Knee – MPFL (Medial Patellofemoral Ligament) Reconstruction Rehabilitation Protocol

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Key Surgical Considerations

Following MPFL reconstruction surgery, it is critical to protect both the newly placed graft and the patellofemoral joint during the initial healing period. During the first six weeks after surgery, patients must avoid any movements that place lateral stress on the patella, deep knee flexion, or twisting and pivoting actions. Early on, the rehabilitation focus should be on initiating controlled knee motion and encouraging quadriceps muscle activation, all while ensuring proper patellar tracking is maintained.

Phase I — Protection & Early Mobility (0–2 Weeks)

Goals

The primary objectives during this early phase are to manage pain and swelling, safeguard the graft fixation, restore full passive knee extension, achieve a passive range of motion between 0 and 90 degrees by the end of the second week, and begin activating the quadriceps muscle.

Precautions

The knee brace should be kept locked in extension for all walking activities. Patients must avoid any lateral glide of the patella beyond the neutral position. The initial weight bearing status should be non-weight bearing, progressing to partial weight bearing as tolerated.

Interventions

Treatment interventions include cryotherapy to control swelling, quadriceps sets to stimulate muscle activation, gentle heel slides (not exceeding 90 degrees of flexion), neuromuscular electrical stimulation (NMES), gentle medial patellar glides, and ankle pumps to help maintain circulation.

Criteria to Advance

Progression to the next phase is appropriate when the patient reports pain at or below 3 out of 10, demonstrates at least 90 degrees of knee flexion, shows visible quadriceps activation, and has no more than a trace of knee effusion.

Phase II — Controlled Strengthening (2–6 Weeks)

Goals

The aims of this phase are to gradually restore the full range of motion, normalize the patient's walking pattern, and introduce closed-chain strengthening exercises.

Precautions

Deep squats beyond 90 degrees of knee flexion, as well as twisting and pivoting movements, must be avoided. The use of a knee brace set between 0 and 90 degrees of flexion should continue during ambulation.

Interventions

Recommended exercises and activities include stationary cycling with no resistance, mini-squats (0 to 45 degrees), wall sits, step-ups, straight-leg raises, bridges, and gentle balance training.

Criteria to Advance

To move forward, the patient should have regained a full range of motion (0 to 120 degrees), display a normal walking pattern, experience pain at or below 2 out of 10, and have no knee effusion.

Phase III — Strength & Neuromuscular Control (6–12 Weeks)

Goals

During this period, the focus shifts to enhancing quadriceps and hip strength, and improving dynamic stability and control over valgus knee movement.

Precautions

Patients should not engage in plyometric exercises, cutting motions, or impact activities until they are cleared by a medical professional.

Interventions

Appropriate exercises include leg presses (0 to 60 degrees of flexion), lunges, lateral band walks, single-leg balance training, step-downs, and either elliptical or pool jogging.

Criteria to Advance

Advancement is indicated when the patient demonstrates at least 80% limb symmetry index (LSI) in strength, is able to perform hop-preparatory tasks without pain, and has no signs of swelling.

Phase IV — Functional Restoration & Return to Activity (3–6 Months)

Goals

The primary goals are to restore functional strength, build endurance, and develop the patient's confidence in their patellar tracking.

Precautions

Pivoting and high-impact activities should be avoided until the patient has achieved full strength and neuromuscular control.

Interventions

Interventions include progressive jogging (starting at 12 weeks or later), agility ladder drills, low-level plyometric exercises, closed-chain hopping, and a variety of proprioceptive and agility drills.

Criteria to Advance

To advance further, the patient should reach 90–95% LSI in strength, have no apprehension or effusion, and receive formal clearance from the surgeon, usually at 5–6 months post-operation.

Discharge / 6-Month Clearance Criteria

Before discharge or full clearance at six months, patients should demonstrate full range of motion, no residual pain or swelling, and quadriceps and hip strength at 90–95% LSI or higher. Functional hop and balance tests should show at least 90% symmetry, with normal dynamic valgus control (no knee drift). The patient must also exhibit no apprehension or instability during functional movements and obtain clearance from both the surgeon and physical therapist for unrestricted activity.

Selected References

- Arundale AJ et al. Rehabilitation after MPFL reconstruction: current concepts review. Knee Surg Sports Traumatol Arthrosc. 2018;26(9):2886–2895.
- Stephen JM et al. Rehabilitation and return to sport following MPFL reconstruction. Am J Sports Med. 2019;47(3):618–626.
- Saper MG et al. Outcomes and return to activity after MPFL reconstruction. Orthop J Sports Med. 2020;8(2):2325967119900760.

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