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**DISCHARGE INSTRUCTIONS & PHYSICAL THERAPY PROTOCOL FOR
ACL RECONSTRUCTION QUADRICEPS TENDON AUTOGRAFT**

Recovery after knee surgery entails controlling swelling and discomfort, healing, return of range-of-motion of the knee joint, regaining strength in the muscles around the knee joint, and a gradual return to activities. The following instructions are intended as a guide to help you achieve these individual goals and recover as quickly as possible after your knee surgery.

A. COMFORT:

- 1. Elevation** – Elevate your knee and ankle above the level of your heart. The best position is lying down with two pillows lengthwise under your entire leg. This should be done for the first several days after surgery.
- 2. Swelling** – A cooling device may be provided to control swelling and discomfort by slowing the circulation in your knee. Initially, this can be used continuously for the first 3 days, (while the initial post-op dressing is on). After 3 days, the cooling device should be applied 3 times a day for 10-minute intervals. If a cooling device is not provided at the time of surgery, place crushed ice in a cloth covered plastic bag over your knee for no more than 20 minutes, three (3) times a day.
- 3. Medication** –
Pain Medication- Take medications as prescribed, but only as often as necessary. Avoid alcohol and driving if you are taking pain medication.
- 4. Driving** – Driving is NOT permitted for six weeks following right knee surgery.

B. ACTIVITIES:

1. **Range-of-Motion** – Move your knee through range of motion as tolerated. Do not flex beyond 90 degrees in the first month. This must be done while sitting or lying down.
2. **Locking Knee Brace** – The brace is to be worn for up to 4-6 weeks following surgery. It will be locked straight until bone healing and good knee strength have been achieved, (usually 4 weeks after surgery). At that time your doctor will determine if your leg has enough strength to allow your brace to be unlocked. You may unlock the brace while sitting but lock the brace before standing. Sleep with the brace on until directed by Dr. Romanowski.
3. **Exercises** – These help prevent complications such as blood clotting in your legs. Point and flex your foot and wiggle your toes. Thigh muscle tightening exercises should begin the day of surgery and should be done for 10 to 15 minutes, 3 times a day, for the first few weeks after surgery
4. **Weightbearing Status** – You are allowed to put all of your weight on your operative leg using your brace in the **locked straight** position. Do this within the limits of pain. You may start to progress your weightbearing with a unlocked brace as your leg strengthens and your physical therapist progresses your activity. Crutches are typically used for 2-5 weeks and should be used until directed to discontinue by Dr. Romanowski or your physical therapist.
5. **Physical Therapy** – PT should be started 3-5 days after surgery. You should call the physical therapist of your choice for an appointment as soon as possible after surgery. A prescription for physical therapy, along with physical therapy instructions (included in this packet) must be taken to the therapist at your first visit.
6. **Athletic Activities** – Athletic activities, such as swimming, bicycling, jogging, running and stop-and-go sports, **should be avoided** until allowed by your doctor.
7. **Return to Work** – Return to work as soon as possible. Your ability to work depends on a number of factors – your level of discomfort and how much demand your job puts on your knees. If you have any questions, please call your doctor.

C. WOUND CARE:

1. Tub bathing, swimming, and soaking of the knee **should be avoided** until allowed by your doctor – Usually 2-3 weeks after your surgery. Keep the dressing on, clean and dry for the first 7 days after surgery.
2. You may shower 1 day after surgery with the dressing on.

D. EATING:

1. Your first few meals, after surgery, should include light, easily digestible foods and plenty of liquids, since some people experience slight nausea as a temporary reaction to anesthesia.

E. CALL YOUR PHYSICIAN IF:

1. Pain in your knee persists or worsens in the first few days after surgery.
2. Excessive redness or drainage of cloudy or bloody material from the wounds (Clear red tinted fluid and some mild drainage should be expected). Drainage of any kind 5 days after surgery should be reported to the doctor.
3. You have a temperature elevation greater than 101°
4. You have pain, swelling or redness in your calf.
5. You have numbness or weakness in your leg or foot.

F. RETURN TO THE OFFICE:

1. Your first return to our office should be within the first 1-2 weeks after your surgery. Call Dr. Romanowski's office (704-358-0308) to make an appointment for this first post-operative visit.

GUIDELINES FOR REHABILITATION FOLLOWING ACL QUADRICEPS AUTOGRAFT RECONSTRUCTION

GENERAL GUIDELINES

- Presuppose 8 weeks for complete graft re-vascularization
- CPM not commonly used
- ACL reconstruction performed with meniscal repair or transplant follows the ACL protocol. Physician may extend time frames for use of brace or crutches.
- Supervised physical therapy takes place for 3-9 months

GENERAL PROGRESSION OF ACTIVITIES OF DAILY LIVING

Patients may begin the following activities at the dates indicated (unless otherwise specified by the physician):

- Bathing/showering immediately. No underwater submersion.
- Sleep with brace locked in extension for 1 week
- Driving: 1 week for automatic cars; left leg surgery
4-6 weeks for standard cars; right leg surgery
- Brace locked in extension for 4 weeks for ambulation
- Use of crutches, brace for ambulation for 4-6 weeks
- Weightbearing as tolerated immediately post op

