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Postoperative Rehabilitation Guidelines Proximal Bridge-Enhanced ACL Repair (BEAR) with Internal Brace Augmentation

The following protocol is intended as a general guideline for physical therapist, athletic trainer, and patient after arthroscopic anterior cruciate ligament (ACL) primary repair with BEAR Augmentation. These guidelines are designed to facilitate the expedited and safe return to athletic or professional activity and is based on a review of the current scientific principles of knee rehabilitation. For the treating health care provider this protocol should not serve as a substitute for individualized clinical decision making during the patient's post-operative course following ACL primary repair. It should rather take into consideration the individual's physical findings, progression, and possible post-operative limitations. If the therapist or patient requires assistance or encounters any postoperative complication they should consult with your surgeon**.**

Phase I (Postoperative Phase)

Postop Days 1-2

- WBAT with crutches as needed with brace locked in full extension
  - With Combined Meniscus repair: also WBAT
- ROM as tolerated (Limit for meniscal repair patients: 0-110 degrees)
- Focus on Extension (avoid pillow under knee)
- Patellar mobilization (superior-inferior and medial-lateral, 30 seconds each)
- Ankle pumps, SLR, Quad sets
- Slowly progress ambulation if no increased pain or swelling
- Aggressive Cryotherapy (20 min/hour, reconstitute/change cooling device frequently)

Start supervised physical therapy within 5-10 days after surgery

Postop Days 3-28

- WBAT with brace locked in extension, unlock brace when sitting
  - Meniscus repair-WBAT
- Unlock brace for ambulation if good quad control (per PT, usually around 2-3 weeks)

- Gait training
- ROM Goal 0-120
  - Continue emphasis on full extension (support heel at night, prone hangs, extension sitting)
  - CPM 3-4h/day (may use at night), discontinue when ROM 0-120 degrees
- Restore quadriceps control
  - Quadriceps sets, SLR, ankle pumps
  - **Early electrical stimulation/NMES/Laser Therapy**
- Closed kinetic chain exercises start after post-op day 10
  - Mini-squats on Total Gym
- Hamstring curls, hip abductor/gastrocnemius strengthening
- Aggressive patellar mobilization
- Start Stationary bike when ROM allows
- Cryotherapy after treatment and several times a day at home
- ROM limit for patients with simultaneous meniscal repair: 0-110 degrees for 4 weeks

Phase II (Initial Rehabilitation Phase)

Postop Weeks 5-8

- Goal: FULL ROM by week 4-6
- Active knee extension with progressive resistance (start at 5 lbs and progress 2-3 lbs/week)
- Open kinetic chain exercises (0-80 degrees)
- Stationary bike
- Elliptical if strenuous biking tolerated (usually 7-8 weeks)
- Initiate proprioceptive/neuromuscular exercises
  - Single limb stance
  - Lunge exercises on uninvolved side
  - Step ups lateral/anterior/posterior
- Hamstring, hip abductor, gastroc/soleus strengthening
- Pool exercise program after appropriate wound healing if pool access available
- Cryotherapy/Estim after treatment and at home daily

Phase III (Progressive Strengthening Phase)

Postop Weeks 9-16

- Maintain full ROM
  - flexion and extension equal to contralateral side
- Continue all exercises from Phase II
- Progressive hip abduction/adduction/flexion/extension strengthening
- Progressive Hamstring strengthening
- Progressive squatting/leg press program
  - Limit squatting <110 degrees with maximal body weight for 3 months after meniscal repair
  - **Avoid squatting/leg press if with patellofemoral pain → resume isometric exercises**

- **Initiate Blood Flow Restriction Training (BFT) if available**

Cardiovascular endurance training including elliptical, bike, swimming, stepper if no pain or swelling, start treadmill running if strenuous elliptical tolerated well

- Retrograde treadmill ambulation
- Continue with Pool program/Aguajogger if available
- Balance board squats
- Progressive Step-down Program
- Initiate light agility drills at week 12-16 if good ROM/Quad+Hip abductor control/Stability
  - NO CUTTING DRILLS
  - Lateral shuffles
  - Jump rope
  - Fitter
  - Bounding
  - Fast steps
- Initiate simple Sport Specific Activities
  - Shooting a basketball/hitting a tennis ball of wall/hand eye coordination

Phase IV (Return to Activity Phase)

Postop weeks 17-24

- Enhance strength, flexibility, endurance, and neuromuscular control
- Initiate plyometric drills
- Initiate running program
- Advance sport-specific agility exercises
- Start sport-specific skill training Start supervised physical therapy within 3 days after surgery
- Continue with NO CUTTING or PIVOTING DRILLS

Postop weeks 25-36

- Normalize strength, flexibility, endurance, and neuromuscular control
- Advance plyometric program
  - Controlled Jumping
  - Controlled bounding for distances
- Progress running and agility program
- Initiate cutting, jumping drills
- Continue sport-specific skill program and functional progression
- Gradual return to sport (MD directed)
- Single leg hop test (goal >90%), Quad Index (>90 %), no functional complaints
- Complete functional knee scores (subjective scoring, IKDC, Tegner, Lysholm, KOOS)

Please do not hesitate to contact Dr. Mithoefer's office to discuss the individual patient's findings and progress at any time.