

MPFL Reconstruction + TTO Protocol

Overview

- Focus on protection of graft and osteotomy fixation in primary phases (Weeks 0 -12)
- Supervised Physical Therapy for 4-6 months
- CPM to help with motion x 4-6 weeks (2-4 hrs/day)
- TROM Brace for 8-10 weeks, WBAT by Week 5-6 (in brace)
- Begin passive ROM + heel slides early on to restore motion + quad control

General Guidelines

- Ok to shower on post-op day 5. NO bathing/soaking knee x 6 weeks
- Sleep with brace locked in extension for 4 weeks
- Motion Goals:
 - Goal of 0-90° by Week 4
 - Goal of full passive flexion and extension by Week 6-7
- NO Active extension x 4 weeks
- Discontinue TROM brace after Week 9-10, Switch to PF brace at Month 3
- Weight-bearing as tolerated after Week 4

Phase 1: Post-Op Through Week 6

Goals:

- Protect graft/osteotomy fixation
- Control inflammation + edema (cryocuff, soft tissue modalities)
- Regain full knee flexion and extension (passive) by Week 6
- Restore normal gait on level surfaces
- Motion Goal: Flexion: 90° by Week 4, 120°-130° by Week 6, Full by Week 8 Brace (Total Length = 9-10 weeks):
- Week 0 - 4: Brace locked in full extension for ambulation AND sleeping

- Weeks 0 - 6: Brace locked in extension with ambulation. Ok to unlock to appropriate degree of flexion when seated/non-weight-bearing
- Week 6-9: Progressively unlock brace WITH weight-bearing (once quad control has returned) beginning in Week 6. Add 30° flexion every 3-4 days after Week 6 with WB. Goal of unlocked brace by Week 8 and discontinued by Week 9.

Weight-Bearing:

- Many patients with PF disorders have poor proximal control: During weight-bearing, prevent dynamic valgus + hip internal rotation to avoid placing abnormal loads on graft
- Week 0-2: TTWB with crutches (with brace on and locked in extension)
- Weeks 3-4: Partial WB (50%). Start with transfers and increase with ambulation
- Weeks: 5-6: WBAT (with brace in extension)
- Wean from crutches by Week 5-6. Begin to unlock TROM brace as noted above after Week 6. Brace unlocked by Week 8 and discontinued by Week 9 as patient demonstrates normal gait mechanics & quad control (no quadriceps lag)

Exercises:

1. Begin patellar mobilization and patellar glides as soon as tolerated
 - Restore normal passive patellar mobility in all directions
2. Maintain full extension (passive extension only x 4 weeks). Work on flexion via passive flexion, AAROM and heel slides (limit to 90°)
 - Goal: 90° flexion by Week 4, 120° by Week 6, full motion by Week 8
3. Restore Core, Hip and Knee Flexion Strength and Function
 - E-Stim
 - NWB exercise targeting hip abductors, external rotators and extensors
 - Once patient is able to isolate muscles with NWB exercise, progress to WB strengthening as tolerated
 - Begin light resisted hamstring strengthening as pain subsides
 - At 4 weeks, begin quad sets and SLR in all planes: Begin with brace on (in extension) until quad strength sufficient to prevent extensor lag. Add weight as tolerated to hip abduction, adduction and extension.
4. Gait training:
 - Facilitate normal gait, pay particular attention to quad-avoidance gait (walking extended or hyper-extended)
 - Facilitated by decreasing pain and swelling, quad strengthening
 - If available, aquatic therapy (once sutures out) to normalize gait, WB + strength.
 - Hamstring, Gastroc/Soleus stretching
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Phase 2: Weeks 7-12

Criteria for advancing to Phase 2:

- Full Extension and Flexion to 90°
- Good quad set, SLR without extension lag
- Minimal swelling/inflammation
- Normal gait on level surfaces

Goals:

- Restore normal gait with stair climbing
- Maintain full extension, ok to progress active extension and quad strengthening. Continue to progress to achieve full flexion
- Increase hip, quadriceps, and calf strength
- Increase proprioception

Exercises:

- Continue with range of motion/flexibility exercise
- Quad sets and quad isometrics at 60° and 90°
- Progressive hip, hamstring, calf strengthening (gradually add resistance to open chain hamstring exercises at week 12)
- Continue Hamstring, Gastroc/Soleus stretches
- Stationary Bike (progressive time and resistance)

Phase 3: Weeks 13-20

Goals:

- Full range of motion
- Begin closed-chain resistance and strengthening
- Begin functional training
- Focus on maintaining neutral lower extremity alignment
- Emphasize postural alignment and symmetric strengthening
- Improve strength, endurance + proprioception of extremity to prepare for sports
- Normalize running mechanics
- Strength goal: 70% of uninvolved lower extremity per isokinetic evaluation

Exercises:

- Initiate CKC quad strengthening and progress as tolerated (Wall sits, Step-ups, Mini-squats, Leg press 90° – 30°, Lunges)
- Neutral lower extremity alignment – Anterior superior iliac spine and knee remain positioned over 2nd toe, with hip in neutral
- Patient should begin wearing PF brace (Months 3-5) to augment muscular control and proprioception

- Advance partial squats and incorporate BOSU ball to facilitate proximal control
- Initiate single-leg activities including single-leg squat, ball toss, etc
- Progress toward full weight-bearing running at about 16 weeks
- Begin swimming if desired
- Progressive hip, quad, hamstring, calf strengthening
- Cardiovascular/endurance training via stairmaster, elliptical, bike & treadmill

Phase 4: Months 5 - 6

Goals:

- Symmetric performance of basic and sport specific agility drills
- Single hop and three hop tests 85% of uninvolved leg
- Quadriceps and hamstring strength at least 85% of uninvolved lower extremity

Exercises:

- Continue flexibility & strengthening program based on individual deficits
- Initiate plyometric program as appropriate for patient's athletic goals
- Agility progression including, but not limited to: - Side steps and crossovers - Figure 8 and shuttle running, One and two leg jumping - Cutting, Acceleration/deceleration/sprints
- Continue progression of running distance based on patient needs
- Initiate sport-specific drills as appropriate for patient

Phase 5: Post-op Months 6-8

Return to sport.