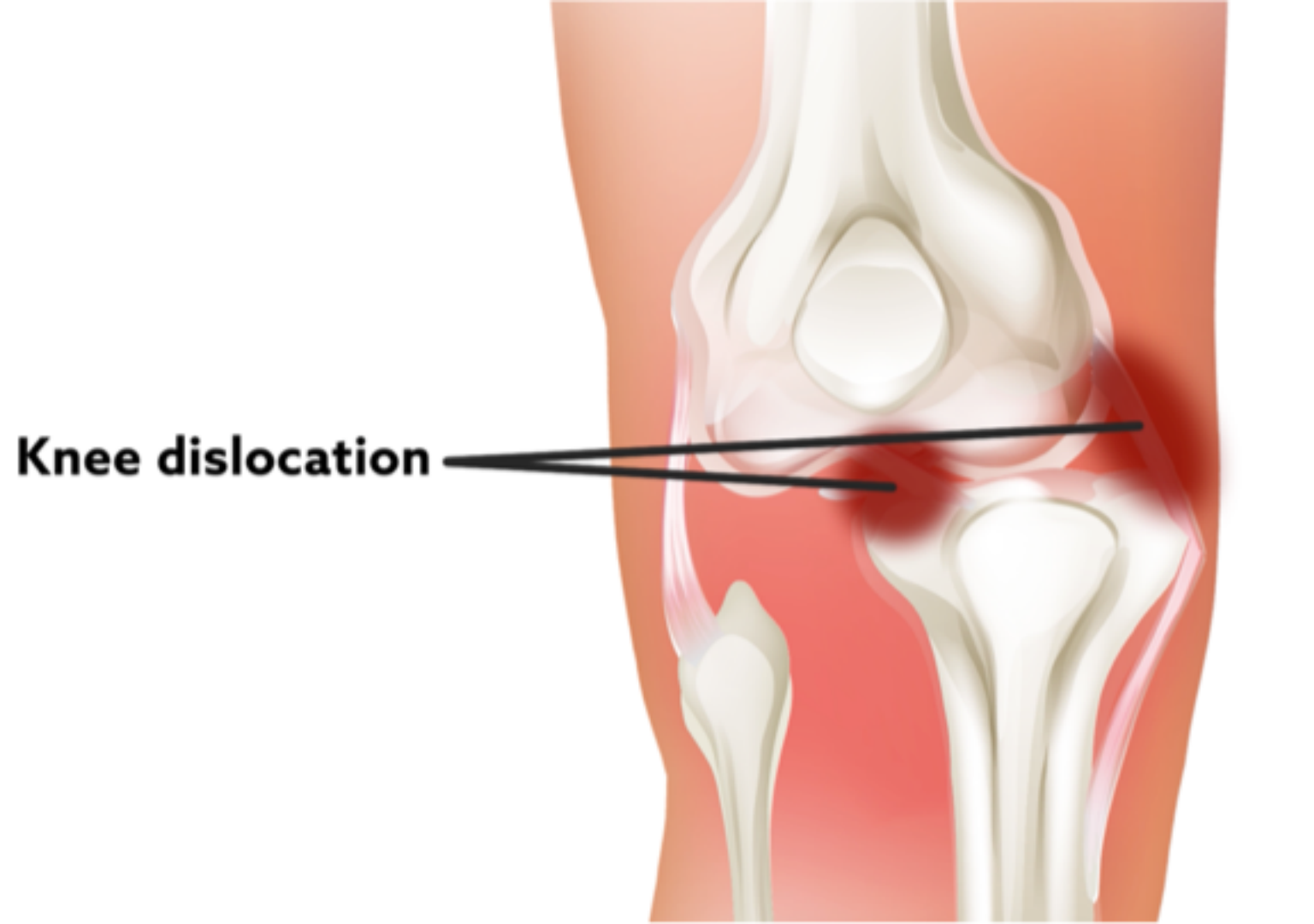
Knee dislocation

Successful graft tensioning

