HIP RESURFACING POST-OPERATIVE GUIDELINE

The following Hip Resurfacing Guideline was developed by HSS Rehabilitation. Progressions in this guideline are both criteria-based and individualized to address the patient's goals. Phases and time frames are designed to give the clinician a general sense of progression. This model should not replace clinical judgment.

The rehabilitation program following hip resurfacing emphasizes early, controlled motion to prevent hip stiffness and to avoid disuse atrophy of the musculature. The program should be a balance of managing prior deficits, tissue healing and appropriate interventions to maximize flexibility, strength, and pain-free performance of functional activities.

FOLLOW SURGEON'S MODIFICATIONS AS PRESCRIBED

HIP RESURFACING POST-OPERATIVE GUIDELINES

Pre-Operative Phase

PRECAUTIONS

- Avoid prolonged sitting or standing if painful
- Avoid severe pain with walking, particularly if there is a limp or other compensatory movement
- Maintain hip range of motion (ROM) and perform strengthening exercises, as tolerated
- Modify or minimize activities that increase pain

ASSESSMENT

- Lower Extremity Functional Scale (LEFS)
- Numeric Pain Rating Scale (NPRS)
- Lower extremity (LE) active range of motion (AROM) and passive range of motion (PROM)
    - Note specific deficits to involved hip
- LE strength via manual muscle testing (MMT) or handheld dynamometry (HHD)
- Home environment – define barriers and available resources.
- Pre-operative gait quality, distance and use of assistive device.

TREATMENT RECOMMENDATIONS

- Patient Education:
    - Familiarize with post-operative plan of care, treatment progressions, and mobility
- Optimize hip function prior to surgery, including balance, strength and flexibility
- Functional training for mobility impairments (e.g. dressing, donning/doffing socks, etc.)
- Issue a home exercise program (HEP) that addresses primary impairments

CRITERIA FOR ADVANCEMENT

- Patient able to verbalize post-operative plan of care

EMPHASIZE

- Optimize muscular strength and flexibility
- Familiarize with post-operative plan of care

HIP RESURFACING POST-OPERATIVE GUIDELINES

Acute Care Phase (post-op days 0-7)

PRECAUTIONS

- **Weight bearing as directed by surgeon**
- **Follow precautions specific to surgeon**
    - No precautions: All movements are allowed unless specified by surgeon
    - Standard precautions: Avoid hip flexion greater than 90°, adduction past mid-line, and internal rotation of hip past neutral
- Use appropriate assistive device as directed by surgeon or physical therapist (PT)
- Emphasize rest: prep meals, optimize home environment, recruit family members to assist with activities of daily living (ADLs)
- Avoid severe pain with strengthening and ROM exercises
- Avoid placing a pillow under the knee to prevent hip flexion contracture
- Avoid lying on operated side

ASSESSMENT

- Mental status (person, place, time), as well as fear avoidance behaviors.
- NPRS
- Wound status
- Edema (circumferential measurements; pitting)
- Post-anesthesia sensory motor screening
- Functional status: bed mobility, transfers, gait and stair mobility
- Assess for compromised cardiovascular status/deep vein thrombosis (DVT)

TREATMENT RECOMMENDATIONS

- Patient Education:
    - Weight bearing status
    - Precautions if applicable
- Transfer training
- Gait training with appropriate assistive device and weight bearing status
- Stair negotiation with appropriate assistive device and weight bearing status
- Strengthening exercises including: isometrics for quadriceps and gluteal muscles, ankle pumps, seated knee extension, standing hip extension and abduction, standing knee flexion
- ADL training
- Cryotherapy and elevation of LE for edema control
- Initiate and emphasize importance of HEP

CRITERIA FOR ADVANCEMENT

- Independent with pain and edema management
- Independent with transfers
- Safe ambulation with appropriate assistive device on level surfaces and stairs
- Independent with HEP

EMPHASIZE

- Importance of self-regulation concerning pain and swelling with pain medication, modalities and activity modification
- Independent transfers
- Household ambulation with appropriate assistive device
- HEP compliance

HIP RESURFACING POST-OPERATIVE GUIDELINES

Post-Operative Phase 1 (weeks 1-6)

PRECAUTIONS

- Follow surgical precautions until follow up with surgeon
- Monitor edema and for signs of venous compromise
- Limit volume of activities that increase pain or edema
- Avoid severe pain with therapeutic exercise, ROM, and functional activities, particularly to hip flexors
- Avoid carrying > 20 lbs. and walking > 5 miles
- Delay reciprocal stair negotiation until strength and control of the operated limb is restored
- Encourage self-regulation of pain with activities, rest and modalities
- Consult with surgeon regarding aqua therapy/full submersion of the incision

ASSESSMENT

- LEFS
- NPRS
- Wound assessment
- Edema (circumferential measurements; pitting)
- LE AROM/PROM including surgical hip within precautions if applicable
- LE Strength (MMT)
    - Assess quality of gluteal contraction
- Functional assessments: Timed Up & Go (TUG) Test, 5 Times Sit to Stand (STS), Single leg stance (SLS)
- Lumbo-pelvic dissociation from hip:
    - Supine: posterior pelvic tilt, bent knee fall out
    - Sidelying: clamshell
- ADL ability
- Transfers, gait and stair negotiation

