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MPFL Reconstruction with Tibial Tubercle Osteotomy (TTO) Postoperative Instructions Stephanie Mayer, MD

Pre-Operative

Goals

- o Edema reduction
- o Full range of motion
- o Teach quadriceps activation
- o Normalize gait
- Patient should be able to perform all exercises with good proximal control to minimize hip internal rotation and valgus

Phase I: Protection Phase

Precautions

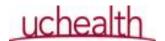
- o Flat foot touch down weight bearing with brace locked in extension for 2 weeks
 - \circ Heel toe gait- flat foot touch down with weight of leg (20lbs)
- Weeks 2-6 post op gradually increase weight bearing with crutches with physical therapy guidance
- Brace locked in extension at all times except for ROM exercises by ATC or PT for first month
- Advance ROM as tolerated to max of 45°
 - \circ 0 45° for 2 weeks starting on post op day 3
 - o 0 90° from post op 2 weeks until 6 weeks
- Advance ROM as tolerated to max of 90° flexion x 6 weeks

Goals

- Protect surgery
- o Pain/Edema reduction
- o Begin and Enhance normalization of quad recruitment
- o Achieve 90 degrees knee flexion by week 6 post op
- 75 straight leg raises without extension lag
- Successful step down test with good control

- Passive and active assisted flexion range of motion to 90 degrees
- Quadriceps sets/SLR in Brace at 0° (assist patient with this exercise until solid quad contraction developed)





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- Seated calf exercises
- o Teach Quad exercises for home program
- o CPM 4 hours a day in increments; (start 3 days post-op 2 weeks post op)
 - 0 45° post op day 3 2 weeks
- Proximal hip and core strengthening (non-weight bearing exercises targeting hip abductors, external rotators, and extensors)
 - Clam shells
 - Prone hip extension
 - Prone edge of table hip extension/abduction/external rotation
 - Straight leg stability ball bridge
 - Deep core training

Manual Therapy

- Scar management
- o Manual flexion mobilization to 90 degrees and extension if limited
- o Patellar mobilization (all directions except lateral)

Criteria to Progress

- o 6 weeks
- o 75 straight leg raises without extension lag
- Successful step down test

Phase II: Neuromuscular Control & Functional Movement Phase

Precautions

 Patient should be able to perform all exercises with good proximal control to minimize hip internal rotation and valgus

Goals

- o Off crutches, D/C brace, and normalize gait mechanics
- o Full range of motion
- o 70% strength on 10 repetition max leg press and single leg squat test with good proximal control
- Recommended assessment of Y-Balance

- Stationary Bike to increase ROM, start with high seat and progress to normal height when able, resistance as tolerated
 - For cardiovascular exercise after full ROM achieved
- Continue proximal strengthening from phase I
- o Bridging progression



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- Shuttle leg press
- Squatting (progressively deeper as patient can control with good symmetry)
- o Band resisted multi-directional walking
- Stability ball leg curls
- Progress to single leg proprioception training and functional exercises as the patient demonstrates sufficient proximal control
 - Single leg standing on progressive unstable surface
 - o May begin aquatic therapy emphasizing normal gait, marching forwards/backwards
 - o Treadmill walking forwards and retro
 - o Closed and Open Chain Tubing exercises
 - Multidirectional hip excursions
 - Step ups (progressive height as patient demonstrates sufficient proximal control)
 - Multi-directional lunges
 - o Eccentric step downs
 - Single leg squatting

Manual Therapy

- o Manual mobilization of flexion and extension if limited
- o Patellar mobilization except for lateral glides
- o Hip mobilization to address any specific impairments

Criteria to Progress

- o Full range of motion
 - o No edema
 - 70% strength on 10 repetition max leg press and single leg squat test with good proximal control
 - o Aim to achieve this at approximately 10-12 weeks

Phase III: Hypertrophy Phase

Precautions

 Patient should be able to perform all exercises with good proximal control to minimize hip internal rotation and valgus

Goals

o 85% strength by end of phase

- Stationary Bike for cardiovascular exercise
- o Continue proximal strengthening and neuromuscular training from phase I and II
- Add resistance to functional movements listed above as patient can perform with good proximal control



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- Squats
- Leg press
- Leg extensions with anti-shear device or cuff weights progress weight as tolerated, keep resistance proximal
- o Multidirectional excursions/Stiff leg dead lifting
- Step ups (progressive height as patient demonstrates sufficient proximal control)
- Multi-directional lunges
- Single leg squatting
- o Stairmaster, Versa Climber, Nordic Track and Elliptical Trainers
- Slide Board start with short distance and progress as tolerated
- o Cable Column ex's retro walking, lateral stepping, NO cross over stepping or shuffling
- Standing leg curls with cuff weights or seated leg curls

Criteria to Progress

 85% strength on 5 repetition max leg press and single leg squat test with good proximal control

Phase IV: Ballistics Phase

Precautions

 Patient should be able to perform all exercises with good proximal control to minimize hip internal rotation and valgus

Goals

- o Run without gait deviations
- >95% strength
- >95% on all hop testing

- Continue proximal strengthening, neuromuscular training, and functional strengthening from phase I, II, and III
- o Jumping progression
 - Initiate with lateral split hops, wall jumps, squat jumps, broad jumps, lateral barrier jumps
 - Progress to controlled tuck jumps
 - Then add front-back barrier jumps
 - o Next add 180 jumps
 - Progress to scissor jump
 - When good form on scissors and pain free can move to single leg hops
 - Patient should not progress to next level until previous level is pain free and with good control





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- o Return to running drills
 - High knees/butt kickers
 - o Exercises to address any specific gait deviations
- Jog-walk interval home program to return to jogging when patient can jog without gait deviations
- Agility training (After good proximal control with single leg hopping exercises)

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Return to sport testing

o 95% or greater

We recommend return to sport testing includes one or more tests in each of the following category:

Strength (ex: 5 Rep Max testing for quad and hamstring, isokinetic testing)

Endurance (ex: Vail Sport Test, SL squat for 2 min, timed mile run)

Balance (ex: Y-balance)

Agility (ex: T-drill, sprint tests)

Neuromuscular control (ex: hop tests, drop jump, tuck jump)

Power (ex: hop tests, max single leg vertical tests) **Sport Specific Movement analysis as needed**

Please feel free to contact the office if you have any other questions at 720-872-4822 or you may email Jordan Teboda, ATC at Jordan.Teboda@cuanschutz.edu.