OrthoVirginia
West End Orthopaedic Clinic

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Anterior Cruciate Ligament Reconstruction Protocol

Pre-op Education/Home program: Instruct the patient in ankle pumps, quad sets, seated knee flexion, supine SLR, T-scope brace, gait training with crutches and protection of the graft. The following is an outlined progression for rehabilitation following surgery. The following are suggested time frames for progression. Modifications or questions should be addressed with Dr. Young.

General Guidelines for immediate post-operative care. Physical therapy to begin POD #1.

- Protect graft and graft fixation
- Control inflammation/swelling with modalities - per therapist discretion.
- When bathing, wrap your leg in a plastic bag with closures at both ends. Do not get the surgical site wet. Suture removal will be determined at the post-operative appointment.
- Educate patient on rehabilitation progression
- Restore normal gait on level surfaces
- Return to work as directed by MD based on work demands

T-scope Brace:

- T-scope brace may be removed for bathing.
- T-scope brace locked in knee extension for ambulation until patient demonstrates full extension with good quad control. The brace can then be unlocked based on patient range of motion - decision per physician/therapist discretion.
- Sleep with brace locked in extension for at least the first 1-2 weeks after surgery. Discontinue use of the brace while sleeping once full knee extension has been achieved.

Driving:

- No driving for 1-2 weeks for automatic cars for left leg surgery; 2-4 weeks for standard cars, or right leg surgery. No driving while the patient is taking narcotic pain medication.

Crutches:

- Weight-bearing determined by meniscal involvement. If both medial and lateral meniscus repair performed, patient to remain NWB for 6 weeks post-op.
- Wean from crutches/brace for ambulation by 4 weeks as patient demonstrates normal gait mechanics and good quad control. Brace for "at-risk" situations until 6 weeks or adequate quad stability.

POD #1-7 (Goal of knee flexion to 90 degrees by the end of week # 1 post-op)

1. Ankle pumps
2. Cryocuff/Elevation - swelling control
3. Wall sides/pushes as tolerated

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4. Patellar mobilization
5. Dressing change
6. Sleep with T-scope brace locked in full extension
7. Quad sets
8. Encourage full extension immediately - seated knee extension stretching or prone hangs
9. Stationary Bike - focus on ROM.
10. SLR - supine, prone and abduction (no adduction).

Phase I (Weeks 1 - 4)

Goals:
1. Ambulate without gait deviations
2. Perform SLR without extensor lag
3. Resume driving, self care (dressing, grooming, etc.), progress with ADL's with certain limitations - will be discussed with patient by the physician and/or physical therapist.
4. Return to work (performing clerical duties only) and/or school
5. Decrease/Eliminate any knee effusion
6. Minimal to no knee pain
7. Knee ROM 0-110

Suggested exercises:
- Continue with all exercises.
- Initiate/Encourage upper extremity strengthening/conditioning
- May use e-stim to promote quad recruitment
- Continue modalities PRN
- Once achieved good quad control and normal gait pattern, may wean from T-scope brace.
- Progress with active knee flexion and continue to encourage full extension
- Instruct in proper gait training, emphasizing heel-toe, good quad isolation, normal knee flexion and push-off.
- Begin SLR, with brace in full extension until quadriceps strength is sufficient to prevent extension lag
- Begin the following **open chain exercises:**
  1. Sitting hip flexion
  2. Standing hamstring curls to tolerance - begin with no weight.
  3. Ankle theraband exercises (dorsiflexion, plantarflexion, eversion, inversion)
- Begin **closed chain knee exercises** as tolerated:
  1. Stationary bike - initally for ROM, gradual progression with resistance to tolerance.
  2. Wall slides
  3. Single leg stance: beginning on a level surface and progressing to unlevel surfaces
  4. Walking forward, retrowalking, and sidestepping

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5. Standing calf raises - progress to using the wobble board
6. Leg press/Calf press
7. Step ups
8. Mini-squats
10. If available, aquatic therapy for normalizing gait, weight bearing strengthening, deep-water jogging (Pool exercises may begin at 6 weeks post-op, if available).

