Anterior Cruciate Ligament (ACL) Reconstruction—Hamstring Tendon Autograft

Overview
This is a protocol that provides you with general information and guidelines for the initial stage and progression of rehabilitation according to the listed timeframes. Specific changes may be made by the care team as appropriate given each patient’s operative findings.

Questions
If you have any concerns or questions after your surgery, during business hours call 763-302-2231. You may need to leave a message.

Address
Maple Grove
9630 Grove Circle N., Suite 200
Maple Grove, MN 55369

Minnetonka
15450 Highway 7, Suite 100
Minnetonka, MN 55345

Robbinsdale
3366 Oakdale Ave. N Suite 103
Robbinsdale, MN 55422

POST OPERATIVE INSTRUCTIONS

DIET
• Begin with clear liquids and light foods (jello, soup, etc.).
• Progress to your normal diet as tolerated.

WOUND CARE
• Leave operative dressing in place for 2-3 days. Loosen ACE wrap if swelling in foot/ankle occurs.
• Remove surgical dressings 2-3 days after your surgery. If minimal drainage is present, apply band-aids over incisions and change daily.
• Swelling and bleeding after surgery is normal. If ACE wrap becomes saturated with blood, reinforce with additional dressing.
• Keep your incisions clean and dry until you’re seen back in clinic.
You may shower as needed after surgery, but cover incisions with plastic bag to keep them dry. No immersion in water, i.e. bath.

**MEDICATIONS**

- Local pain medications were used at the time of surgery. This will wear off in 8-12 hours. If a local “block” medication was given, this could last longer.
- Most patients will require narcotic pain medications for short period of time following surgery. Take per MD request.
- If pain meds are causing nausea and vomiting, contact the office (763-520-7870)
- Do not operate or drive machinery while taking narcotic meds.
- Ibuprofen can be taken between narcotic medication doses to help alleviate pain.

**ACTIVITY**

- Crutches and knee immobilizer are needed after surgery.
- Elevate the operative leg above your chest whenever possible to reduce swelling.
- Do NOT place pillows behind your knee, but rather under your foot/ankle. This will maintain good extension of your knee.
- Do not engage in activities that increase pain/swelling in your knee such as prolonged standing, walking, sitting without leg elevated.
- No driving until instructed by surgeon.

**BRACE**

- Knee immobilizer is typically used after surgery.

**ICE THERAPY**

- Begin immediately after surgery.
- Ice machines can be used continuously, or ice packs every 2 hours for 20 minutes daily until post-op appointment. See page 9 for more information.

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**Blood clot (DVT) prophylaxis**

- Deep vein thrombosis (DVT) is a serious condition because blood clots in your veins can break loose, travel through your bloodstream and lodge in your lungs, blocking blood flow (pulmonary embolism or PE).
- **Symptoms**: Swelling in the affected leg. Rarely, there may be swelling in both legs. Pain in your leg. The pain often starts in your calf and can feel like cramping or a soreness.
- **Risk factors**: smoking, obesity, pregnancy, oral contraceptive use, prolonged sitting and surgery
- To reduce this risk we recommend taking 325 mg Aspirin daily, if 18 yrs or older.
- Self care measures include: stop smoking, avoid sitting for long periods, and WALK.
- Deep vein thrombosis may sometimes occur without any noticeable symptoms.
POST OP APPOINTMENTS

First post op visit (7-10 days)
Your first post-op appointment is about 7-10 days from surgery. You will see the PA to review your surgery and have the sutures removed. Please bring your operative pictures with you to this appointment to enhance your understanding of your surgery.

We will order an X-ray and refill medications as needed. You will be able to shower and get your incisions wet at this point.

**Subsequent appointments will be scheduled every 4 weeks.

What to expect after surgery
• Swelling and bruising are very typical from knee to foot.
• Ambulation and stairs will be difficult for the first several weeks. This will become easier as your thigh muscle become stronger.
• Knee immobilizer should be worn for the first week or until thigh function returns.
• Pain medications will be needed for the first 1-4 weeks. Switch to ibuprofen or acetaminophen (if not contraindicated) as soon as possible.
• Ice and Elevation are important to reduce swelling.
• Physical therapy is generally initiated one week after surgery.
• Most patients return to work within a few weeks of surgery, unless your job is physically demanding, in which case patients may be kept out of work for a longer period of time.
PHYSICAL THERAPY

These exercises should be started the day after surgery. These will be all the required exercises until you are seen by your physical therapist in the office. It is important to begin working on range of motion right after surgery as this will help in your overall recovery.

HOME EXERCISES

**ANKLE PUMPS**
3 sets of 15, 2 times per day
MOVE YOUR FOOT UP AND DOWN

**HEAL SLIDES**
2 sets of 10, 2 times per day
FLEX YOUR HIP AND KNEE. RETURN TO STRAIGHT POSITION.

**KNEE FLEXION STRETCH**
2 sets of 10, 2 times per day
PLACE TOWEL UNDER HEAL. PULL KNEE TOWARDS CHEST. HOLD FLEXED KNEE FOR 15-20 SECONDS. RETURN TO STRAIGHT POSITION.

