

REHAB PROTOCOL FOR SINGLE-LEVEL LUMBAR FUSION

GENERAL PRINCIPLES / PRECAUTIONS

- Patient should remain in lumbosacral orthosis (LSO) as needed for comfort
- Limit lifting to 20 pounds for 12 weeks after surgery.
- Avoid postures and movements that overstress fused and adjacent segments to fusion for 12 weeks.
- This protocol, as well as most others, is a general guideline. Patients should not be progressed to the next phase until they demonstrate proper form with all activities and all criteria are met in the current phase.
- Rehabilitation may be started at different times post-operatively. Exercises / treatment should be prescribed based on time since from surgery and patient functional levels.
- Properly assess the whole body and incorporate treatment for loss of mobility and stability throughout. Not doing so can prevent optimal outcomes and increase risks of future injuries.

IMMEDIATE POST-OPERATIVE PHASE (weeks 1-2)

- **Goals:**
 - Retard core muscular atrophy
 - Decrease / minimize pain, muscle spasm and fascial binding
 - Educate in prevention, proper body mechanics and postures
- **Treatment (Days 1-7)**
 - Focus on lumbar stabilization and hip isometrics. The key to getting off to a good start includes sound training of abdominal bracing and pelvic floor contractions using proper cues.
 - Hook lying ab bracing / pelvic floor contractions
 - Supine ab brace / pelvic floor + unilateral heel slide
 - Supine ab brace / pelvic floor + march
 - Glute sets
 - Hip adductor sets
 - Education in neutral lumbar spine body mechanics for sitting, standing, bending, log rolling and transferring supine ↔ sit, sit ↔ stand
 - Soft tissue mobilization, modalities as needed for spasm, fascial binding and pain
- **Treatment (Days 8 – 14)**
 - Continue week 1 exercises and add
 - Supine ab brace / pelvic floor + hip abduction slides
 - Side-lying ab brace / pelvic floor + clam shells
 - Standing ab brace / pelvic floor + rows with tubing
 - Standing ab brace / pelvic floor + symmetrical pull downs
 - Prone hip extension (pillow under pelvis)
 - If unable to do prone hip ext. do Quadruped UE flexion
 - Continue STM and modalities as needed
 - Continue postural / body mechanics education as needed

MODERATE PROTECTION PHASE (weeks 3-6)

- **Goals**
 - Progress stabilization and general conditioning exercises

- Assess and safely treat other areas for loss of mobility and stability. Use careful consideration promote lower extremity flexibility
- **Treatment (Days 15-28)**
 - Continue to initiate ab brace / pelvic floor before each stabilization or strengthening exercise. Add LE flexibility as needed and tolerated.
 - Standing arm bike
 - Standing symmetrical pull downs
 - Standing wall plank w/ inside leg hike
 - Standing anti rotation
 - Seated machine row
 - Prone alternating UE / LE lift (swimmers)
 - Quadruped multifidus (fire hydrant leg lifts and pointer dog)
 - Side-lying hip abduction (top leg in slight hip extension)
 - Side-lying clam shells w/ mini band
 - Side-lying hip ER (lower leg) – h's
 - Side bridge (plank) from knees
 - Supine bridges
 - Supine shuttle lifts
 - Supine hamstring stretch if no increases in pain
 - Supine piriformis stretch if no increases in pain
 - Supine hip flexors, quad stretch if no increases in pain
 - Prone quad stretch with strap if no increases in pain
 - Seated thoracic extension stretch with belt
 - or, supine thoracic stretch over foam roller
 - Unilateral stance
 - eyes closed if able
 - Educate in golfers lift
- **Treatment (Weeks 5-6)**
- Many of the exercise in weeks 3 and 4 will be continued in 5 and 6 but the complexity of the movements will be increased to improve reactivity of core muscles, improve proprioception and hip disassociation
 - Standing arm bike or Elliptical
 - Standing pull downs with hike
 - Standing wall plank w/ inside leg hike (resisted)
 - Standing anti-rotation w/ hike
 - Quadruped alternating UE / LE (pointer dogs)
 - Prone bridges from knees
 - Side-lying hip abduction resistance added
 - Standing clam shells with resistance
 - Side bridge from feet
 - Supine bridges progression
 - Wall Squats with arms up
 - Shuttle on side

MINIMAL PROTECTION PHASE (weeks 7-16)

- **Goals**
 - Promote increasing overall conditioning, strength and core endurance
 - Advance balance and flexibility exercises in preparation for the return to activity phase
- **Treatment**
 - Focus on increasing core endurance
 - Elliptical
 - Pool running

- Supine bridge final progressions
- Prone bridges from toes
- Prone repeated extension
- Resisted pointer dogs
- Bent over rows
- Romanian Deadlift
- Chest passes with medicine ball
- Side bridges w/ hip abduction
- Standing squats with arms up
- Resisted walking forward and sideways
- Continue to progress complexity of movements but maintain neutral L-spine
- Sports / vocation specific exercises

DISCHARGE TESTING / PLANNING (usually performed 4-6 months post-op)

- Based on a patient's age, sex, specific sport / activity, and level (i.e. recreational, amateur, professional) that they are returning to, a decision is made to endorse their return to sport or to ask that the patient refrain from doing so. Currently we strive for the following criteria before fully endorsing going back to more activities:
 - Demonstrate quality and symmetrical movement throughout the body evaluated with comprehensive movement screen or assessment process
 - Symmetrical and acceptable comprehensive scores on CKC UE and / or LE testing
 - Be within one standard deviation of established norms / averages for testing lumbar extensors (Beiring-Sorenson), Side bridging, and plank testing.
- Biomechanical assessment of their performance helps safe return to sport / higher level activity. Patient's may be videoed and analyzed doing activities such as throwing or hitting to see if sound body mechanics are being utilized.
- Not all patients who have undergone lumbar fusion are candidates for functional testing. Those undergoing these tests should be chosen with proper consideration given to what they plan to return to and their general fitness level.
- No matter how well a patient is doing with return to sport testing it is prudent to remember how important time is to full healing and safe return to sport / activity.
- Patients often schedule periodically during this phase to assess their progress and properly change their program until they are deemed safe to return to all activities.