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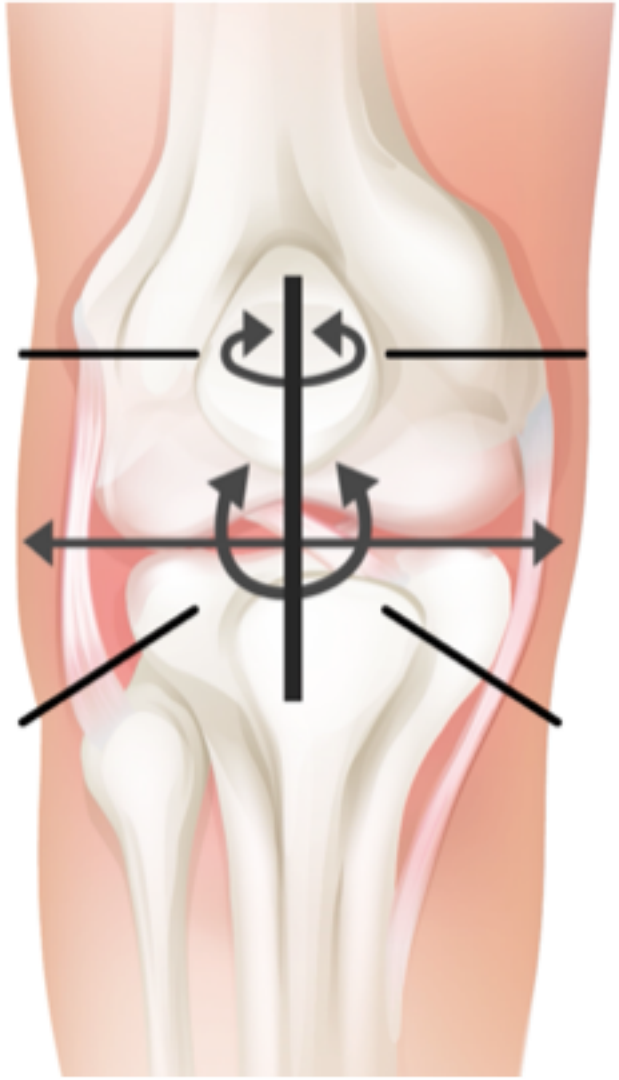