TREATMENT RECOMMENDATIONS

- Patient Education:
    - Weight bearing status
    - Precautions if applicable
- Manual Therapy
    - Soft tissue mobilization: for edema control, pain modulation, and to facilitate movement
    - Scar mobilization when incision is stable

- ROM
    - Focus on mobility impairments, within precautions
- Strength/Neuromuscular Control
    - Focus on hip extensors, abductors and external rotators
    - Exercises that encourage lumbo-pelvic and femoral-pelvic dissociation (e.g., quadruped rocking)
    - Body weighted squatting with focus on hip hinging (<90° hip flexion) and symmetrical weight bearing
- Functional strength
    - Forward and lateral step up and step-down progression, starting with 2-4 inch (“) step
- Proprioception/balance training:
    - Bilateral to unilateral progressions
- Gait training: emphasize normalized gait mechanics
- Modalities:
    - Cryotherapy/elevation as needed to control edema
- Low impact cardiovascular conditioning including stationary bicycle, elliptical, treadmill walking, within precautions – be mindful of seat height on bicycle
- ADL training (e.g. donning/doffing socks)
- HEP progression

CRITERIA FOR ADVANCEMENT

- Able to complete 6” step up with adequate control
- Symmetrical weight bearing with sit to stand transfers
- Pain and edema controlled
- Ambulation on level surface with normal gait pattern
- Independent with necessary ADLs
- Independent with HEP

EMPHASIZE

- Minimize edema
- Maximize independence with ADLs
- Normalize gait pattern
- Communicate appropriately with surgical team if short-term goals are not being met

HIP RESURFACING POST-OPERATIVE GUIDELINES

Post-Operative Phase 2 (Weeks 7-12)

PRECAUTIONS

- Avoid pain with ADLs and therapeutic exercise
- Avoid returning to excessive low impact activity (i.e. walking) and/or high impact activities (i.e. jumping), as this may increase edema and/or pain

ASSESSMENT

- LEFS
- NPRS
- Scar observation and mobility
- LE AROM/PROM with focus on hip external rotation
- Strength Assessment: MMT and/or HHD
- Functional assessments: sit-stand, TUG, 5x STS, SLS
- ADL ability
- Gait and stair negotiation

TREATMENT RECOMMENDATIONS

- Continuation of phase 1 manual/exercise treatments as needed, especially as HEP
- Flexibility/Stretching
    - quadriceps, hamstrings, hip rotators, hip flexors, calf muscles
- Strength/Neuromuscular Control
    - Progressive resistance exercises of bilateral LEs
    - Progress from bilateral to eccentric control to unilateral exercise
    - Lumbo-pelvic and femoral-pelvic dissociation exercises (e.g. fire hydrants, side steps, reverse lunges)
    - Core strengthening (planks)
- Functional Strength
    - Step up/down progression
    - Squats
- Balance/proprioception training progressions
    - Bilateral to unilateral stance
    - Static to dynamic activities
    - Stable to unstable surfaces
- Gait training on incline/decline and uneven surfaces
- Transfer training from floor to stand

- Cardiovascular conditioning: continue stationary bicycle, treadmill, elliptical
- Aquatic exercise if accessible when incision healed and cleared by surgeon
- Review patient's preferred exercise routine for safety/modifications

CRITERIA FOR DISCHARGE

- Hip flexion AROM ≥90° , external rotation ≥45°, extension >0° (negative Thomas Test)
- Limb symmetry index (LSI) > 80% of hip abductors, extensors and external rotators
- Functional, pain-free 8" step down, as a measure of quadriceps and gluteal control
- Ability to transfer from floor to standing
- Independent with LE ADLs such as donning/doffing socks and shoes
- Independent with finalized, comprehensive HEP
- Independent ambulation with normalized gait pattern on indoor and outdoor surfaces
- Reciprocal stair negotiation with minimal/no pain or deviation
- **Discharge OR move onto Phase 3 if the goal is to return to sport or advanced functional activities (as cleared by surgeon)**

EMPHASIZE

- Optimize strength and ROM
- Resume uninhibited ADLs
- Encourage maintaining highest level of physical activity
- Encourage HEP compliance for up to 1 year, or surgeon's recommendation

HIP RESURFACING POST-OPERATIVE GUIDELINES

Post-Operative Phase 3 (weeks 13-52)

Begin only if returning to sport with surgeon clearance

PRECAUTIONS

- Note that expert opinion varies widely on allowable sports – consult with surgeon
- Avoid carrying > 50 lbs. for first 6 months post-operative
- May resume racquet sports at 3-4 months (e.g., doubles tennis, racquetball, tennis hitting with a coach or instructor)
- Avoid high impact sports for first 6 months (e.g., running)

