OrthoIllinois SPORTS MEDICINE

GEOFFREY S. VAN THIEL, MD/MBA

Assistant Professor - Rush University Medical Center
Team Physician - US National Soccer Teams
Team Physician - Chicago Blackhawks Medical Network - Ice Hogs

www.VanThielMD.com - VanThielMD@orthoillinois.com
Fax: (815) 381-7489 – Phone: (815) 381-7365

SPORTS MEDICINE SURGERY – HIP ARTHROSCOPY

Follow us on Twitter and Facebook: @VanThielMD & Facebook.com/VanThielMD

– Cutting edge information on the arthroscopic treatment of the hip, knee and shoulder –

REHABILITATION PROTOCOL

Posterolateral Corner Reconstruction

Overview

The posterolateral corner knee reconstruction includes replacement of the popliteus tendon and the lateral collateral ligament with allograft tissue. These structures function to prevent abnormal varus opening, external rotation, and posterolateral rotation of the injured knee. Thus, it is important during the early postoperative period that stress not be placed on these grafts with these motions. The patient needs to obtain appropriate muscle strength to prevent abnormal motion of their knee before the ligament reconstruction can be tested.

This rehab program serves as a general guideline for patients who undergo this reconstruction with the understanding that it may be modified in the individual patient's case or with other concurrent knee ligament surgery. It is very important to recognize that these grafts can take up to two years to heal so these patients must be followed up very closely.

Additional Ligament Reconstructions

Since acute and chronic posterolateral knee injuries most commonly occur in combination with other ligament injuries, some portions of this rehab program (such as the type of motion allowed) may be modified because of the treatment of other concurrent knee ligament injuries. For this reason, this rehab program serves as a general guideline for patients who undergo this reconstruction with the understanding that it may be modified in the individual patient's case.

Brace Use and Weightbearing

- Brace: The hinged knee brace will be worn for the first 6 weeks. It should be locked in extension at all times except for range of motion exercises. This includes ambulation and sleep.
- Weightbearing: Touch down foot flat weightbearing is to be maintained until 6 weeks post op with the use of crutches.

Initial Modifying Factors:

1. Avoidance of tibial external rotation is necessary (avoid external rotation of the foot/ankle, especially when sitting).
2. Avoidance of isolated hamstring exercises (during knee flexion) to avoid extra posterior and posterolateral stress on the healing reconstructive tissues for 4 months postoperatively.

Postop Weeks 1-2

Elevation of the knee above the level of the heart should be performed to minimize swelling. An ice pack or a commercial cold compression device will also be utilized to help in pain control and to minimize swelling of the operative site.

Strengthening Exercises

- Patients are to initiate the use of quadriceps sets and straight leg raises which should only be performed in their brace. Quadriceps sets, in which the patient maximally fires their quadriceps (as if they are going to perform a straight leg raise) are performed hourly to tolerance, while straight leg raises in the brace are performed 4-5 times daily.
- Early initiation of these quadriceps exercises will help to minimize postoperative quadriceps atrophy and knee effusions.
- Ankle pumps

Motion Exercises

- In general, the patient is allowed to unlock their knee brace starting at two weeks postop to work on gentle ROM exercises 4 times daily from 0-90º of knee flexion.
- Patella/Tendon mobilization

Postop Weeks 3-6

During this time, patients will be working on further quadriceps strengthening exercises as well as increasing their knee ROM to full motion as tolerated. Ambulation will continue to be with the use of crutches.

Motion Exercises

- Patients will work on maintenance of full knee extension several times daily. The patient should also work on increasing the range of motion of their knee while working on motion with an unlocked knee brace 5-6 times daily to 90º, or greater, by the end of the third week.
- The goal is for patients to achieve a full range of motion of their knee by the end of week six.

Exercises

- Quadriceps sets and straight leg raises in the knee brace will continue to be the main form of exercise during this period. If the patient can perform a straight leg raise without any extension sag (i.e., the knee can be held out perfectly straight in extension), they are allowed to initiate their quadriceps sets and straight leg raising exercises outside the brace.
- Otherwise, they should continue to do these in the brace with 30 sets of quadriceps sets, 5-6 times daily, and 10-20 straight leg raise sets, 5-6 times daily.
- Patella/Tendon mobilization
- Ankle pumps

Postop Weeks 7-12

Patients are allowed to initiate weight bearing and low-impact closed chained exercises during this time period. It is important that extra stress not be placed on the reconstruction during this time period so that it will heal. Even for the best of reconstructive procedures, they are in danger of stretching out and failing if extra stress is placed on these ligament reconstructions by a patient who does not develop appropriate motor strength. Therefore, patients should be encouraged to continue to use the crutches until they can walk without a limp. They should avoid any significant activities until their strength gains are maximized.

