ACL Reconstruction Using Quadriceps Tendon Autograft

Criterion Based Postoperative ACL Quadriceps Tendon Reconstruction Rehabilitation

*Because this procedure only requires harvest of a portion of the quadriceps tendon rehabilitation can begin with minimal soft tissue limitations. Watch for excessive quadriceps pain with exercises, however immediate weight bearing and flexion range of motion have no real restrictions.*

PHASE I (PREOPERATIVE)

Goals
Restoration of ROM both active and passive
Reduced knee swelling
Reduced knee pain

Weight bearing status
Weight bearing as tolerated, crutches as needed

Exercises
Extension stretching (heel props, towel stretch, prone hangs)
Flexion exercises (heel slides, supine flexion hangs)
Straight Leg Raise x 4
Quadriceps sets
Hamstring sets
Leg press
Mini squats
Step downs

Criteria to Progress to Phase II
Surgical reconstruction
Restoration of ROM
Restoration of quadriceps and hamstring strength
Minimal pain and swelling

PHASE II (DAYS 1-14)

Goals
Restoration of ROM both active and passive
Full extension and 110° flexion by end week 1
Full extension and 130° flexion by end week 2
Reduced knee swelling
Reduced knee pain

**Weight bearing status**
Weight bearing as tolerated, crutches as needed
Full weight bearing with no antalgic gait by 3 weeks

**Exercises**
Extension stretching (heel props, towel stretch, prone hangs)
Flexion exercises (heel slides, supine flexion hangs) as tolerated
Straight Leg Raise x 4
Quadriiceps sets in full extension with or without electrical stimulation
Hamstring sets
Ankle pumps
Weight shifting as tolerated
Continuous Passive Motion
Standing terminal knee extension (Knee lockouts)
Cryotherapy for edema and effusion

**Criteria to Progress to Phase III**
Clean and dry wound/incisions
Restoration of ROM (Full extension and 130° flexion)
Straight leg raises with minimal extensor lag
Improved quadriiceps and hamstring strength
Minimal pain and swelling

**PHASE III (WEEKS 2-4)**

**Goals**
Restoration of ROM both active and passive
Maintain full weight bearing
Improve balance and proprioception
Minimize knee swelling
Minimize knee pain

**Weight bearing status**
Full weight bearing with no antalgic gait by 3 weeks

**Exercises**
Previous exercises
Isometric quadriiceps sets against resistance at 0°, 90° and 60°
Closed kinetic chain squats or leg press bilateral 0-60°
Stationary bike with gradual increase in resistance
Step-downs
Leg press
Mini squats
Calf raises bilateral
Band exercises (lateral walking, monster walks)
Single leg balance drills
Bilateral single plane balance board

Criteria to Progress to Phase IV
Restoration of ROM (Full extension and 130° flexion)
Equal motion bilaterally
Normal gait without assistive device
Single leg stance without assistance > 30 seconds
Minimal pain and swelling

PHASE IV (WEEKS 4-12)

*PRECAUTION - Graft at weakest point during this period. No impact loading activities such as jumping, running, pivoting, or cutting.

Goals
Maintenance of ROM both active and passive
Full bilateral equal flexion and extension
No knee pain or swelling
Preparation for activities

Exercises
Previous exercises
Calf raises bilateral progressing to unilateral
Squats and leg press 0-60° bilateral progressing to unilateral
Lunges 0-60°
Balance board multiple planes bilateral progressing to unilateral
Single leg balance eyes open/eyes closed
Ball toss while in single leg stance
Sports cord resisted walking
Single leg deadlift
Core strengthening

Criteria to Progress to Phase V
Restoration of ROM (Full extension and 130° flexion)
Equal motion bilaterally
Normal gait without assistive device
Single leg stance without assistance > 30 seconds
Ability to bilaterally squat to 60° with equal weight bearing
Minimal pain and swelling
**PHASE V (WEEKS 12+)**

**Goals**
Maintenance of ROM both active and passive  
Full bilateral equal flexion and extension  
No knee pain or swelling  
Preparation for activities

**Exercises**
Previous exercises  
Calf raises unilateral  
Progressive resistance for squats, leg press and lunge  
Continue core exercises  
Advance hamstring exercises  
Advanced balance exercises  
Start functional drills such as ladder drills, carioca at weeks 10-12

12 weeks +  
Mini-jumping exercises progressing to hopping  
Perturbation exercises on balance board  
Increase speed of functional drills  
Functional activities such as jump shot, kicking soccer ball, ect.  
Begin progressive running program

**Criteria for Return to Activity**
Restoration of ROM (Full extension and 130° flexion)  
Equal motion bilaterally  
Normal gait  
Negative Lachman’s test with excellent stability  
Single leg stance without assistance > 30 seconds  
Ability to bilaterally squat to 60° with equal weight bearing  
Minimal pain and swelling  
80% bilateral symmetry and with reported norms on scores on functional tests