



## **ANTERIOR CRUCIATE LIGAMENT (ACL) RECONSTRUCTIVE SURGERY**

**\*Please take this information to your physiotherapy appointments.**

### **THE ROLE OF THE ANTERIOR CRUCIATE LIGAMENT (ACL)**

The anterior cruciate ligament provides stability to the knee. When it is torn, resulting knee instability will frequently lead to injuries of the menisci and cartilage, which are important shock absorbers in the knee.

### **GOAL OF ACL RECONSTRUCTIVE SURGERY**

The main goal of surgery is to reconstruct the anterior cruciate ligament in order to stabilize the knee. Portions of tendons from around the knee, such as hamstring, patellar or quadriceps tendons are commonly used to make a new ACL. The other goal of surgery is to address associated injuries in the knee such as tears of meniscus (cartilage), loose bodies and joint surface damage.

### **SURGICAL TECHNIQUE**

The surgery involves:

1. An examination of the knee under anaesthetic to confirm the instability of the knee joint.
2. An arthroscopy (using a camera through “poke” holes) to examine the anterior cruciate ligament and to visualize the rest of the knee joint to diagnose and treat any tears of the meniscus (cartilage), loose bodies and/or damaged joint surface
3. Obtaining a new ligament graft through an incision near the knee
4. Reconstructing the ACL by: a) creating drill holes in the tibia (lower leg bone) and femur (thigh bone) that enter the knee at the normal attachment points for the anterior cruciate ligament, b) passing the new graft through the drill holes and through the knee, and c) fixing each end of the graft after ensuring correct positioning
5. Examining the knee to ensure full range of motion and restoration of good stability.

### **POST OPERATIVE PROTOCOL**

The key in the early post operative period is to control swelling and start early range of motion. Unless specifically directed otherwise, weight-bearing is allowed. Use crutches for balance and support, as the muscles about the knee will not support you properly, until the pain and swelling are under better control. A specific exercise program will be outlined by physiotherapy.

## REHABILITATION PROGRESSION

The following is a general guideline. Please consult Dr. Brooks-Hill/Dr. Clark if there is any uncertainty concerning advancement of a patient to the next phase of rehabilitation. Rehabilitation should be individualized according to patient status.

General progression of driving - 1 week for automatic cars, left leg surgery  
4 to 6 weeks for standard cars and/or right leg surgery

## POST OPERATIVE PROTOCOL

### PHASE I

For hamstring grafts:

Avoid hamstring stretching for 4 weeks  
Avoid isolated hamstring strengthening for 6 weeks (squats ok)

For patellar tendon grafts:

Wear knee immobilizer only when walking for 6 weeks (early ROM important)

### 1<sup>ST</sup> 6-8 weeks

#### GOALS

1. Control swelling
  - a) Elevate knee above the level of your heart (if sitting, elevate your leg)
  - b) Ice knee 15 min of every hour or use an ice compression device (re-circulate water every hour)
  - c) Push knee into bed to activate quadriceps
2. Early Range of Motion
  - a) Move the leg as much as tolerated
  - b) Rest with leg straight to achieve full extension (not slightly bent with a pillow behind the knee)
3. Protect Graft Fixation
  - a) Use crutches until walking normally. Weightbearing is allowed. Crutches are for balance and support, consider single crutch/cane until gait is normalized.
  - b) Avoid activities that risk falling and/or twisting.

#### Therapeutic Exercises

- Heel slides/Wall slides
- Quad sets ( consider functional electrical stimulation)
- Patellar mobilization
- Non-weightbearing gastrocnemius/soleus and stretching (avoid knee hyperextension)
- Quadriceps isometrics at 0°, 60°, 90°



### Progress to:

- Wall slides 0-45, progressing to mini-squats
- Hip adduction, abduction and extension
- Stationary bike (begin with high seat, low tension to promote ROM and progress to single leg)
- Bridging
- Calf raises
- Balance exercises (e.g. single leg balance, wobble board)
- Hamstring Curls (after 6 weeks)
- Aquatic therapy with emphasis on normalization gait
- Weight-bearing gastrocnemius/seleus stretching
- Proprioception
- Squats (1/4, double leg, progress to single leg)

### Phase II

#### Criteria to advance to Phase II

- Full range of motion

#### GOALS

1. Improve strength, endurance and proprioception of the lower extremity to prepare for functional activities
2. Avoid over-stressing the graft fixation
3. Protect the patellofemoral joint

#### Therapeutic Exercises

- Continue flexibility exercises as appropriate for patient
- Stairmaster (begin with short steps and avoid hyperextension)
- Nordic Track
- Advance closed kinetic chain strengthening (one leg squats, leg press 0-45°, step-ups begin at 2" and progress to 8", lunges, etc.)
- Progress proprioception activities (slide board, use of ball, raquet with balance activities, etc.)
- Progress aquatic program to include pool running, swimming (no breaststroke)
- Start walk/jog progression at approximately 3 months

### Phase III

This phase begins after approximately 4-5 months of rehabilitation.

#### Criteria to advance to phase III

- 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 progress flexibility and strengthening program
- Initiate plyometric program as appropriate for patient's functional goals
- Functional progression, including but not limited to
  - Forward/backward running. ½, ¾, full speed
  - Cutting, cross-over, carioca, etc.
  - Sport specific drills

### **Phase IV**

(after approximately 6 months rehabilitation)

### **Criteria to advance to Phase IV**

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

## GOALS

1. Return to functional activities/work/athletics safely
2. Maintenance of strength, endurance and proprioception

### **Therapeutic exercises**

- Gradual sports/functional/work activity participation
- Continue with strength, power and proprioception training while returning to functional/sporting activities.