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ACL SEMITENDINOSUS RECONSTRUCTION

This rehabilitation protocol has been developed for a patient following a ACL Semitendinosus Reconstruction. It is extremely important to **protect the repair for 6 weeks** post – operatively to allow for appropriate healing to take place. This protocol has been divided into several phases, each of which may vary slightly based upon the individual patient and his or her special circumstances.

Goals of the Surgical Procedure and Rehabilitation:

- Control Pain and Inflammation
- Maintain the Integrity of the repair
- Prevent Muscular Inhibition
- Regain normal lower extremity strength and endurance
- Regain normal knee range of motion
- Achieve the highest level of function based on both the physician and the patient's individual goals.

Important Post – Operative Signs to Monitor:

- Swelling of the knee and surrounding soft tissue
- Abnormal pain response, hypersensitive – an increase in night pain
- Severe Range of Motion Limitations
- Weakness in the lower extremity musculature

Returning to Activity:

*To safely and most efficiently return to normal or high level functional activity the patient requires adequate strength, flexibility, and endurance this **will require both time and clinical evaluation**. Functional evaluation including strength and range of motion testing is one method of evaluating a patient's readiness to return to such activity. Returning to intense activities following an ACL Semitendinosus Reconstruction will require both a strenuous strengthening and range of motion program. The patient will also have to wait a period of time to allow for appropriate tissue healing. Symptoms such as pain, swelling, or instability should be closely monitored by the patient.*

PHASE I: IMMEDIATE POST – SURGICAL PHASE (Week 1)

Day 1:

- Brace:
 - Locked at zero degrees extension for ambulation
- Weight Bearing:
 - Two Crutches as tolerated – (50% weight bearing)
- Range of Motion:
 - Full Passive Extension (0 Degrees)
 - Up to 90 degrees Flexion
- Exercises:
 - Ankle Pumps
 - Passive Knee Extension to Zero degrees
 - Straight Leg Raise (Flexion)
 - Hip Abduction / Adduction
 - Quad Sets
 - Hamstring Stretch
- Muscle Stimulation:
 - Electrical Muscle Stimulation to Quadriceps
- Cryotherapy for Pain and Inflammation
 - Ice 15 – 20 minutes every hour
 - Elevate with Knee in Extension

Day 2 to Day 7:

- Continue use of Brace:
 - Locked at zero for ambulation
- Weight Bearing:
 - Use two Crutches as tolerated
- Range of Motion:
 - Patient can be out of brace 4-5 times daily to perform self ROM 0-90 degrees
- Exercises:
 - Intermittent ROM Exercises (0-90 degrees)
 - Patellar Mobilization
 - Ankle Pumps
 - Straight Leg Raises (Hip: Flexion/Abduction/Adduction/Extension)
 - Standing Weight Shifts
 - Knee Extension 90 degrees to 40 Degrees
 - Continue Quad Sets
- Muscle Stimulation:
 - Electrical Muscle Stimulation to Quadriceps
- Cryotherapy for pain and inflammation:

- Ice 15-20 minutes every hour
- Elevate with knee in extension

PHASE II: MAXIMUM PROTECTION PHASE (WEEKS 2 – 8)

Goals:

- Absolute Control of external forces and protect the graft
- Nourish Articular Cartilage
- Decrease Swelling
- Prevent Quad Atrophy

Week 2 to Week 3

- Brace:
 - Locked at Zero degrees for Ambulation Only
 - Unlocked for Self ROM (4-5 times daily)
- Weight bearing:
 - As Tolerated (Goal to discontinue crutches 7-10 days post op)
- Range of Motion:
 - Self ROM (4-5 times daily)
 - Emphasis on maintaining 0 degrees of passive extension
- Exercises:
 - Multi Angle Isometrics at 90, 60, 30 degrees
 - Straight Leg Raises (Hip: Flexion/Abduction/Adduction/Extension)
 - Mini Squats (0-40 degrees)
 - Hamstring Curls (Isometrics)
 - Lunges
 - Leg Press (0-60 degrees)
 - PROM / AAROM (0-105 degrees)
 - Patellar Mobilization
 - Hamstring and calf Stretching
 - Proprioception Training
 - Well Leg Exercises
 - PRE Program:
 - Start with 1 lb. and progress 1 lb. per week
- Swelling Control:
 - Ice
 - Compression
 - Elevation