**KNEE EXTENSION**
2 sets of 10, 2 times per day
PLACE TOWEL ROLL OR PILLOW UNDER KNEE. LIFT FOOT OFF FLOOR.

**QUADRICEPS SETS**
2 sets of 10, 2 times per day
PLACE TOWEL ROLL OR PILLOW UNDER HEAL. TIGHTEN THIGH MUSCLE AND HOLD FOR 5 SECONDS.

**LEG LIFTS**
2 sets of 10, 2 times per day
RAISE LEG OFF THE FLOOR 6 INCHES, KEEPING THE KNEE STRAIGHT.
**PHASE I: Weeks 1-3 (RANGE OF MOTION [ROM])**

**CLINIC VISIT**
- 7-10 days after surgery

**WEIGHT BEARING (WB)**
- Weight bear as tolerated (WBAT) with knee immobilizer and crutches immediately following surgery.
- Full WB with knee immobilizer and crutches.
- Full WB without knee immobilizer using crutches, working on heal-toe stride when ambulating.
- Full WB without crutches. Continue to work on normal gait–heal-toe lift off. DO NOT LIMP. Do not walk on toes or with bent knee. Establishing a normal gait early is important.

**ROM**
- Flexion as tolerated
- Regain/Maintain full knee extension
- ROM goal at end of 3 weeks is 120 degrees to full ROM with full extension.
- May use ice, kodiak ice machine, cryocuff, game ready during this phase to address swelling.

**STRENGTHENING**
- Initiate strength program to include quad sets along with Progressive Resistance Exercises (PREs)
- PREs: 3-way straight leg raises, prone knee flexion

**MODALITIES**
- Ice post exercise regimen

**PROGRESSION CRITERIA**
- Gain and maintain full extension (do not force hyperextension)
- Minimum flexion to 100 degrees
- Decrease swelling
- Progress toward independent walking
- Initiate strength program
PHASE II: Weeks 3-6 (Strength)

CLINIC VISIT
• 1 month post-op

WEIGHT BEARING (WB)
• Full WB without crutches
• Smooth gait pattern without limping
• Can begin backwards walking on treadmill once Full WB without knee immobilizer

ROM
• Continue Phase I exercises as needed
• Continue flexion as tolerated
• Attain/maintain full extension

STRENGTHENING
• Closed chain kinetic exercises
• Begin functional strengthening exercises
• Proceed with Active ROM exercises

CONDITIONING
• 3x/week for 20 minutes

PROGRESSION CRITERIA
• ROM: full extension with flexion to 130 degrees (or full flexion)
• Confident, smooth gait
• Begin functional strengthening

PHASE III: Weeks 6-12 (Power)

CLINIC VISIT
• As needed

ROM
• Full ROM to flexion and extension. Continue ROM exercises in Phase I and II as needed. Discontinue ROM exercises when ROM is equal to both knees
PHASE III: Weeks 6-12 (Power)  Continued

STRENGTHENING
• Continue previous exercises as needed and add advanced closed chain activities as function allows.

CONDITIONING
• 3x/week for 20 minutes on an exercise bike, with normal pedaling motion
• Initiate elliptical training as early as 8 weeks if adequate strength is present.

MODALITIES
• Ice post exercise regimen (up to 30 mins)
• Proprioception: progress from level planes, incline and mini tramp surfaces

FUNCTIONAL TESTING
• May initiate landing progression
• Unsupported landing on two legs: 10-12 weeks
• Unsupported landing on one leg: 12-14 weeks

PROGRESSION CRITERIA
• Attain full ROM
• Advance functional strengthening
• Walk up and down stairs consecutively using both legs easily
• Must be able to land with flexed knee and no valgus deviation at the knees

PHASE IV: Weeks 12+ (Agility)

CLINIC VISIT
• 3 month and 6 month post op visits

ROM/STRENGTHENING
**Exercise daily to maintain ROM and advance strength and function to return to regular activities

ROM: Daily
STRENGTH: 3x/week

RUNNING: WEEK 12 (AUTOGRRAFTS), WEEK 16+ (ALLOGRAFTS, REVISIONS)
Running program: Start basic running program at 12 weeks (no swelling present. Leg strength and ROM full). Emphasis will be on normal running gait with full knee extension.
FUNCTIONAL TRAINING: 4+ MONTHS: Start only after Phase III complete. Must pass each stage prior to proceeding to the next stage.

