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LAKESHORE
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MISHA KNEE SYSTEM

Name _____ **Date** _____

Procedure _____

Procedure Date _____

Frequency 1 2 3 4 5 times/week **Duration** 1 2 3 4 5 6 weeks

Dressing should be changed at first post op therapy visit using ***sterile*** technique. The MISHA incision is typically closed with skin staples. This includes sterile field, sterile gloves, betadine or chlorhexidine skin cleanser and sterile supplies when redressing the wounds. Patients are sent home from surgery with an extra dressing for the therapist to use for first dressing change. When staples are removed, they should be removed with a sterile staple remover.

The MISHA Knee System is an implantable shock absorber that unloads the medial knee to provide pain relief for patients with knee osteoarthritis. It is implanted subcutaneously, but outside of the joint capsule. It consists of a cylindrical absorber located between bases fixed with locking screws to the medial cortices of the distal femur and proximal tibia.

The ISA provides compressive load absorption, and articulating ball-and-socket joints accommodate the natural motions of the knee. By providing a supplemental load path to the affected medial portion of the joint, the MISHA Knee System reduces the amount of load carried by the degenerated or damaged surfaces of the medial knee joint.

The ISA is implanted through a single incision in the subcutaneous tissue of the medial extra-capsular space. The shock absorber spans the joint, superficial to the medial collateral ligament and isolated from the articular surfaces of the knee. Surgical implantation is completed using standard orthopedic tools and techniques in conjunction with single use, sterile instruments unique to the MISHA Knee System.

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, swelling control, 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 below 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 the table below. While performance of these tasks or similar activities is encouraged, if tasks are unfamiliar to the provider, do not attempt to perform. A glossary of acronyms used throughout these guidelines can be found at the end of this document.

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 1 day post-op is recommended.

IMPORTANT PATIENT REMINDERS & EXPECTATIONS

MOVE: Patients should move early and often; a return to high levels of activity is possible with adherence to post-op rehabilitation.

- Patients should be shown that the implant does not restrict their range of motion and that flexing their knee for several minutes at a time, several times a day can be beneficial.
- Patients should be reminded that they can physically achieve high knee flexion immediately post-operatively, but if they don't MOVE their knee may become stiff.

At MINIMUM, patients should achieve 90° knee flexion by two weeks, 120° knee flexion by four weeks, and full knee flexion by six weeks.

Patients should be reminded that they just had surgery:

- This procedure is more invasive than arthroscopy: soft tissue and muscle had to be stretched to put in the implant
- Swelling and soft tissue discomfort are common as the body gets used to the implant. This can last 4-12 weeks or longer depending on how an individual's body recovers

SUGGESTED REHABILITATION PROGRESSION

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 90º by 2 weeks	N/A	1: Self-directed prehabilitation or single pre-op visit with physical therapist 2: Review of patient post-operative recreational and fitness goals 3: Quad strengthening, restoration of normal gait mechanics, learn walking with assistive device	Quad sets Crutch proficiency WBAT Gait mechanics	Educate on flexion and extension exercises

Weeks	Milestones	Criteria to Progress	Key Considerations	Strength/ NM Control/ Functional Training	Stretching/ Mobility
0-2	Provide HEP, starting night of surgery; set expectations during pre-surgery visit. Start 1st PT appt 1 day post-op (WBAT) for evaluation of progress. Reset goals/frequency as necessary. Progress knee ROM as tolerated with a minimum goal of 90º by 2 wks.	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 Encourage full knee extension ASAP post-op (heel props, towel stretch etc)
* Note: the goal is to allow the medial incision to heal and decrease swelling.*					
2-4	Knee ROM 0-full (target 120º 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 s/p for good outcomes (3 wks light duties; 4-6 wks moderate; 8+ wks heavy/ manual labor)	Criteria to d/c assistive device: good quad control SLR x 10, no limp, pain and minimal swelling Return to driving: MD clearance Return to work: MD clearance	Contact MD if patient has not achieved 90º 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 Initiate 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)

Weeks	Milestones	Criteria to Progress	Key Considerations	Strength/ NM Control/ Functional Training	Stretching/ Mobility
4-6	Knee ROM: 0-full Ascend/descend stairs with reciprocal gait pattern Sit to 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 (free style swim only, no flip turns and no butterfly)		Independence with functional tasks/ADLs (sit to stand, bed mobility, ascending stairs) At 6 wks, encourage and initiate kneeling activities on foam pad Initiate return to light strength activities Ensure maintained or improved strength in non-operative limb	Elliptical (6 wk) 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, S ball) 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)
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)

Weeks	Milestones	Criteria to Progress	Key Considerations	Strength/ NM Control/ Functional Training	Stretching/ Mobility
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 NM 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 8" step with good mechanics via Forward Step Down Test	General guidelines for returning to sport (note that patients should not expect to exceed pre-treatment abilities) *4 to 6 weeks before swinning, cycling or golfing *2 to 3 months before jogging *3 to 6 months before playing racquet sports *at least 6 months before skiing		

ACRONYMS

- ASD: anterior step down
- BKFO: bent knee fall out
- Heel taps ASD: heel taps anterior step down
- LAQ: long arc quad
- LE: lower extremity
- S Ball: Swiss ball
- SL stance: single leg stance
- SLR: straight leg raises
- SLS: single leg stance
- SLS progressions: single leg squat progressions
- Standing TKE: terminal knee extension
- NM: neuromuscular

Comments:

Teach HEP_____

Modalities PRN

Every patient's therapy progression will vary to a degree depending on many factors. Please use your best clinical judgment on advancing a patient. If other ideas are considered to improve patient's outcome do not hesitate to call.

Patient's recovery is a team approach: Patient, family/friend support, therapist, and surgeon. Every team member plays an important role in recovery.

Signature_____ **Date** _____