Phase II: (Weeks 4 - 12)

Criteria for advancement to Phase II:

- Achieve/Maintain full knee extension
- Achieve good quad control
- Perform SLR without extension lag
- Minimum of 110 degrees of knee flexion
- Minimal knee swelling/inflammation
- Normal gait pattern on level surfaces

Goals:

1. Progress with Active/Passive ROM to achieve full knee ROM.
2. Tolerate prolonged sitting or standing
3. Ascend/descend stairs with normal gait pattern and without symptoms
4. Assess unilateral muscle performance with Leg Press (no earlier than 16 weeks post op)
5. Gradual progression with hip, quadriceps, hamstring and calf strengthening exercises
6. Gradual progression with proprioception exercises

Suggested Exercises:

- Continue with range of motion exercises as appropriate for the patient
- Continue closed kinetic chain strengthening, progress as tolerated
- Lower extremity flexibility program
- Can progress to using the Elliptical for conditioning, as tolerated.
- Continue with stationary bike - progress with time and resistance as tolerated
- Continue to progress proprioceptive activities – ball toss, mini-tramp balance, etc.

Phase III (Weeks 12 - 16)

Criteria to advance to Phase III include:

- No patellofemoral pain
- Minimum of 120 degrees of knee flexion (patient should have full knee ROM)

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- Sufficient strength and proprioception to begin a walk-jog progression - progressing to running.
- Minimal swelling/inflammation

Goals:
1. Full AROM
2. Improve strength, endurance and proprioception of the lower extremity to prepare for sport activities
3. Avoid overstressing the graft
4. Protect the patellofemoral joint
5. Place emphasis on normal running mechanics

Note: No amusement parks until 16 weeks.

Suggested Exercises:
- Continue flexibility and ROM exercises as appropriate for patient
- Continue to progress towards full running - ensure proper gait pattern with running
- Begin swimming if desired
- Continue to progress with lower extremity strengthening exercises
- Cardiovascular/endurance training (i.e. Elliptical, stationary bike, running, etc.)
- Continue to progress with proprioception exercises.
- Agility drills/foot work
- Patient may begin golf (starting with chipping and putting only at 16 weeks).

Phase IV: (Months 4 - 6)

Criteria for advancement to Phase IV:
- Minimal - no knee swelling/inflammation
- Full, pain-free knee ROM
- No evidence of patellofemoral joint irritation
- Strength approximately 70-75% of uninvolved lower extremity
- Sufficient strength and proprioception to initiate agility (sport specific) activities
- Normal running gait

Goals:
1. Symmetric performance of basic and sport specific agility drills
2. Single leg press strength assessment. Functional hop/stop test with at least 92% symmetry

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Suggested Exercises:

- Continue and progress flexibility and strengthening program based on individual needs and if any strength or flexibility deficits are present.
- Begin plyometric exercises based on patient's athletic goals/lifestyle
- Suggested agility exercises: Crossovers, Figure 8 running, Shuttle running, Acceleration/deceleration/sprinting, Ladder drills
- Continue progression of running distance based on patient goals, sport, lifestyle.
- Begin sport-specific drills

Phase V: (Begins at approximately 6 months post-op)

Criteria for advancement to Phase V:

- No patellofemoral or soft tissue symptoms
- Physician clearance to resume full sports activity or work (jobs with high physical demand - i.e. construction job)

Goals:

1. Safe return to athletics/work
2. Maintenance of strength, endurance, proprioception
3. Progress to a home exercise program
4. Passing all functional testing

Exercises:

- Gradual return to sports participation
- Overall maintenance program - progress to a home exercise program
- Progress with speed and intensity of the exercise program.

Bracing:

- Functional brace may be used. Decision will be made by the Dr. Young and will be on a case by case basis.

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