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**POSTOPERATIVE REHABILITATION INFORMATION AND
PROTOCOL FOR ANTERIOR CRUCIATE LIGAMENT (ACL)
ALLOGRAFT/AUTOGRAFT RECONSTRUCTION**

This information and protocol is a guideline, individual variations and changes will apply.

I. PREOPERATIVE INSTRUCTION/TESTING

1. Patient education including general explanation of surgery, ACL precautions and importance of compliance. The patient's knowledge and compliance with the rehabilitation protocol is essential to maximizing the benefits of the surgical reconstruction.
2. Issue and fit -
 - Postoperative knee brace (0-90 degrees) as applicable.
 - Cryotherapy unit as applicable.
 - Crutches with instruction on weightbearing status and gait training.
3. Provide instruction in the utilization of cryotherapy.
4. Provide instruction on immediate postoperative exercises and progression of postoperative exercises:
 - Quad sets.
 - Hamstring/quad co-contractions.
 - Ankle ROM/Pumps.
 - Bent leg raises (functional SLR).
 - Passive patella mobilization.
5. Knee arthrometer, KT 1000, testing as appropriate.

II. POSTOP BRACE GENERAL INSTRUCTIONS

1. Remove brace for instructed exercises and with use of continuous passive motion machine. Brace may be removed for bathing and showering after stitches are removed (approx. 7 – 10 days).
2. Sleep in brace as pathology dictates. The doctor or therapist will inform you when you may sleep without the brace.
3. The brace should be worn all the time, except for instructed exercises, for the first four postoperative weeks.

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4. The brace should be worn for stressful activities from weeks 5 to 8 in the postoperative period. Guidelines will be provided by your doctor or therapist.

III. WEIGHTBEARING AND WALKING

1. Postop Day 1: Use two crutches, touch down only.
2. Postop Day 2: Use two crutches, partial weight bearing.
3. Postop Weeks 3 to 4: Progress to full weight bearing as tolerated with the goal of walking without crutches by week 6.

Weightbearing status will be determined by pathology, pain and function.

IV. CONTINUOUS PASSIVE MOTION GUIDELINES (CPM)

1. If applicable, begin using CPM as comfort allows postoperatively.
2. May begin CPM while drain is still in place and prior to home therapist visit. Do not wear brace while in CPM.
3. Initial setting is 0 – 40 degrees. Attempt to increase by 5 – 10 degrees every 2 to 3 hours while using.
4. Attempt to use CPM 6 to 8 hours daily.
5. Discontinue CPM when 0 – 90 degrees is achieved actively and instructed by doctor or therapist to discontinue. This usually takes 1-2 weeks.

Progression of range of motion is determined by pain.

V. CRYOTHERAPY/PAIN CONTROL GUIDELINES

1. The self-contained cryotherapy unit is recommended after surgery and throughout the rehabilitation process to control edema and pain. Please follow the verbal and written instructions from your therapist/physician extender as to the proper use of the unit.
 - Constant utilization of the self-contained cryotherapy unit is recommended during the first 3-5 postoperative days as possible. Occasional removal of the pad is recommended to check skin/wound status. It is imperative that the self-contained cryotherapy unit is utilized as instructed.
2. If you were not issued a self-contained cryotherapy unit it is recommended that you use other conventional methods such as ice bags, or gel packs after surgery and throughout the rehabilitation process to control edema and pain. Cryotherapy should not be used more than 20 minutes per hour.

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3. Regardless of the cryotherapy method utilized, once your postoperative bandaging is removed be sure to apply a protective barrier to your skin prior to the use of cryotherapy.
4. Careful use of pain medication is needed to help control postoperative pain and will be determined by your doctor. The use of cryotherapy and monitoring your pain/discomfort postoperatively is extremely important.

PHASES:

Phase I – Protective Phase (POD 1 – POW 2)

Goals:

1. Full extension ROM
2. Good quad set in full extension
3. 90 degrees of active flexion ROM
4. Independent gait with crutches and brace – emphasize normal gait pattern

Postop Day 1:

Rehabilitation Activities

1. Ankle pumps and quad sets 20 per hour
2. Active flexion
3. Gait with crutches and brace, weight-bearing per surgeon instructions
4. Patellar mobilization
5. RICE

Postop Week 1-2:

Rehabilitation Activities: Continue the above and add:

1. NMES to quad as needed
2. SLR
3. Weight shifting if quad control is good
4. CKC TKE low resistance with good quad control

Phase II – Controlled Stability (POW 2-4):

Goals:

1. Achieve 120 degrees active flexion
2. Achieve good single leg stability

Rehabilitation Activities

1. Open chain strengthening
 - a. Continue SLR but add side lying hip abduction and adduction SLR
 - b. Sitting hip flexion
 - c. Ankle TB
 - d. Standing hamstring curl to tolerance
 - e. Partial knee extension 90-45 degrees

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2. Closed chain strengthening: Initiate or continue as quad control and inflammation allows, i.e., bike, leg press, wall slides.

Phase III – Functional Strengthening (POM 1-4)

Goals:

1. Increase total leg strength to allow for functional progression
2. Improve balance/proprioception to allow for functional progression
3. Restore muscular and cardiovascular endurance (no running until cleared by physician)

Criteria to enter Phase III:

1. Satisfactory physician clinical examination
2. Minimal/no soft tissue restraints
3. Full A/PROM
4. Normalized gait and stair negotiation

Phase IV – Return to Function (POM 4-6)

Goals:

1. Normalize strength, proprioception and endurance
2. Prepare for return to sport/occupation
3. Provide confidence in performance of knee

Criteria to enter plyometric and return to sport training phase (generally 4.5 months postop)

1. <25% isokinetic quad testing compared to uninvolved
2. Equal single leg stance bilaterally with good stability (i.e. straight ahead touch/cross over touch)

Rehabilitation activities:

- Step 1: Jogging progression
- Step 2: Double leg jump progression
- Step 3: Single leg hop progression
- Step 4: Sprint progression

Criteria to return to sport (generally at 6-8 months postop):

1. <10% difference with isokinetic testing
2. Single leg hop for distance: <15% difference (best of 3 trails)
3. Crossover hop for distance: <15% difference (best of 3 trails)

Postoperative testing and criteria:

Shuttle/leg press test unilaterally at 8 and 12 POW - repeat monthly
Biodex and shuttle/leg press test at 4.5 months postop and 6 months postop
Hop test at 6 months as directed by physician

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It is important for optimal long-term results that the patient is compliant and achieves appropriate range of motion, strength, endurance, and proprioception prior to returning to full activities including competitive sports. Individuals heal and incorporate their grafts at different rates and thus it is critically important that the patient receives final clearance from their orthopaedic surgeon prior to returning to athletics and full activity.

The need for functional bracing will be determined by your doctor and will be recommended as applicable.

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