ASSESSMENT

- LEFS
- NPRS
- ROM/Flexibility
    - in particular for specific sport demands
- Strength/functional capacity assessment
- Star excursion balance test
- Sport specific movement assessment

TREATMENT RECOMMENDATIONS

- Sports specific warm up and activities
- Activity specific training
- Endurance training (e.g. elliptical, power walking)
- Low impact agility drills
- Dynamic balance activities
- Consider consultation with sports specific professional

CRITERIA FOR DISCHARGE

- No increase in pain or edema with activity
- Strength, ROM, flexibility throughout the kinetic chain to meet sports specific demands
- Independent with comprehensive, patient-specific HEP
- Transition plan from rehabilitation to sports activities (e.g. trainer, performance coach, gym)

EMPHASIZE

- Progressive return to sport/recreational activity
- Neuromuscular patterning

HIP RESURFACING POST-OPERATIVE GUIDELINES

References

1. Benedetti MG, Berti L, Frizziero A, Ferrarese D, Giannini S. Functional recovery after hip resurfacing and rehabilitation. *J Sport Rehabil*. 2012; 21(2): 167-174.

2. Dayton MR, Judd DL, Hogan CA, Stephens-Lapsley JE. Performance-based versus self-reported outcomes using the Hip Disability and Osteoarthritis Outcome Score after total hip arthroplasty. *Am J Phys Med Rehabil.* 2016; 95(2): 132-138.

3. Dobson F, Hinman RS, Hall M, Terwee CB, Roos EM, Bennell KL. Measurement properties of performance-based measures to assess physical function in hip and knee osteoarthritis: a systematic review. *Osteoarthritis Cartilage.* 2012; 20:1548-1562.

4. Foucher KC, Freels S. Preoperative factors associated with postoperative gait kinematics and kinetics after total hip arthroplasty. *Osteoarthritis Cartilage.* 2015; 23: 1685-1694.

5. Fukumoto Y, Ohata K, Tsukagoshi R, Kawanabe K, Akiyama H, Mata T, et al. Changes in hip and knee muscle strength in patients following total hip arthroplasty. *J Jpn Phys Ther Assoc,* 2016; 16(1): 22-27.

6. Friesenbichler B, Casartelli NC, Wellauer V, Item-Glatthorn JF, Ferguson SJ, Leunig M, et al. Explosive and maximal strength before and 6 months after total hip arthroplasty. *Journal of Orthopedic Research.* 2017; doi:10.1002/jor.23626.

7. Horstmann T, Listringhaus R, Brauner T, Grau S, Mundermann, A. Minimizing preoperative and postoperative limping in patients after total hip arthroplasty. *Am J Phys Med Rehabil.* 2013. 92(12): 1060-1069.

8. Husby, V. S., Helgerud, J., Bjorgen, S., Husby, O. S., Benum, P. & Hoff, J. (2010). Early postoperative maximal strength training improves work efficiency 6-12 months after osteoarthritis induced total hip arthroplasty in patients younger than 60 years. *American Journal of Physical Medicine & Rehabilitation,* 89(4): 304-314.

9. Lyman S, Lee Y, Franklin PD, Li W, Mayman DJ, Padgett DE. Validation of the HOOS, JR: a short-form hip replacement surgery. *Clin Orthop Relat Res.* 2016; 474: 1472-1482.

10. Matheis C, Stoggl T. Strength and mobilization training within the first week following total hip arthroplasty. *J Bodyw Mov Ther.* 2017; doi: 10.1016/j.jbmt.2017.06.012.

11. Morse KW, Premkumar A, Zhu A, Morgenstern R, Su EP. Return to sport after hip resurfacing arthroplasty. *Orthop J Sports Med*. 2021, 9(5), 23259671211003521 DOI: 10.1177/23259671211003521.

12. Okoro T, Lemmey AB, Maddison P, Andrew JG. An appraisal of rehabilitation regimes used for improving functional outcome after total hip replacement surgery. *Sports Med Arthrosc Rehabil Ther Technol*. 2012*;* 4:5. doi: 10.1186/1758-2555-4-5.

13. Pozzi F, Madara K, Zeni JA. A six-week supervised exercise and educational intervention after total hip arthroplasty: a case series. *Int J Sports Phys Ther.* 2017*;*12(2): 258-272.

14. Rasch A, Dalen N, Berg HA. Muscle strength, gait, and balance in 20 patients with hip osteoarthritis followed for 2 years after THR. *Acta Orthop.* 2020*;* 81(2): 183-188.

15. Shaffer SW, Teyhen DS, Lorenson CL, Warren RL, Koreerat CM, Straseske CA, et al. Y-Balance test: a reliability study involving multiple raters. *Mil Med.* 2013*;* 178: 1264-1270.

16. Su EP. Immediate post-op instructions new york: Edwin SU MD NY. Edwin P. Su MD Orthopaedic Hip & Knee Surgeon New York NY. Accessed June 6, 2024. https://www.edwinsu.com/immediate-post-op-instructions.

Created: 6/2020
Revised: 3/2022, 6/2024