UCLA DEPARTMENT OF ORTHOPAEDIC SURGERY
SPORTS MEDICINE

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ACL HAMSTRING TENDON RECONSTRUCTION/MENISCUS REPAIR PROTOCOL

GENERAL GUIDELINES

- Focus on protection of graft during primary re-vascularization (8 weeks) and graft fixation (8 –12 weeks)
- CPM not commonly used
- The physician may alter time frames for use of brace and crutches
- Supervised physical therapy takes place for 7-12 months
- Use caution with hamstring stretching/strengthening based on donor site morbidity

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 4 weeks or as directed by PT/MD for maintenance of full extension
- Driving: 1 week for automatic cars, left leg surgery
  4 weeks for standard cars, or right leg surgery
- Post-op brace locked in full extension (0-4 week) for ambulation & sleeping
  4 weeks- unlock brace (<90^{o}) as quad control allows
  6 weeks- wean from brace as patient demonstrates good quad control and normal gait mechanics
- Use of crutches/brace for ambulation for 6 weeks with adequate quad function
- Weight bearing: refer to weight bearing status below for phase 1
- Return to work as directed by PT/MD based on work demands

REHABILITATION PROGRESSION:

Frequency of physical therapy visits should be determined based on individual patient status and progression.

The following is a general guideline for progression of rehabilitation following ACL hamstring tendon 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 4 weeks.

Goals:

- Protect graft and graft fixation
- Minimize effects of immobilization
- Control inflammation and swelling
- Full active and passive extension/hyperextension range of motion. Caution: avoid hyperextension greater than 10^{o}
- Educate patient on rehabilitation progression
- Flexion to 90^{o} only in order to protect graft fixation
- Restore normal gait on level surfaces

Brace:

- 0-4 week- post-op brace locked in full extension for ambulation and sleeping
- 4 weeks- unlock brace ($<90^{o}$) as quad control allows
- 6 weeks- wean from brace as patient demonstrates good quad control and normal gait mechanics
- 6-8 weeks- patient should only use brace in vulnerable situations (e.g. crowds, uneven terrain, etc)

Weightbearing Status:

- 0-1 week- non-weightbearing with two crutches to assist with balance
- 1-4 weeks- non-weight bearing, locked brace, two crutches
- At 4 weeks, Weight bearing as tolerated, unlock brace, use two crutches
- Wean from crutches/brace for ambulation by 6 weeks as patient demonstrates normal gait mechanics and good quad control.

Exercises:

- Active-assisted leg curls 0-1 week. Progress to active and resistance as tolerated after 1 week.
- Heel slides (limit to 90^{o})
- Quad sets (consider NMES for poor quad sets)
- Gastroc/Soleus stretching
- Gentle hamstring stretching at 1 week
- 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.
- Quadriceps isometrics at 60^{o} and 90^{o}
- Aquatic therapy (once sutures removed) for normalizing gait, weightbearing strengthening, deep-water aquajogging for ROM and swelling.

PHASE II:
Begins approximately 5 weeks post-op and extends to approximately 12 weeks. Criteria for advancement to Phase II:

- Full extension/hyperextension
- Good quad set, SLR without extension lag
- Flexion to 90^{o}
- 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
- Initiate CKC quad strengthening and progress as tolerated (wall sits, step-ups, mini-squats, leg press 90^{o}-30^{o}, lunges)
- Progressive hip, hamstring, calf strengthening (gradually add resistance to open chain hamstring exercises)
- Continue hamstring, gastroc/soleus stretches
- Stairmaster (begin with short steps, avoid hyperextension)
- Nordic Track, elliptical machine for conditioning
- Stationary biking (progressive time and resistance)
- Single leg balance/proprioception work (ball toss, balance beam, mini-tramp balance work)
- Begin running in the pool (waist deep) or on an unweighted treadmill at 10-12 weeks

Phase III:
Begins at approximately 12 weeks and extends through approximately 18-20 weeks (4 ½- 5 months). Criteria to advance to Phase III include:

- No patellofemoral pain
- Minimum of 120 degrees of flexion
- Sufficient strength and proprioception to initiate running (unweighted or in pool)
- 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
- Normalize running mechanics
- Strength approximately 70% of the uninvolved lower extremity per isokinetic evaluation

Exercises:

- Continue flexibility and ROM exercises as appropriate for patient
- Initiate open kinetic chain leg extension (90^o-30^o), progress to eccentrics as tolerated
- Isokinetics (with anti-shear device)- begin with mid range speeds (120^o/sec-240^o/sec)
- Progress toward full weightbearing running at about 16 weeks
- Begin swimming if desired
- Recommend isokinetic test with anti-shear device at 14-16 weeks to guide continued strengthening
- Progressive hip, quad, hamstring, calf strengthening
- Cardiovascular/endurance training via stairmaster, elliptical, bike
- Advance proprioceptive activities

Phase IV:

Begins at approximately 4 ½ -5 months and extends through 6-7 months post-op. 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 three hop tests 85% of uninvolved leg
- 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/springs
Agility ladder drills

- Continue progression of running distance based on patient needs
- Initiate sport-specific drills as appropriate for patient

Phase V:

Begins at 8-9 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/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