



Adam N. Whatley, M.D.
6550 Main St., STE. 2300
Zachary, LA 70791
Phone(225)658-1808 Fax(225)658-5299

ACL Patella Tendon Autograft Reconstruction Protocol

The intent of this protocol is to provide the clinician with a guideline for the post-operative rehabilitation course of a patient that has undergone an ACL patellar tendon autograft reconstruction. It is by no means intended to be a substitute for one's clinical decision making regarding the progression of a patient's post-operative course based on their physical exam/findings, individual progress, and/or the presence of post-operative complications. If a clinician requires assistance in the progression of a post-operative patient they should consult with the referring Surgeon.

GENERAL GUIDELINES

- Focus on protection of graft during primary revascularization (8 weeks) and graft fixation (4-6 weeks.)
- CPM not commonly used
- For ACL reconstruction performed with meniscal repair or transplant, defer to ROM and weightbearing precautions outlined in the meniscal repair/transplant protocol.
- The physician may alter time frames for use of brace and crutches.
- Supervised physical therapy takes place for 3-6 months.

GENERAL PROGRESSION OF ACTIVITIES OF DAILY LIVING

- No bathing/showering (sponge bath only) until after suture removal. Brace may be removed for bathing/showering.
- Sleep with brace locked in extension for 1 week or as directed by PT/MD for maintenance of full extension.
- Driving: 1 week for automatic cars, left leg surgery
2-4 weeks for standard cars, or right leg surgery
- Weight-bearing as tolerated immediately post-op
- Brace locked in extension for ambulation until patient demonstrates full extension with good quad control. The brace can then be unlocked based on patient range of motion.
- Wean from crutches/brace for ambulation by 4 weeks as patient demonstrates normal gait mechanics and good quad control as defined by absence of quadriceps lag.
- Return to work as directed by PT/MD based on work demands.

REHABILITATION PROGRESSION

PHASE I: Immediately postoperatively to week 4

Goals:

- Protect graft and graft fixation
- Minimize effects of immobilization
- Control inflammation/swelling
- Full active and passive extension/hyperextension range of motion. Caution: avoid hyperextension greater than 10 degrees.
- Educate patient on rehabilitation progression
- Restore normal gait on level surfaces

Brace:

- Sleep with brace locked in extension for 1 week or as directed for maintenance of full extension.
- Brace locked in extension for ambulation until patient demonstrates full extension with good quad control. The brace can then be unlocked based on patient range of motion.

Weightbearing Status:

- Weight-bearing as tolerated immediately post-op with crutches and brace
- Wean from crutches/brace for ambulation by 4 weeks as patient demonstrates normal gait mechanics and good quad control.

Exercises:

- Patellar mobilization/scar mobilization
- Heel slides
- Quad sets (consider NMES for poor quad sets)
- Hamstring curls – add weight as tolerated
- Gastroc/Soleus, Hamstring stretches
- Gastroc/Soleus strengthening
- SLR, all planes, with brace in full extension until quadriceps strength is sufficient to prevent extension lag – add weight as tolerated to hip abduction, adduction and extension.
- Closed Kinetic Chain Quadriceps strengthening activities as tolerated (wall sit, step ups, mini squats, leg press 90-30 degrees)
- Quadriceps isometrics at 60° and 90°
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- If available, aquatics for normalizing gait, weightbearing strengthening, deep-water aquajogging for ROM and swelling.
- Single leg balance, proprioception work

- Stationary cycling – initially for promotion of ROM – progress light resistance as tolerated

PHASE II: Post-operative weeks 4 to 10

Criteria for advancement to Phase II:

- Full extension/hyperextension
- Good quad set, SLR without extension lag
- Minimum of 90° of flexion
- Minimal swelling/inflammation
- Normal gait on level surfaces

Goals:

- Restore normal gait with stairclimbing
- Maintain full extension, progress toward full flexion range of motion
- Protect graft and graft fixation
- Increase hip, quadriceps, hamstring and calf strength
- Increase proprioception

Brace/Weightbearing Status:

- If necessary, continue to wean from crutches and brace.

Exercises:

- Continue with range of motion/flexibility exercises as appropriate for the patient
- Continue closed kinetic chain strengthening as above, progressing as tolerated – can include one-leg squats, leg press, step ups at increased height, partial lunges, deeper wall sits.
- Stairmaster (begin with short steps, avoid hyperextension)
- Nordic Trac, Elliptical machine for conditioning.
- Stationary biking- progress time and resistance as tolerated; progress to single leg biking
- Continue to progress proprioceptive activities – ball toss, balance beam, mini-tramp balance
- Continue hamstring, gastroc/soleus stretches
- Continue to progress hip, hamstring and calf strengthening
- If available, begin running in the pool (waist deep) or on an unweighted treadmill at 8 weeks.

PHASE III: Post-operative weeks 10 to 16

Criteria to advance to Phase III include:

- No patellofemoral pain
- Minimum of 120 degrees of flexion

- Sufficient strength and proprioception to initiate running.
- Minimal swelling/inflammation

Goals:

- Full range of motion
- Improve strength, endurance and proprioception of the lower extremity to prepare for sport activities
- Avoid overstressing the graft
- Protect the patellofemoral joint
- Normal running mechanics
- Strength approximately 70% of the uninvolved lower extremity per isokinetic evaluation (if available)

Exercises:

- Continue flexibility and ROM exercises as appropriate for patient
- Knee extensions 90°-30°, progress to eccentrics
- If available, isokinetics (with anti-shear device) – begin with mid range speeds (120°/sec- 240°/sec)
- Progress toward full weightbearing running at 12 weeks.
- Begin swimming if desired
- Recommend isokinetic test with anti-shear device at 12 weeks to guide continued strengthening.
- Progressive hip, quadriceps, hamstring, calf strengthening
- Cardiovascular/endurance training via Stairmaster, elliptical, bike
- Advance proprioceptive activities

PHASE IV: Post-operative months 4 through 6

Criteria for advancement to Phase IV:

- No significant swelling/inflammation.
- Full, pain-free ROM
- No evidence of patellofemoral joint irritation
- Strength approximately 70% of uninvolved lower extremity per isokinetic evaluation
- Sufficient strength and proprioception to initiate agility activities
- Normal running gait

Goals:

- Symmetric performance of basic and sport specific agility drills
- Single hop and 3 hop tests 85% of uninvolved lower extremity
- Quadriceps and hamstring strength at least 85% of uninvolved lower extremity per isokinetic strength test

Exercises:

- Continue and progress flexibility and strengthening program based on individual needs and deficits.
- Initiate plyometric program as appropriate for patient's athletic goals
- Agility progression including, but not limited to:
 - Side steps
 - Crossovers
 - Figure 8 running
 - Shuttle running
 - One leg and two leg jumping
 - Cutting
 - Acceleration/deceleration/sprints
 - Agility ladder drills
- Continue progression of running distance based on patient needs.
- Initiate sport-specific drills as appropriate for patient

PHASE V: Begins at approximately 6 months post-op

Criteria for advancement to Phase V:

- No patellofemoral or soft tissue complaint
- 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/work
- Maintenance of strength, endurance, proprioception
- Patient education with regards to any possible limitations

Exercises:

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

Bracing:

- Functional brace generally not used, but may be recommended by the physician on an individual basis.