<table>
<thead>
<tr>
<th>STAGE 1:</th>
<th>STAGE 2:</th>
<th>STAGE 3:</th>
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<tbody>
<tr>
<td>(Start with both feet and progress to operative leg. Unsupported linear)</td>
<td>• Hopping and running</td>
<td>• Progress to running agility program (3x/week)</td>
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<tr>
<td>• Unsupported hopping in a box pattern</td>
<td>• Landings</td>
<td></td>
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<tr>
<td>• Diagonal hopping</td>
<td>• Jump off 2” height forward, backward, and both left/right</td>
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<tr>
<td>• Straight line hopping (4 hops forward, then backward)</td>
<td>• Weight evenly distributed</td>
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<td>• Zigzag hopping</td>
<td>• Resisted jogging-elastic band at waist</td>
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<td></td>
<td>• Jog backwards, then forwards</td>
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<td>• Progress to forward shuffles, Carioca</td>
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FUNCTIONAL TESTING: 4+ MONTHS (Twin Cities Orthopedics “ACE” program)

Outcomes testing: Single leg hop to determine function. Patient should have completed Stage 1 of functional training. Perform between 12-16 weeks after surgery. This must be completed prior to progressing the patient to functional training and sport specific training.

**MODALITIES**

- ICE (up to 30 mins after exercise)

**PROGRESSION CRITERIA**

- Advance agility and power training
- Achieve normal activities on uneven surfaces
ICE MACHINES

Patients are not required to purchase any of these devices. They are only offered as a supplemental modality to help with pain control. Patients may use ice packs from home or any other cold therapy device.

BENEFITS

• Portable ice machines
• Reduces pain and swelling
• Gives constant cold therapy

PRICE

• Call for prices

CONTACT

Jeff Olmscheid
Ottobock Medical
Phone: 612-839-1472
WHY YOU SHOULD DISPOSE OF YOUR MEDICATIONS

- CHILDREN ACCIDENTALLY INGESTING HARMFUL MEDICATIONS
- USE OF MEDICATIONS FOR OTHER REASONS INSTEAD OF THEIR INTENDED PURPOSE
- USE OF EXPIRED MEDICATIONS WHICH CAN CAUSE ILLNESS OR OTHER HARM

**33% OF AMERICANS REPORT THEY HAVE NOT CLEANED OUT THEIR MEDICINE CABINETS IN MORE THAN A YEAR.**

FLUSH?

Proper disposal is important. Medicines flushed down the toilet contaminate water, harm wildlife and pollute drinking water. According to the Minnesota Pollution Control Agency, U.S. Food and Drug Administration and Drug Enforcement Administration, flushing medications down the toilet is not the best way to get rid of unused medications.

HOW YOU SHOULD DISPOSE

1. Bring your medications to a local drug take-back location. (see list below)
2. The DEA has two National Drug Take Back Days every year across the U.S.
   a. Go to the DEA, Diversion Control Division website for more information
      https://www.deadiversion.usdoj.gov/drug_disposal/takeback/
3. Some drug take-back programs offer mail-back programs
4. You should only flush medications if it’s indicated by the medication instructions
5. If you are unable to bring your medications to a drug take-back location, you can throw away medications by:
   a. Mixing them with sawdust, kitty litter or coffee grounds.
   b. Sealing the contents in a plastic bag.
LOCATIONS TO DISPOSE

Brooklyn Center
Hennepin County District Court Brookdale
6125 Shingle Creek Pkwy, Brooklyn Center, MN
Hours: Mon-Thurs 9 a.m. - 9 p.m.
 Fri & Sat 9 a.m. - 5 p.m.
 Sun Noon - 5 p.m.

 Brooklyn Park
Hennepin County Sheriff’s Patrol Headquarters
9401 83rd Ave. N., Brooklyn Park, MN
Hours: Mon-Fri 8 a.m. - 4:30 p.m.

Edina
Hennepin County Library – Southdale
7001 York Ave. S., Edina, MN
Hours: Mon-Thurs 9 a.m. - 9 p.m.
 Fri & Sat 9 a.m. - 5 p.m.
 Sun Noon - 5 p.m.

Golden Valley
Golden Valley Police Department
7800 Golden Valley Rd, Golden Valley, MN
Hours: 24 hrs a day, 7 days a week

Maple Grove
Maple Grove Police Department
12800 Arbor Lakes Parkway N, Maple Grove, MN
Hours: 24 hrs a day, 7 days a week

Minneapolis
Hennepin County Public Safety Facility
401 4th Ave. S., Minneapolis, MN
Hours: 24 hrs a day, 7 days a week

Minneapolis Police Department
1st precinct
19 N 4th St., Minneapolis, MN
Hours: 24 hrs a day, 7 days a week

Minneapolis Police Department
4th precinct
1925 Plymouth Ave. N., Minneapolis, MN
Hours: 24 hrs a day, 7 days a week

Minnetonka
Hennepin County District Court Ridgedale
12601 Ridgedale Drive, Minnetonka, MN
Hours: Mon-Thurs 9 a.m. - 9 p.m.
 Fri & Sat 9 a.m. - 5 p.m.

Osseo
Osseo Police Department
415 Central Ave., Osseo, MN
Hours: Mon-Thurs 7:30 a.m. - 5 p.m.
 Fri 7:30 a.m. - 11:30 a.m.

Spring Park
Hennepin County Sheriff’s Water Patrol
4141 Shoreline Drive, Spring Park, MN
Hours: Mon-Fri 8 a.m. - 4:30 p.m.

For more information
Visit hennepin.us/medicine
or call 612-348-3777.