NYU Langone Health

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Post-Operative Instructions
MISHA Knee System Implantation Procedure

Day of surgery

A. Diet as tolerated
B. Icing is important for the first 5-7 days post-op. While the post-op dressing is in place, icing should be done continuously. Once the dressing is removed on the third post-operative day, ice is applied for 20-minute periods 3-4 times per day. Care must be taken with icing to avoid frostbite. Alternatively, Cryocuff or Game-ready ice cuff can be used as per instructions.
C. Pain medication as needed every 4 hours (refer to pain medication sheet).
D. Make sure you have a physical therapy post-op appointment scheduled during the first week after surgery.

Video instructions for your brace can be found at https://www.youtube.com/watch?v=jyRZkSyFBOQ

First Post-Operative Day

A. Continue ice pack every 1-2 hours while awake or at least twenty minutes prior to and after exercise session.
B. Pain medication as needed.

Second Post-Operative Day Until Return Visit

A. Continue ice pack as needed.
B. Unless otherwise noted, weight-bearing is toe-touching only for the first 4 weeks after surgery. After 4 weeks, you can bear as much weight on the affected leg as you can tolerate. Most patients use crutches for the first 2-3 weeks.
C. Call our office @ 646-501-7223 option 4, option 2 to confirm your first postoperative visit, which is usually about 1-2 weeks after surgery if you have not been given a time. If you are experiencing any problems, please call our office or contact us via the internet at www.newyorkortho.com.

Third Post-Operative Day

A. You may remove surgical bandage and shower this evening. Apply 4x4 (or similar size) waterproof bandage to these wounds prior to showering and when showering is complete apply fresh waterproof bandage. Please ensure that the bandage is large enough to completely cover the incision. You will need to follow this routine for 2 weeks after surgery.

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INTRODUCTION TO MISHA REHABILITATION GUIDELINES

The MISHA Knee System rehabilitation guideline resembles that recommended for a unicompartmental knee replacement (UKA) with the following exceptions:

- Timelines and treatment progressions below may be quicker due to the anatomic location of the MISHA Knee System (extracapsular) and reduced invasiveness of the MISHA Knee System procedure.
- During the early recovery phase (weeks 0 - 6), the emphasis is on wound healing, range of motion, and linear/uniplanar exercises to safely regain patient strength and flexibility.
- It is recommended that all early phase tasks be monitored with respect to wound healing. See Appendix A for further guidance of these skilled activities.

Following early stages of recovery, progression to multi-planar motions can be initiated as long as quality movement patterns are first achieved in sagittal plane tasks and emphasized/maintained in progression of activities. It is recommended that progression of weight bearing tasks focus on normalizing movement patterns of the lower extremity and pelvis, as well as progressive transition from double limb ➔ single limb tasks, sagittal ➔ frontal ➔ transverse planes of motion.

After implantation, there are no device-specific weight-bearing or return to activity restrictions. The goal is for patients to establish realistic expectations for post-treatment activity levels. Each surgeon may recommend different levels of appropriate recreational activities on an individualized basis, depending upon level of disease and pre-operative function; a realistic goal may be achievement of pre-operative activity levels with reduced pain. Therefore, it is highly recommended to discuss anticipated post-operative function and the highest level of activity expected with each patient's surgeon, to ensure appropriate progression through guidelines and adequate preparation for return to activity.

Suggested therapeutic interventions are provided for each stage in Appendix A. While performance of these tasks or similar activities are encouraged, if tasks are unfamiliar to the provider, do not attempt to perform. A glossary of acronyms and terms used throughout these guidelines can be found in Appendix B.

It is strongly recommended that patients schedule their first post-op physical therapy evaluation as soon as their surgical date is known, as initiating physical therapy within 3 - 5 days post-op is recommended.

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Rehabilitation Protocol: MISHA Knee System Implantation Procedure

Weeks	Milestones	Criteria to Progress	Key Considerations	Strength/NM Control/ Functional Training	Stretching / Mobility
Pre-surgery	Review post-op rehab expectations: 1) Immediate WBAT with assistive device 2) Immediate full extension; Progress knee flexion as tolerated with a minimum goal of 90 degrees by 2 weeks	N/A	Self-directed pre-habilitation, or single pre-op visit with physical therapist Review of patient post-operative recreational and fitness goals Quad strengthening, restoration of normal gait mechanics, learn walking with assist devices/crutches	Quad sets Crutch proficiency WBAT Gait mechanics	Educate on flexion and extension exercises
0-1	Provide home exercise program, starting night of surgery; set expectations during pre-surgery visit. Start 1st PT appointment by 3-5 days post-op. (WBAT) for evaluation of progress. Reset goals/ frequency as necessary	First 0 to 96 hours critical to monitor for infection, DVT, edema/ pain control, quad activation prior to safe initiation of WB with crutches	Pain and swelling management (ice, elevation above the heart, compression) Early WBAT Quad activation	Ankle pumps Quad sets with short arc leg raises Glute squeezes	Recommend gentle hamstring stretching (tibial base sits near pes insertion), Gastroc stretching Patella mobilizations Encouraging full knee extension immediately post-op (heel props, towel stretch)