PHYSICAL THERAPY ATTENDANCE

The following is an approximate schedule for supervised physical therapy visits:

- | | | |
|-------------|--------------|-------------------|
| ➤ Phase I | (0-6 weeks) | 1 visit/week |
| ➤ Phase II | (2-3 weeks) | 2-3 visits/week |
| ➤ Phase III | (2-6 months) | 2-3 visits/week |
| ➤ Phase IV | (6-9 months) | 1 visit/1-2 weeks |

REHABILITATION PROGRESSION

The following is a general guideline for progression of rehabilitation following ACL semitendinosus/gracilis autograft reconstruction. Progression through each phase should take into account patient status (e.g., healing, function) and physician advisement. Please consult the physician if there is any uncertainty concerning advancement of a patient to the next phase of rehabilitation.

PHASE I

Begins immediately post-op through approximately 6 weeks

Goals:

- Protect graft fixation (assume 8 weeks fixation time)
- Minimize effects of immobilization
- Control inflammation
- Full extension range-of-motion

- Educate patient on rehabilitation progression

Brace:

- 0-1 week: Locked in full extension for ambulation, sleeping
- 1-6 weeks: Locked for ambulation, remove for sleeping

Weightbearing Status:

- 0-6 weeks: Weightbearing as tolerated with two crutches

Therapeutic Exercises:

- Heel slides for 0-90° in the first month, then full ROM.
- Quad sets
- Patellar mobilization
- Non-weightbearing gastroc/soleus, begin hamstring stretches at 4 weeks
- SLR, all planes, with brace in full extension until quadriceps strength is sufficient to prevent extension lag
- Quadriceps isometrics at 60° and 90°

PHASE II

Begins approximately 6 weeks post-op and extends to approximately 8 weeks.

Criteria for advancement to Phase II:

- Good quad set, SLR without extension lag
- Approximately 90° of flexion
- Full extension
- No signs of active inflammation

Goals:

- Restore normal gait
- Maintain full extension (especially hip extension), progress flexion range-of-motion
- Protect graft fixation
- Initiate open kinetic chain hamstring exercises

Brace/Weightbearing Status:

- Discontinue use of brace and crutches as allowed by physician when the patient has full extension and can SLR without extension lag.
- Patient must exhibit non-antalgic gait pattern, consider using single crutch or cane until gait is normalized.

Therapeutic Exercises:

- Wall slides 0°-45°, progressing to mini-squats
- 4-way hip
- Stationary bike (begin with high seat, low tension to promote ROM, progress to single leg)
- Closed chain terminal extension with resistive tubing or weight machine
- Toe raises
- Balance exercises (e.g., single-leg balance, KAT)
- Hamstring curls
- Aquatic therapy with emphasis on normalization of gait
- Continue hamstring stretches, progress to weightbearing gastroc/soleus stretches

PHASE III

Begins at approximately 8 weeks and extends through approximately 6 months.

Goals:

- Full range-of-motion
- Improve strength, endurance and proprioception of the lower extremity to prepare for functional activities
- Avoid overstressing the graft fixation
- Protect the patellofemoral joint

Therapeutic Exercises:

- Continue flexibility exercises as appropriate for patient
- Stairmaster (begin with short steps, avoid hyperextension)
- Nordic Trac
- Knee extensions: 90°-45°, progress to eccentrics
- Advance closed kinetic chain strengthening (one-leg squats, leg press 0°-45°, step-ups begin at 2" and progress to 8", etc.)
- Progress proprioception activities (slide board, use of ball, racquet with balance activities, etc.)
- Progress aquatic program to include pool running, swimming (no breaststroke)

PHASE IV

Begins at approximately 6 months and extends through approximately 9 months.

Criteria for advancement to Phase IV:

- Full, pain free ROM
- No evidence of patellofemoral joint irritation
- Strength and proprioception approximately 70% of uninvolved leg
- Physician clearance to initiate advanced closed kinetic chain exercises and functional progression

Goals:

- Progress strength, power, proprioception to prepare for return to functional activities

Therapeutic Exercises:

- Continue and progress flexibility and strengthening program
- Initiate plyometric program as appropriate for patient's functional goals
- Functional progression including, but not limited to:
 - Walk/jog progression
 - Forward backward running, 1/2, 3/4, full speed
 - Cutting, crossover, carioca, etc.
- Initiate sport-specific drills as appropriate for patient

PHASE V

Begins at approximately 9 months post-op

Criteria for advancement to Phase V:

- No patellofemoral or soft tissue complaints
- Necessary joint ROM, strength, endurance, and proprioception to safely return to work or athletics
- Physician clearance to resume partial or full activity

Goals:

- Safe return to athletics
- Maintenance of strength, endurance, proprioception (continue to work on hip extension)
- Patient education with regard to any possible limitations

Therapeutic Exercises:

- Gradual return to sports participation
- Maintenance program for strength, endurance

Bracing:

- The physician may recommend a functional brace for use during sports for the first 1-2 years after surgery.