

Extensor Mechanism Reconstruction - Marlex Mesh

Physical therapy protocol - Marlex mesh / monofilament polypropylene reconstruction

Patient: _____ Surgery / procedure date: _____

This is the full Pacific Bone & Joint postoperative protocol. Patient-specific operative and discharge orders take precedence over this default pathway.

Protect the Marlex mesh reconstruction first

This protocol is for extensor mechanism reconstruction after total knee arthroplasty using monofilament polypropylene (Marlex-type) mesh. It is intentionally much more protective than a primary quadriceps or patellar tendon repair. Unless the operative order says otherwise, the reconstruction is immobilized for 12 weeks before knee motion begins.

Item: PB&J default Marlex pathway

Reconstruction: Monofilament polypropylene (Marlex-type) mesh reconstruction after TKA.

Immobilization: Long-leg cast incorporating the foot for 12 weeks; knee in full extension or about 5 degrees flexion per surgeon technique.

ROM: No knee ROM for 12 weeks. At 12 weeks: hinged knee brace full-time; active gravity flexion only.

Weight bearing: Toe-touch in the cast unless the operative order differs. After cast removal, progress weight bearing in the hinged brace locked at 0 degrees for gait as cleared.

Default PB&J Marlex mesh pathway

- Weeks 0-12: long-leg cast incorporating the foot, with the knee held in full extension or approximately 5 degrees of flexion according to the surgeon's casting technique. No knee ROM.
- Use toe-touch weight bearing with walker or crutches during the cast period unless the operative order specifies a different limit. Prevent falls and forced knee flexion.
- Inspect the wound and cast early. Change or revise the cast for fit, skin protection and wound access as directed; the published Marlex technique commonly changes the cast at 2-3 weeks and keeps total cast immobilization for 12 weeks.
- At 12 weeks, transition to a hinged knee brace full-time. Begin only controlled active gravity flexion; do not force flexion or use therapist overpressure.

Staged rehabilitation after the 12-week cast

Weeks 0-12 - long-leg cast

- No knee ROM and no unprotected knee flexion. Keep the cast intact and dry; monitor the edges and skin for pressure problems.
- Train safe transfers, stairs and protected gait. Use ankle pumps and hip/core conditioning that does not lever the knee or compromise the cast. DVT prophylaxis follows the surgical medication plan.

- Do not perform resisted knee extension, straight-leg raises, squats, lunges, step-downs or other exercises that load the reconstruction.
- A fall, cast breakage, sudden pain, forced flexion event or new wound problem requires prompt contact with the surgical team.

Month 4 - weeks 12-16

- Hinged knee brace full-time. Set ROM to 0-45 degrees. Flexion is active gravity-assisted only; no passive stretching or therapist overpressure.
- For standing and walking, lock the brace at 0 degrees. Progress weight bearing only as the surgeon permits; the published technique allows weight bearing in the brace with the knee locked in extension.
- Continue walker/crutches or a cane for fall prevention. Quadriceps isometrics in full extension may begin if cleared, but do not add resisted open-chain knee extension.
- Do not unlock the brace for gait even if the patient feels strong.

Months 5-6 - progressive flexion in the brace

- Month 5, weeks 16-20: increase the brace ceiling to 0-60 degrees. Continue active gravity flexion only and keep the brace locked at 0 degrees for gait.
- Month 6, weeks 20-24: increase the brace ceiling to 0-90 degrees. Continue the same fall precautions and avoid forced flexion.
- Do not accelerate the monthly flexion limits because the knee feels stiff. Protecting mesh incorporation takes priority over early motion.

After 6 months - restore function without stretching the reconstruction

Brace and motion progression

- At approximately 6 months, the surgeon reassesses extensor function, lag, wound status and radiographs as indicated before allowing brace weaning or motion beyond 90 degrees.
- Advance flexion gradually after clearance. Avoid aggressive passive stretching, manipulation-style force or sudden deep flexion.
- Wean the brace only when gait is stable, the reconstruction is clinically secure and there is no new or increasing extensor lag. Continue an ambulatory aid when useful to reduce fall risk.
- Begin controlled closed-chain quadriceps strengthening only after clearance: high sit-to-stand, shallow mini-squat, supported step-up and progressive functional loading. Add resisted open-chain extension later and only if the extensor lag remains stable.

Long-term priorities

Avoid falls and unexpected hyperflexion even after the brace is discontinued. Build quadriceps endurance slowly. Safe walking, transfers and stairs take priority over deep squatting, impact, or kneeling. This Marlex pathway should not be shortened to a routine tendon-repair protocol.

Urgent concerns

Contact the surgical team immediately for a pop, forced-bend event, sudden increase in extensor lag, new inability to actively extend the knee after function had returned, cast or brace failure, wound drainage, fever, increasing redness, a fall onto the knee, or new inability to bear weight.

Clinical references: Abdel MP, Pagnano MW, Perry KI, Hanssen AD. JBJS Essential Surgical Techniques. 2019;9:e21, Extensor Mechanism Reconstruction with Use of Marlex Mesh. Abdel MP et al. J Bone Joint Surg Am. 2018;100:1309-1318, series of 77 reconstructions. The PB&J default follows the 12-week cast and then staged hinged-brace flexion pathway described by the Mayo group.