HIP PERIACETABULAR OSTEOTOMY POST-OPERATIVE GUIDELINES

The following Periacetabular Osteotomy guidelines were developed by HSS Rehabilitation. Progression is both criteria-based and patient specific. Phases and time frames are designed to give the clinician a general sense of progression. The rehabilitation program following a Periacetabular Osteotomy must be tailored to the surgical procedure(s) performed, taking into account tissue and bone healing properties as well as neuromuscular re-education in the setting of new bony alignment. The program is developed to balance healing with gentle restoration of hip range of motion, muscular balance and stability. Special attention should be given to not irritate the psoas muscle during patient education of activities of daily living and therapeutic exercise.

Follow surgeon’s modifications as prescribed.
HIP PERIACETABULAR OSTEOTOMY POST-OPERATIVE GUIDELINES

Pre-operative Phase

PRECAUTIONS
- Avoid pain with daily activities and therapeutic exercise
- No active hip flexion with a long lever arm, such as straight leg raise (SLR) flexion
- Modify or minimize activities that increase symptoms

ASSESSMENT
- Lower Extremity Functional Scale (LEFS)
- Numeric pain rating scale (NPRS)
- Sensory motor screening
- Lower extremity (LE) active range of motion (AROM) and passive range of motion (PROM)
- Thoracic and lumbar spine AROM
- Deep abdominal and LE strength
- LE flexibility
- Gait
- Current activity level and post-operative goals
- Understanding of post-operative plan of care and current home exercise program (HEP)

TREATMENT RECOMMENDATIONS
- Patient education
  - Post-operative plan of care
  - Activity modifications/limitations
  - HEP
- Bed mobility
- Transfer training
- Gait training with post-operative assistive device and weight-bearing (WB) status
- Cryotherapy
- Hip and core strengthening focusing on lumbopelvic stability through functional movement patterns

GOALS FOR PRE-OPERATIVE PHASE
- Pain controlled with daily activity and therapeutic exercise
- Understanding of post-operative plan and activity modifications
- Independent with HEP
EMPHASIZE

- Familiarization with post-operative plan of care
- Improved deep abdominal and hip muscle activation for lumbopelvic stability during functional activities
- Symptom management
HIP PERRICETABULAR OSTEOTOMY POST-OPERATIVE GUIDELINES
Post-Operative Phase 1: Day 1 - Week 6

PRECAUTIONS
• Avoid irritation of the anterior hip structures
• Avoid prolonged standing and walking to fatigue
• Avoid pivoting or rotating on the operated leg during ambulation
• Avoid prolonged sitting with hips flexed to 90° or greater
• Avoid pain with daily activities and therapeutic exercise
• No active hip flexion with a long lever arm, such as SLR flexion
• Foot flat weight-bearing (FFWB) 20% body weight (BW) for the first 6 weeks
• No open chain isolated hip muscle activation, unless isometric

ASSESSMENT
• LEFS
• NPRS
• Incision status
• Sensory motor screening
• LE PROM, as appropriate
• Deep abdominal and LE strength, as appropriate
• Gait mechanics with appropriate assistive device (AD)
• Functional status
• Understanding of precautions, cryotherapy and HEP

TREATMENT RECOMMENDATIONS
• Patient education
  o Precautions and activity modification
  o HEP
• Bed mobility
• Transfer training
• Gait training on level surfaces and stairs with appropriate AD
  o FFWB 20% BW for first 6 weeks
• Cryotherapy
• HEP (0-4 weeks)
  o Hooklying abdominal bracing
  o Prone abdominal brace with gluteal isometrics (pillow under hips)
  o Quadriceps set (towel under knee)
  o Ankle pumps

• HEP (4-6 weeks)
  o Abdominal brace with shoulder flexion, progress to weighted
  o Hooklying hip external rotation isometric, with band (as tolerated)
  o Supine hip abduction isometric, with band (as tolerated)
  o Bridge, no band progress to band
  o Prone abdominal brace with gluteal isometrics (pillow under hips)
  o Reclined long arc quads (LAQ)
  o Upright stationary bike (4 weeks) with light resistance

CRITERIA FOR ADVANCEMENT
• Pain controlled with daily activity and therapeutic exercise
• Normalized gait pattern with appropriate AD
• Independent with HEP
• Advance to weight bearing as tolerated (WBAT) per surgeon orders after 6-week follow up and review of radiographs
• Start outpatient physical therapy at 6 weeks post-operative

EMPHASIZE
- Protection of surgical site
- Avoiding symptom provocation
- Weight-bearing status
- Independent transfers
- Patient compliance with activity modification and HEP
HIP PERIACETABULAR OSTEOTOMY POST-OPERATIVE GUIDELINES
Post-Operative Phase 2: Weeks 7-12