Exercises

- Patients continue with quadriceps sets and straight leg raises. Quadriceps sets with 10-30 repetitions should be performed 5-6 times daily. Straight leg raises with 10-30 repetitions should be performed 5-6 times daily. Leg presses at one-quarter body weight may be performed to a maximum of 70º of knee flexion.
- Double knee bends
- Double leg bridges
- Reverse lunge – static holds
- Beginning cord exercises
- Leg press to max. 70° knee flexion

Allowed at 8 weeks

- Treadmill – walking 7% incline
- Swimming with fins – light flutter kick

Exercise Bike/Stationary Cycling

- The use of an exercise bike may be initiated once the patient achieves 105-110º of knee flexion. The initial goal of this exercise is to work on fluid motion rather than an increase in strength. The patient should first start out with a total of 5 minutes on the exercise bike every other day. They may increase their time on the exercise bike as well as work up to 20 minutes daily based on their knee response to this activity. If there is any significant soreness or effusions (swelling) developing, the patient should back off of the total minutes and days utilizing the exercise bike.

Postop Weeks 13-16

Goals

1. Full knee range of motion. Patient needs to see surgeon if extension deficit > 5º or flexion < 110º.
2. Normal gait pattern.

3. Increase in functional strengthening program.

Exercise Program

1. Continue with previous exercises daily or every other day as tolerated.
2. Weight room activities:
    a. Leg press machine: continue to work with 20 kg (45 lbs) to 50 kg and perform to fatigue. Leg flexion allowed to a maximum of 70º of knee flexion.
    b. Squat rack/squat machine: Half squats (not past 70º knee flexion) at ½ body weight, 10 repetitions. Progress to full body weight as tolerated.
    c. Continue biking and/or swimming program on a daily basis. No whip kicks or flip turns allowed.

<u>Postop Months 4-6</u>

Goals

1. Improved quadriceps strength/function
2. Increase endurance
3. Improve coordination/proprioception

Exercise Program

- *Walking program*: 20-30 minutes daily with medium to brisk pace. Add 5 minutes per week. May progress to running program under surgeon supervision depending on other concurrent injuries/surgeries or evidence of any underlying arthritis. This must be individualized according to the patient. The patient needs to be able to walk fast on uneven terrain without pain prior to starting jogging. When a patient can walk 2 to 3 miles without problems, jogging may be initiated. Start with a 100 yard jog, followed by 500 yards of walking. This should be repeated 5 times and then allow the knee to rest 2 to 3 days to assess its symptoms. An increase of 100 yards per session is gradually allowed over time.
- *Biking*: Increase the resistance as tolerated. Perform 3-5 times/week at 20 minutes per session. Ones thighs/legs should feel drained once off the bike.
- *Step-ups*: Put foot of operative knee on step and step up on the step. Repeat with an increase in repetitions until doing 100 step-ups per day. Attempt to take twice as long to step-down from the step as one takes to step-up. Increase step height as tolerated.

Walking and Jogging

- This must be individualized according to the patient. The patient needs to be able to walk fast on uneven terrain without pain prior to starting jogging. When a patient can walk 2 to 3 miles without problems, jogging may be initiated. Start with a 100 yard jog, followed by 500 yards of walking. This should be repeated 5 times and then allow the knee to rest 2 to 3 days to assess its symptoms. An increase of 100 yards per session is gradually allowed over time. Patients with arthritis or other concurrent knee ligament reconstructions will have this program modified to a low impact exercise program.

<u>Postop Months 7</u>

- Continue on maintenance exercise program 3-5 times/week.
- No competition or pivot sports until cleared by surgeon.

- One needs to strive to achieve maximum strength of the operation extremity. Even well placed and functioning grafts could stretch out over time if one relies on the grafts to make the knee stable rather than having appropriately strengthened muscles provide stability to the knee. For this reason, patients who have these complex surgeries should participate in a regular lifetime exercise program to maximize their surgical outcome.
- Patients complete Biodex and functional testing and have varus stress x-rays to evaluate healing prior to clearance for competition.

Adapted from Dr. Robert LaPrade – The Steadman Clinic