Medial rotation

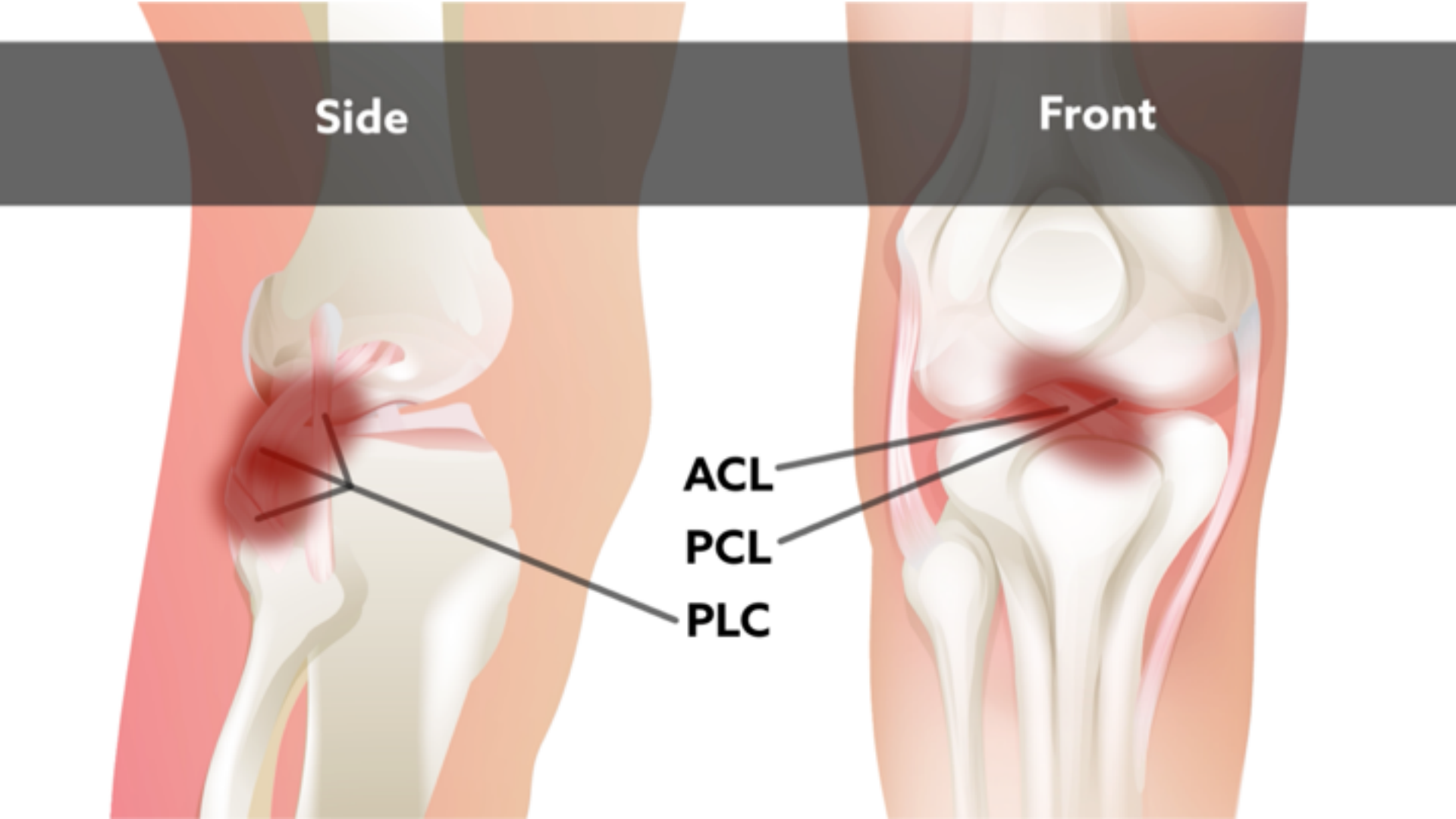
Lateral rotation

Medial shift

Lateral shift

Medial tilt

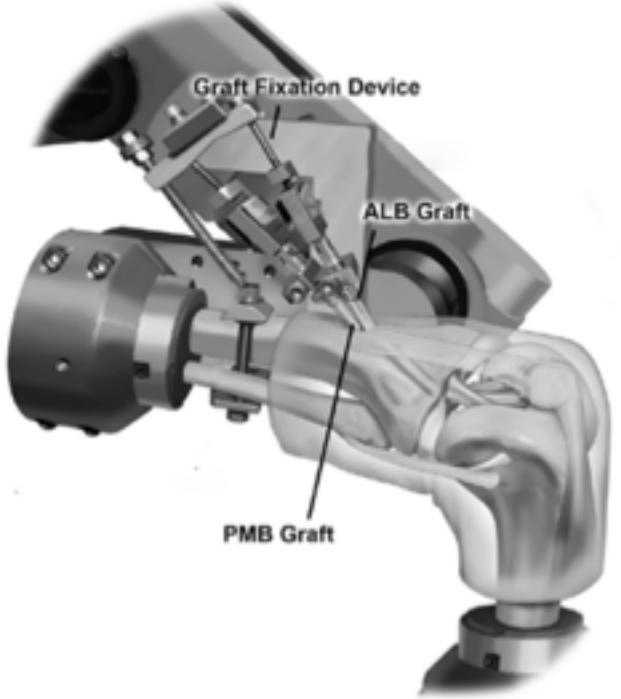
Lateral tilt

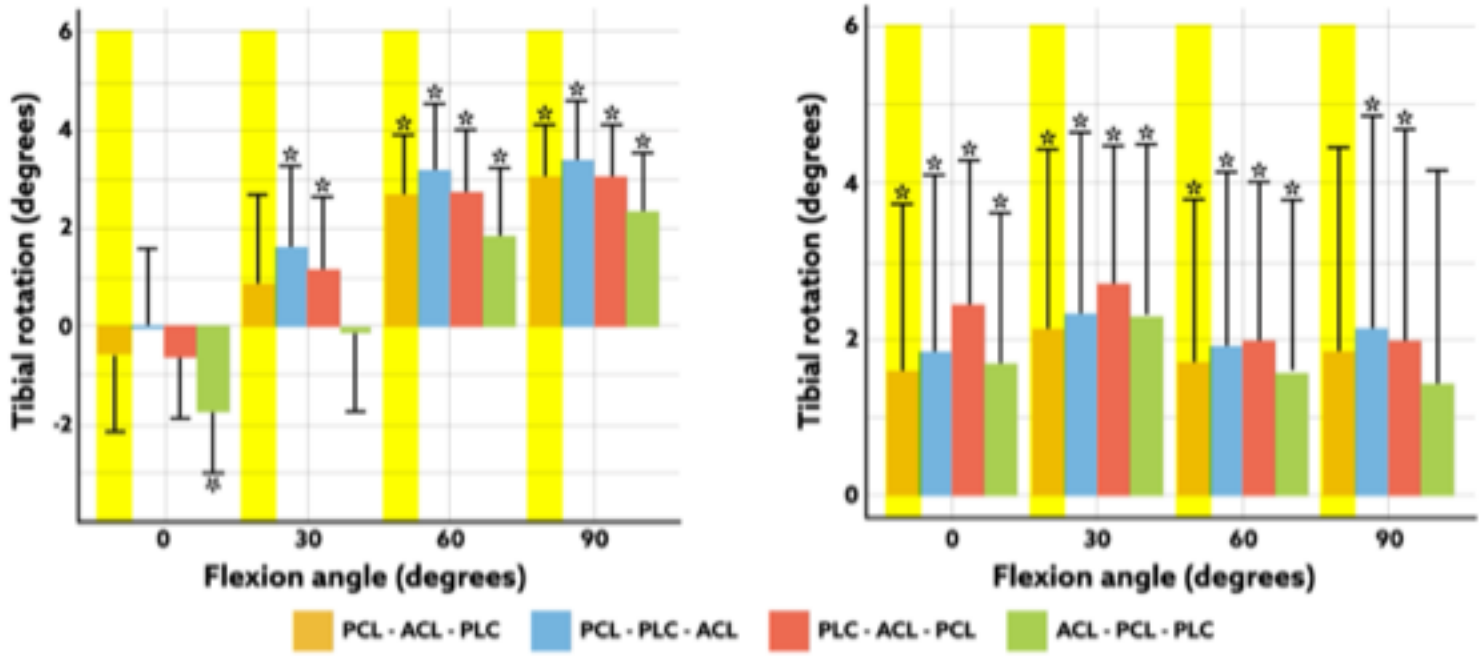

Side
Front
ACL
PCL
PLC

Graft tensioning order

Group	Tension 1	Tension 2	Tension 3
1	PCL	ACL	PLC
2	PCL	PLC	ACL
3	PLC	ACL	PCL
4	ACL	PCL	PLC

ACL - Anterior cruciate ligament
PCL - Posterior cruciate ligament
PLC - Posterolateral corner




Tibial rotation (degrees)
6
4
2
0
-2
0
30
60
90
Flexion angle (degrees)
Tibial rotation (degrees)
6
4
2
0
0
30
60
90
Flexion angle (degrees)
PCL - ACL - PLC
PCL - PLC - ACL
PLC - ACL - PCL
ACL - PCL - PLC