Week Four

- Brace:

- Brace locked at zero for ambulation if patient does not have good quad control
- Unlocked for self ROM (4-5 times per day)
- Range of Motion:
 - Self ROM (4-5 Times per day)
 - Emphasis on maintaining Zero degrees passive Extension
- Exercises:
 - Same as week 2-3
 - PROM 0 – 125 Degrees
 - Bicycle for ROM stimulus and endurance
 - Pool walking program
 - Swimming
 - Initiate eccentric quads 40 – 100 (Isotonic only)
 - Leg Press (0 – 60 degrees)
 - Emphasize CKC Exercises

Week 5 to Week 6

- Brace:
 - Discontinue use of Drop Locked Brace
- Exercises:
 - Same as week 4
 - Hamstring curls (Light Resistance)
 - Pool Program
 - AROM 0 – 115 degrees
 - PROM 0 – 125 degrees
 - Emphasize CKC Exercises
 - Bicycle / Stairmaster
 - Proprioceptive Training

Week 6 to Week 8

- Brace:
 - Consider use of functional brace
- Exercises:
 - Continue PRE Program

PHASE III: MODERATE PROTECTION PHASE (WEEKS 10 – 16)

GOALS:

- Maximal strengthening for quads / lower extremity
- Protect Patellofemoral Joint

Week 10

- Exercises:
 - Knee Extension (90 – 40 Degrees)
 - Leg Press (0 – 60 degrees)
 - Mini Squats (0 – 45 degrees)
 - Lateral Step Ups
 - Hamstring Curls
 - Hip Abduction / Adduction
 - Toe / Calf Raises
 - Bicycle
 - Stairmaster
 - Wall Squats
 - Lunges
 - Pool Running
 - Proprioceptive Training
 - Continue PRE Progression (No Weight Restriction)

Weeks 12 - 14

- Exercises:
 - Continue all exercises listed above
- Maintain / Begin Running
 - With Physician Discretion
 - If Patient Fulfills Criteria

PHASE IV: LIGHT ACTIVITY PHASE (Month 4 – 5)

Criteria to Enter Phase IV

- AROM 0-125 degrees >
- Quad Strength 70% of Contralateral Side
 - Knee Flexor / Extensor rated 70-79%
- No Change in KT Scores (+2 or less)
- Minimal / No Effusion
- Satisfactory clinical exam

Goals:

- Development of strength, Power, and endurance
- Begin Gradual Return to functional activities

Week 20 - 21

- Exercises:
 - Emphasize Eccentric Quad Work
 - Continue CKC Exercises:
 - Step Ups
 - Mini Squats
 - Leg Press
 - Continue knee extension 90 – 40 degrees
 - Hip Abduction / Adduction
 - Initiate Plyometric Program
 - Initiate Running Program
 - Criteria For Running:
 - No Pain
 - No Swelling
 - Satisfactory Clinical Exam
 - Physician Recommendation
 - Initiate Agility program
 - Sport specific training and drills
 - Functional Drills
 - Straight Line Running
 - Jog to run
 - Walk to run
 - Hamstring curls and stretches
 - Pool Running (Forward / Backwards)
 - Calf Raises
 - Bicycle for endurance
 - Walking Program
 - Stairmaster
 - High Speed Isokinetics

PHASE V: RETURN TO ACTIVITY PHASE (MONTHS 6 - 7)

Goals:

- Achieve Maximal Strength & Endurance
- Return to sports activities

***** Continue strengthening program for One Year from surgery *****

For Quads:

- Knee extension
- Wall squats
- Leg press
- Step ups

For Endurance: (Pick One)

- Bicycle
- Stairmaster
- Nordic Trac
- Swimming

For Strength:

- Hamstring Curls
- Calf Raises
- Hip Abduction
- Hip Adduction

For Stability:

- High Speed Hamstrings
- High Speed Hip Flexion / Extension
- Balance Drills
- Backwards Running