Note: the goal is to allow the medial incision to heal and decrease swelling

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Weeks	Milestones	Criteria to Progress	Key Considerations	Strength/NM Control/ Functional Training	Stretching / Mobility
2-4	Knee ROM 0-full (target 120 deg flex no later than 4 weeks) Goal: discharge assistive device by end of week 2 (Target to achieve by post-op day 30) when ambulating without a limp. *Return to driving:* Requires MD clearance *Return to work:* No earlier than 18 days p/o for good outcomes (3 wks - light duties; 4-6 wks - moderate; 8+ wks heavy/manual labor)	Criteria to d/c assist device: good quad control SLR x 10, no limp, pain and minimal swelling *Return to driving:* Requires MD clearance *Return to work:* Requires MD clearance	**Contact MD if patient has not achieved 90 degrees knee flexion by week 4** Contact MD if patient still requires an assistive device by week four (pain, lack of ROM, etc.) Goal: achieve SL stance 30 sec good proximal stability Scar mobility permitted once incision is closed	Bridges Partial WB squats Mini squats or wall squats Sit-stand Initate step-up Mini lunge Standing 4-way hip Prone knee flexion Multi Angle isometric quad/knee extension Emphasis on quad strengthening	Bike half to full revolutions (ROM only) Lateral hip and IT band mobility Patella mobilizations Extension mobilizations Wall slides with patient overpressure or heel slide with belt (week 4)
4-6	Knee ROM: 0-full *(Smith 2011; Hayes 2015; Ekhtiari et al., 2017)* Ascend/descend stairs with reciprocal gait pattern (Luepongask 2002) Sit <-> stand with symmetric weight bearing between extremities Progressing with community distance ambulation Wk 4: may begin aquatic activities (pool walking or lap swim) as long as incision site is fully healed (freestyle only, no flip turns for lap swim, no butterfly kick)		Independence with functional tasks/ADLs (sit<->stand, bed mobility, ascending stairs) At 6 weeks, encourage and initiate kneeling activities on foam pad Initiate return to light strength activities (gym, etc). Ensure maintained or improved strength in non-operative limb	Elliptical (6 week) Full squat to 90 degrees only Side steps with band Resisted walking Heel taps ASD, lat step down Cone taps Resisted quad/ hamstring Advanced bridges (SL, SBall) SLS progressions (unstable surface, ball toss, eyes closed, etc.)	Continue mobility interventions listed above and address soft tissue restrictions as appropriate (ie. lateral hip, quad, IT band, adductors, etc.)

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Weeks	Milestones	Criteria to Progress	Key Considerations	Strength/NM Control/ Functional Training	Stretching / Mobility
6-8	Knee ROM: full by week 8	Return to heavy labor work duties no earlier than 8 weeks as appropriate per MD	Ok to progress strengthening exercises and functional tasks as appropriate pending no reactive pain or effusion Increase aerobic conditioning / endurance (low impact activities) monitoring reactive edema May progress swimming strokes at this time (only linear strokes (back/fly/free)	Progressive resistance exercises for all LE musculature Pending appropriate mechanics, loading with squats, DL squats, deadlifts, lunges Incorporate multi-planer SL activities and progress unstable surfaces	Continue mobility interventions listed above and address soft tissue restrictions as appropriate (ie. lateral hip, quad, IT band, adductors, etc.)
8-12			Encourage continued progression of low impact activities for cardiovascular fitness and community endurance	Continue progressive strengthening and proprioceptive activities as appropriate	
>12		Return to appropriate recreational activities pending adequate LE strength, ROM, and neuromuscular control: Pass PT/ATC functional progression program (per appropriate professional in state laws) Criteria to initiate jogging: • Full, pain free ROM • Minimal effusion (less than 1+) • 20 forward step downs from 8in step with good mechanics via Forward Step-Down Test Pivoting sports: not until endurance/fitness level >> pre-op level, gait normal, and atrophy reversed.	General guidelines for returning to sport (note that patients should not expect to exceed pre-treatment abilities) • 4 to 6 weeks before swimming, cycling, or golfing, • 2 to 3 months before jogging, • 3 to 6 months before playing racquet sports • at least 6 months before skiing Low impact activities encouraged; potential for high-impact tasks per MD discretion		