PRECAUTIONS
- Avoid irritation of anterior hip structures
- Avoid prolonged standing and walking to fatigue
- Avoid pain with daily activities and therapeutic exercise
- No active hip flexion with a long lever arm, such as SLR flexion
- Avoid premature progression of WB status and discharge of AD
- Avoid faulty movement patterns and postures

ASSESSMENT
- LEFS
- International Hip Outcomes Tool (iHOT)
- NPRS
- Sensory motor screening
- LE AROM and PROM
- Thoracic and lumbar spine AROM
- LE and deep abdominal strength, as appropriate
  - Use hand-held dynamometer (HHD), if accessible
- LE flexibility, as appropriate
- Gait
- Balance
- Functional movement patterns and postures
- Current activity level
- Understanding of precautions and HEP

TREATMENT RECOMMENDATIONS
- Patient education
  - Precautions/activity modification
  - Monitoring response to increased activity level
  - HEP
- Gait training
  - WBAT with surgeon clearance, gradual progression from AD as patient demonstrates normalized gait pattern
• Hip PROM and AROM, as tolerated
  o Quadruped rocking
  o Bent knee fall outs
  o Active-assisted ROM (stool rotations) for hip external rotation (ER)/internal rotation (IR)
  o AROM (prone rotations) for hip ER/IR
• Strengthening: Hip and trunk, focusing on neuromuscular control and activation of muscle groups
  o Hip abduction, ER and extension isometrics progressing to open and closed chain strengthening
  o Hip flexor strengthening:
    ▪ Isometrics to heel slides to marching
    ▪ Avoid until asymptomatic, progress slowly, avoid anterior hip irritation and long lever flexion, such as SLR.
  o Bridging progression, double to single leg
  o Deep abdominal strengthening progression
  o Standing resisted core activation with external perturbation
• Balance/proprioception
  o Weight shifts
  o Progress from double limb support to single limb support (different surfaces)
  o Single leg balance (SLB) progression
  o Balance board
• Functional strengthening
  o Leg press: double leg to eccentric
  o Squat
  o Forward step-up progression
  o Forward step-down progression
• Cardiovascular fitness,
  o Stationary bicycle
  o Swimming (arms with pull buoy only)
• Mobility exercises, as indicated
  o 1 and 2 joint hip flexors
  o Hamstrings
  o Gastrocnemius/soleus
  o Foam rolling
• Soft tissue mobilization, as indicated
• Aquatic therapy, as appropriate
• Cryotherapy
• Progressive HEP
CRITERIA FOR ADVANCEMENT

• Pain free with daily activity and therapeutic exercise
• Normalized gait pattern without AD
• Normalized functional movement patterns and postures
• Hip ROM within functional limits
• SLB without deviation for 30 sec
• Able to ascend 8” step with good mechanics and control
• Able to descend 4” step with good mechanics and control
• Independent with HEP

EMPHASIZE

• Avoiding symptom provocation
• Lumbopelvic neuromuscular re-education and strengthening
  • Specific attention should be given to hip abduction and hip extension strengthening
• Normalized gait mechanics
• Normalized functional movement patterns
• Protection from hip flexor irritation
• Patient compliance with activity modification and HEP
HIP PERIACETABULAR OSTEOTOMY POST-OPERATIVE GUIDELINES

Post-Operative Phase 3: Weeks 13-24

PRECAUTIONS

- Avoid irritation of anterior hip structures
- Avoid pain with daily activities and therapeutic exercise
- Avoid faulty movement patterns and postures
- Do not ignore functional progression and cardiovascular fitness

ASSESSMENT

- LEFS
- iHOT-12
- NPRS
- LE PROM and AROM
- Thoracic and lumbar spine AROM
- LE and deep abdominal strength
  - Use HHD, if accessible
- LE flexibility
- Gait
- Balance
- Functional movement patterns and postures
- Current activity level
- Understanding and compliance of HEP

TREATMENT RECOMMENDATIONS

- Patient education
  - Monitoring response to increased activity intensity and volume
  - HEP
- Strengthening: hip and trunk, address any continued impairments
  - Band walk progression
  - Clocks/three-point taps
  - Front and side plank progressions
- Balance/proprioception
  - Continue with single leg balance progression
  - Perturbation training
• Progress functional movements
  o Squat progression: staggered stance to single leg
  o Step down progression
  o Step up progression
  o Dead lift: double leg to single leg
  o Lunges: forward static to dynamic, lateral
  o Chops/lifts
  o Cable column rotations
• Cardiovascular fitness
  o Stationary bicycle
  o Elliptical
  o Swimming
• Flexibility exercises, as indicated
• Soft tissue mobilization, as indicated
• Aquatic therapy, as indicated
• Progressive HEP and initiate gym program

