Max Protection PCL Based Multi Ligament Protocol

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Max Protection PCL Based MLKI Protocol:

This program is divided into two components:

1) Initial Program
2) Second collateral ligament specific program

Depending on various patient, injury, and surgical factors, this protocol may be implemented as an initial program (see "Initial Program" below) prior to proceeding with the ACL/Posterolateral Corner or the ACL/MCL protocol.

If the patient has an ACL and/or PCL and Posterolateral corner:

PLEASE REVIEW THE FOLLOWING NOTES FOR KNEE PROTECTION AFTER SURGERY

Notes**:**

- Please review any additional physician notes for adjustments to protocol depending on concurrent pathology (ex. meniscus repair).
- AVOID VARUS force to knee during rehab exercise
- No aggressive PROM to avoid stretching graft tissue
- PT to educate and observe patient to avoid pivoting over the knee
- PT to educate and observe patient to avoid tibial external and internal rotation of the knee
- PT to observe and adjust rehab based on patient response regarding pain and effusions.
- Unlike isolated ACL reconstruction, DO NOT ALLOW HEEL PROP under the ankle. This avoids hyperextension and stretching PLC grafts.
- While at rest, educate patient to keep patella facing straight up (toward ceiling) to avoid the leg rotating outward and putting varus stress on the knee.
- **BICEPS FEMORIS precautions**: In all cases, avoid isolated open chain, hamstring strengthening until 4 months postop
- Range of motion exercises must be performed AT LEAST 4 times a day.

Modalities:

- Ice, compression, thigh high compression sleeve, and other swelling reduction ok to start immediately.
- Ice pack/cryo 20 - 30 min on and 20 - 30 min off
- Quickly transition from any bulky postop dressing to thinner compression dressing by POD2 to facilitate cryotherapy.
- Thigh high compression sleeve at least 6 weeks postop
- E – stim and biofeedback to quad starting POD1

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If the patient has an ACL and/or PCL and MCL:

PLEASE REVIEW THE FOLLOWING NOTES FOR KNEE PROTECTION AFTER SURGERY

Notes**:**

- Please review any additional physician notes for adjustments to protocol depending on concurrent pathology (ex. meniscus repair).
- AVOID VALGUS force to knee during rehab exercise
- No aggressive PROM to avoid stretching graft tissue
- PT to educate and observe patient to avoid pivoting over the knee
- PT to educate and observe patient to avoid tibial external and internal rotation of the knee
- PT to observe and adjust rehab based on patient response regarding pain and effusions.
- Unlike isolated ACL reconstruction, DO NOT ALLOW HEEL PROP under the ankle. This avoids hyperextension and stretching any posterior oblique ligament grafts or repair.
- While at rest and during exercise, educate patient to keep patella facing straight up (toward ceiling) to avoid the leg rotating inward and putting valgus stress on the knee.
- Educate patient to avoid dragging their foot during ambulation with crutches.
- **Semimembranosus precautions**: In all cases, avoid isolated open chain, hamstring strengthening until 4 months postop
- Range of motion exercises must be performed AT LEAST 4 times a day.

Modalities:

- Ice, compression, thigh high compression sleeve, and other swelling reduction ok to start immediately.
- Ice pack/cryo 20 - 30 min on and 20 - 30 min off
- Quickly transition from any bulky postop dressing to thinner compression dressing by POD2 to facilitate cryotherapy.
- Thigh high compression sleeve at least 6 weeks postop
- E – stim and biofeedback to quad starting POD1

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Initial Program:

	Weightbearing	Brace	ROM	Exercise
Phase I Week 0 - 2	NWB, crutches	Immobilizer/brace in full extension at all times	None	Quad sets Patella mobs avoiding skin incisions Ankle pumps No hip work
Phase II Week 2 - 6	NWB, crutches	Immobilizer / brace in full extension at all times except for ROM and exercise	Begin **PRONE** PROM to the knee. ROM 0 – 90 only. AVOID any posterior translational or rotational force to the tibia. Do not roll to side that will result in stress of the collateral ligament reconstruction. Example: Left knee ACL/PCL/PLC. Do not roll to patients right to get prone as this will create a varus force to the knee.	Phase I as above

Once completed with the first 6 weeks, the patient will discontinue the immobilizer and transition to a PCL brace (Ex: Ossur Rebound).

