St Luke's Orthopaedic Specialists

NICHOLAS J. AVALLONE, M.D.

www.dravallone.com

Rehabilitation guidelines for arthroscopically assisted ACL reconstruction with patellar tendon autograft

DISCLAIMER: The intent of this protocol is to provide therapists with guidelines for rehabilitation of patients that have undergone surgery with Dr. Avallone. It is based from the protocol presented in **JOSPT 42 (7) 601-614** and is specific to his operative technique. It is not intended to serve as a substitute for sound clinical decision making. Therapists should consult with Dr. Avallone if they require assistance in the progression of post-operative patients.

Post-Op Days 1 through 14

Modalities

- Ice as indicated; no more than 15 minutes each hour
- Biofeedback, NMES, etc to overcome quad inhibition

Bracing/Assistive Device

- WBAT with crutches. D/C crutches when patient is FWB in locked knee brace and ambulating safely and confidently.
- Knee brace is worn at all times **locked in full extension** including ambulation and sleeping. Knee brace may be unlocked in the sitting position 2-3 days post-op at therapist's discretion. The only times that the brace may be removed is during for therapeutic exercises (except as noted in the exercise section), while bathing (seated with knee extended), and when on the CPM.

Flexibility Exercises

- Flexibility exercises: hamstrings, quadriceps, gastroc/soleus, ITB, and hip flexors

Range of Motion Exercises

- ROM GOALS: 0° to 110° of knee motion, stress full extension
- CPM 2 hours twice per day; increase ROM as tolerated until 0°-110° is achieved; then discharge
- Supine and prone sustained extension stretching
    - Educate patients on the importance of achieving and maintaining full knee extension. They should never to put anything underneath the knee to support it in flexion when lying supine or sitting with the knee stretched out in front of them.
    - When lying in bed the heel should be above the knee and the knee above the level of the heart to reduce post-operative edema.
- Stationary bicycle
- Supine wall slide

Strengthening/Neuromuscular Control Exercises

- Seated hamstrings (carpet drags) / prone hamstring curls / sports cord knee flexion
- Isometric quadriceps contraction in complete/supported extension at 0° and 65°. Use NMES until quad set is adequate to perform a SLR.
- SLR x 4 directions without brace if patient is **without** extension lag, and progress to resistance above the knee. If a lag exists, the patient should perform SLRs with brace locked (active or active assisted as necessary)
- Long arc quadriceps strengthening (90˚-45˚)

Other

- Soft tissue mobilization or scar
- Patella mobilizations

Cardiovascular/Conditioning/General Exercises

- Airdyne and UBE aerobic program
- Upper body and core strengthening program

EXPECTATIONS

- ROM: 0°-110° (CPM discharged)
- Patient with sufficient neuromuscular control to perform a SLR without extension lag

Post-op Days 4-7

- Bilateral "mini-squats from 0˚ to 40˚

MD VISIT SCHEDULED 10-14 DAYS POST-OP: please provide a progress report including functional outcome questionnaire such as the Lysholm Knee Score, measurements of knee range of motion and an assessment of quadriceps control e.g. the ability to perform a quad set, straight leg raise, etc.

Post-Op Days 15 through 20

Continue with the above program

Bracing

- Continue with locked brace for sleeping
- Unlock brace for sitting; however, the PT must monitor for loss of extension ROM once patients are allowed to rest in flexion when sitting
- Unlock brace for ambulation if SLR without lag

Strengthening/Proprioception

- PWB balance activities
- Progress to semi-squats 80° as tolerated
- Bilateral Leg Press from 0° to 40° and progressing to 80° as tolerated; resistance as tolerated
- Bilateral calf raises

Post-Op Days 21 through 27

Continue with the above program

Bracing: discontinue brace at night IF extension range of motion is maintained

Strengthening/Proprioception

- Step-ups
- Heel walking
- FWB balance and proprioception exercises (provided adequate quad control)

Post-Op Days 28 through 34

Bracing

- Discontinue brace for ambulation. Monitor for loss of extension range of motion
- Use McConnell taping as appropriate for patellofemoral pain

Strengthening/Proprioception

- Terminal knee extension in standing (15° - 0°)
- Unilateral eccentric leg press
- Stairmaster as tolerated
- Lateral shuffles
- Double leg hops
- Pro Fitter & slide board
- Aquatic program if patient not progressing as expected on land and incision fully healed

MD VISIT SCHEDULED 6 WEEKS POST-OP: please provide a progress report including functional outcome questionnaire and measurements of knee range of motion and strength. If the patient is having difficulty with performing any of the above activities, with compliance, or you or the patient have any other special concerns please make note of it in your report.

Post-Op Weeks 6 through 7

Strengthening/Proprioception

- Single-limb hopping on leg press
- Eccentric "star" taps
- Eccentric step downs
- Introduce perturbation progression
- Introduce isokinetic program if available - progress as tolerated (monitor for patellofemoral pain)

Post-Op Weeks 8 through 11
Strengthening/Proprioception

- Long arc quads 90° to 25°
- Single leg hops on ground
- Unilateral eccentric leg press
- Progress step height for step ups/down
- BOSU or stability step-ups
- Unilateral "mini-squats" (0° - 40°)
- Advance in perturbation training

MD VISIT SCHEDULED 12 WEEKS POST-OP – Authorization required for higher level activities

- Please provide a progress report including functional outcome questionnaire and measurements of knee range of motion and strength.
- If available include isokinetic test, KT-1000 results
- If the patient is having difficulty with performing any of the above activities, with compliance, or you or the patient have any other special concerns please make note of it in your report.

Post-Op Weeks 12 through 19
Strengthening/Proprioception

- Plyometrics program; box jumps, scissor jumps
- Jogging straight ahead
- Jumping rope
- Lunges sideways/forward

Post-Op Weeks 20 through 23
Strengthening/Proprioception

- Cutting/Agility drills and sport-specific training
- Reactive jumping

MD VISIT SCHEDULED 6 MONTHS POST-OP – Authorization required for full return to sport activities

- Please provide a progress/discharge report including functional outcome questionnaire and measurements of knee range of motion and strength.
- If available include isokinetic test, KT-1000 results
- If the patient is having difficulty with performing any of the above activities, with compliance, or you or the patient have any other special concerns please make note of it in your report.

Post-Op Weeks 24+ – Return to Sport

- Dr. Avallone will determine at 6 month visit the necessity of bracing and readiness for advancing to full sport activities
- Begin sport specific training if permitted