CRITERIA FOR ADVANCEMENT
• Pain free with daily activity and therapeutic exercise
• Normalized functional movement patterns
• 5/5 on manual muscle testing of bilateral LE strength
• Able to single leg bridge with good pelvic stability, control and gluteal activation
• Able to descend 8” stair with good control and mechanics
• Able to perform a single limb Romanian Deadlift (RDL) with good control and lumbopelvic stability
• Full ROM and flexibility to meet demands of activities
• Independent with HEP

EMPHASIZE
• Avoiding symptom provocation
• Normalized functional movement patterns and postures
• Functional strength and endurance progressions
• Protection from anterior hip irritation
• Patient compliance with activity modification and HEP
HIP PERIACETABULAR OSTEOTOMY POST-OPERATIVE GUIDELINES
Post-Operative Phase 4: Months 6-9

PRECAUTIONS
- Avoid hip flexor and capsular irritation
- Avoid pain with daily activities and therapeutic exercise
- Avoid faulty movement patterns and postures
- Avoid drastic changes in volume or intensity of functional progression and cardiovascular fitness

ASSESSMENT
- LEFS
- iHOT
- NPRS
- LE PROM and AROM
- Thoracic and lumbar spine AROM
- LE and deep abdominal strength
  - Use hand-held dynamometer, if accessible
- LE flexibility
- Gait
- Balance
- Functional movement patterns and postures:
  - Single leg stance
  - Single leg bridge
  - Single leg squat
  - Forward step down
  - Single leg RDL
- Current activity level
- Understanding of precautions and HEP
TREATMENT RECOMMENDATIONS

- Patient education
  - Monitoring response to increased activity, intensity and volume
  - HEP

- Continue to address any functional ROM, flexibility, strength, endurance and control deficits
- Progress functional and activity specific balance/proprioception
- Functional strengthening through activity specific movement patterns
  - Multi-plane movement focusing on muscle co-contraction

- Cardiovascular fitness to meet demands of activity
  - Stationary bicycle
  - Elliptical
  - Swimming

- Initiate return to running progression (Anti-gravity treadmill if available)
  - Run-walk intervals
  - Gradually build volume before intensity

- Initiate plyometric progression
  - Bilateral-> unilateral

- Soft tissue mobilization, as needed
- Progress to independent gym program with HEP integration

CRITERIA FOR DISCHARGE OR ADVANCEMENT TO PHASE 5 IF RETURNING TO PLAY

- Pain free with daily activity and therapeutic exercise
- Normalized functional movement patterns and postures to meet the demands of daily and recreational activity
- Full bilateral LE strength
- Full ROM and flexibility
- Independent with HEP and gym program

EMPHASIZE

- Quality of movement
- Functional progression
- SL strength
HIP PERIACETABULAR OSTEOTOMY POST-OPERATIVE GUIDELINES

Post-Operative Phase 5: 9+ Months

PRECAUTIONS

- Avoid hip flexor and capsular irritation
- Avoid pain with daily activities and exercise
- Avoid faulty movement patterns and postures
- Gradual return to activity participation with load and volume monitoring under guidance of physical therapist, referring surgeon, athletic trainer (ATC) and coach

ASSESSMENT

- LEFS
- iHOT
- NPRS
- LE PROM and AROM
- Thoracic and lumbar spine AROM
- LE and deep abdominal strength
  - Use hand-held dynamometer, if accessible
- LE flexibility
- Balance
- Functional assessment
- Current activity level
- Understanding of precautions and HEP

TREATMENT RECOMMENDATIONS

- Patient education
  - Graded return to activity/participation/competition
  - Monitoring response to increased activity level
  - HEP/gym program
- Functional strengthening in activity specific movement patterns
- Agility exercises to address sport specific demands
- Advance plyometric progression
- Cardiovascular fitness to match demands of activity
  - Indoor/outdoor high intensity cycling
  - Elliptical
  - Running speed and volume progression
  - Unrestricted swimming
- Flexibility exercises, as appropriate
• Progress gym and HEP
• Initiate performance training, as appropriate
• Consult with referring surgeon on return to sport timing and any recommendations or limitations
• Collaborate with ATC, coaches and trainers to monitor load and volume as patient prepares for and initiates return to participation/competition

CRITERIA FOR DISCHARGE/RETURN TO SPORT
• Pain free
• Demonstrates movement patterns, functional strength, flexibility, motion, endurance, power, deceleration, and accuracy to meet the demands of sport
• Referring surgeon clearance for return to sport
• Independent with gym program and HEP

EMPHASIZE
• Avoiding symptom provocation
• Sport specific movement patterns, strength, endurance, accuracy and power
• Patient compliance with gym program and HEP
• Communication of expectations and progressions with referring surgeon, athletic trainer and coaching staff
References


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