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For associated lateral sided injuries (Lateral collateral ligament, Posterolateral corner):
Begin program below:

****When working on flexion, <u>DO NOT</u> place force through the proximal tibia to avoid a posterior translational force which will place stress on the healing PCL grafts and will lead to laxity. It will likely be better to pull at the ankle when working on terminal flexion. Avoid all motion, positions etc that will result in a posterior force on the tibia.****

Phase III **Week 6 - 8**	Progress to WBAT and wean off crutches	Transition to PCL knee brace. PCL knee brace at all times.	As tolerated If biceps repair performed, avoid biceps femoris activation	Phase II as above Begin stationary bike with low resistance Begin leg press 0 – 70 deg up to 25% body weight
Phase IV **Week** **8 – 12** **Progression to strengthening phase**	WBAT	PCL knee brace at all times.	As tolerated No weight through knee beyond 70 deg flexion.	Phase III as above. Once patient able to tolerate 20 min of walking with normal gait, begin a weightbearing strength program consisting of closed chain. No weight through knee beyond 70 deg flexion.
Phase V **After week 12**	WBAT	PCL knee brace at all times	As tolerated No weight through knee beyond 70 deg flexion.	Continue Phase IV Begin periodized strength program and progress depending on individual patient needs. Consider at least 6 weeks for physiological adaptation between significant rehab changes. No weight through knee beyond 70 deg flexion.

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Phase VI **As early as week 16**	WBAT	PCL knee brace at all times	As tolerated Progress weight beyond 70 deg.	Phase V as above. Progress weight beyond 70 deg. May start jogging and side to side movement if adequate balance and strength determined. Progress strengthening as tolerated **Ok to begin isolated hamstring exercise.**
Phase VII **Return to activity and sport phase**	WBAT	Hinged knee brace until 6 months postop. Can transition to custom low profile brace as available and as needed.	As tolerated	Phase VI as above. Progress exercise and strengthening as tolerated. Usually minimum of 9 months needed prior to return. Athletes will need to pass functional testing. Workers will need to pass functional testing.

Timeline:

Full range of motion and normal gait pattern: by 3 – 4 months
Light jogging: Earliest by 4 months if adequate balance and strength
Side to side movement: Earliest by 4 months if adequate balance and strength
Return to sport: Earliest 9 months and out to 12 months

Protocol adapted from:
LaPrade et al AJSM 2019
Geeslin et al JBJS 2011
LaPrade et al AJSM 2018

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For associated medial sided injuries (MCL):
Begin program below:

****When working on flexion, <u>DO NOT</u> place force through the proximal tibia to avoid a posterior translational force which will place stress on the healing PCL grafts and will lead to laxity. It will likely be better to pull at the ankle when working on terminal flexion. Avoid all motion, positions etc that will result in a posterior force on the tibia.****

Phase III **Week 6 - 8**	Progress to WBAT and wean off crutches	Transition to PCL knee brace. PCL knee brace at all times.	As tolerated Avoid activation of semimembranosus if repair performed.	Phase II as above Begin stationary bike with low resistance Begin leg press 0 – 70 deg up to 25% body weight
Phase IV **Week** **8 – 12** **Progression to strengthening phase**	WBAT	PCL knee brace at all times.	As tolerated Only 0 – 70 during weightbearing exercise to minimize graft strain.	Phase III as above. Once patient able to tolerate 20 min of walking with normal gait, begin a weightbearing strength program consisting of closed chain. No weight through knee beyond 70 deg flexion.
Phase V **After week 12**	WBAT	PCL knee brace at all times	As tolerated No weight through knee beyond 70 deg flexion.	Continue Phase IV Begin periodized strength program and progress depending on individual patient needs. Consider at least 6 weeks for physiological adaptation between significant rehab changes. No weight through knee beyond 70 deg flexion.

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Phase VI **As early as week 16**	WBAT	PCL knee brace at all times	As tolerated Progress weight beyond 70 deg flexion.	Phase V as above. May start jogging and side to side movement if adequate balance and strength determined. Progress strengthening as tolerated Progress weight beyond 70 deg flexion. **Ok to begin isolated hamstring exercise.**
Phase VII **Return to activity and sport phase**	WBAT	PCL knee brace until 6 months postop. Can transition to custom low profile brace as available and as needed. Football lineman should consider custom brace wear to minimize reinjury.	As tolerated	Phase VI as above. Progress exercise and strengthening as tolerated. Usually minimum of 9 months needed prior to return. Athletes will need to pass functional testing. Workers will need to pass functional testing.

Timeline:

Full range of motion and normal gait pattern: by 3 – 4 months
Light jogging: Earliest by 4 months if adequate balance and strength
Side to side movement: Earliest by 4 months if adequate balance and strength
Return to sport: Earliest 9 months and out to 12 months

Protocol adapted from:
LaPrade et al Clin Orthop Relat Res 2012
Marx et al Clin Orthop Relat Res 2012
LaPrade et al AJSM 2018