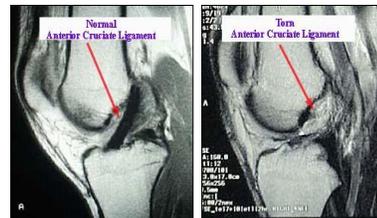


Brian P. McKeon MD
 Jason D. Rand, PA-C, PT
 Patient Information Sheet: Anterior Cruciate Ligament

The anterior cruciate ligament or ACL is one of the major ligaments located in the knee joint. This ligament serves to stabilize the knee permitting us to run, jump and participate in sports. ACL injuries often occur during sports such as basketball or soccer which require cutting and pivoting movements. These actions could result in an ACL tear. Contact injuries such as a football player making contact with the knee of another football player during a tackle may also result in an ACL tear. The external force on the knee may be so overwhelming that other structures may be injured along with the ACL including the medial collateral ligament, or the medial or lateral meniscus.

Initial Injury:

During the initial injury, patients often report a sensation of leg buckling or giving way. You may even hear a “pop” from the knee joint. Patients are seldom able to continue with the activity or sport they were playing. Often the joint will swell within hours of the injury producing an enlarged and tender joint. Treatment at this time consists of rest, elevation, ice, compression and possibly crutches for ambulation.



Magnetic Resonance Imaging (MRI) demonstrating a normal and torn ACL

Your orthopedic surgeon will conduct a physical examination and utilize x-rays and MRI to confirm an ACL tear. The MRI is also useful to diagnose any associated injuries to the knee.

ACL Reconstruction Surgery:

Unfortunately, a complete ACL tear does not heal and must be either reconstructed or left deficient. The knee can function without an ACL. For the younger or active patient who seeks to return to an active lifestyle including playing sports, the ACL should be reconstructed to avoid further knee injury. Older and sedentary patients whose leg remains stable after injury may opt not to have their ACL reconstructed. These patients may be putting other stabilizers of the knee (meniscus) at risk due to the inherent instability of the ACL deficient knee.

Once surgical reconstruction is selected, your surgeon will discuss what type of graft will be utilized to replace the ACL. In the United States, the available grafts are; patella tendon, hamstring and allograft tissue. There are benefits and problems to each of the graft choices. The graft most commonly used in our practice is the Tibial tendon allograft. This graft is donated tendon from a deceased person. This graft is very popular because we do not have to take anything from the patient’s leg. We can leave the patella tendon intact avoiding potential anterior knee pain and also leave the hamstring tendons which work along with the ACL to stabilize the knee. This graft choice reduces surgical time and the length of incisions. By decreasing the length and amount of incisions, we are minimizing skin scarring. Advances in screening methods have virtually eliminated the risk of disease transmission (1).



Incisions utilized for ACL reconstruction with allograft

Pre-Surgery:

Before surgery, patients are instructed to continue to be as active as the knee permits, excluding participation in sports. It is essential to have full knee range of motion and good muscle strength prior to ACL surgery. Physical therapy may be required to achieve this goal.

- Anti-inflammatories such as ibuprofen or aspirin must be stopped 5 days prior to surgery. Utilize ice and elevation to control pain and swelling during this period
- On the night before surgery, do not eat after midnight (no chewing gum or lozenges)
- On the morning of the surgery you may have your daily pills with a sip of water
- Your surgical time will be confirmed the day before the surgery by the surgery center or hospital. The original time may be adjusted based on patient needs and equipment availability
- Patients should bring their MRI and X-rays to the surgery
- If the surgery is done at our Waltham facility, the person who is accompanying you is welcome to a free one-day gym pass

Surgery:

The length of the procedure utilizing donated tissue is approximately one hour. This may be longer depending on whether there are other associated injuries such as a meniscal tear. Your nurse will bring you into the pre-op area where you will have an IV placed and meet with your anesthesiologist. General anesthesia is utilized to assure a comfortable surgery. This means that you will be “asleep” and completely unaware of the surgery until you wake up in the recovery area. Most patients will have a small tube placed in their windpipe, formal intubation may not be required. The surgery is conducted with arthroscopic equipment. This means that we will use a small camera and small equipment through little incisions to reconstruct the ACL.

Post-Surgery:

After the surgery is completed, you will awaken in the operating room and be moved to the recovery area. After surgery, most patients generally recover smoothly and have minimal pain due to local pain medication that is used at the completion of the surgery.

- A pain medication prescription will be provided prior to discharge. You may take the prescribed medication as directed. You should expect to experience minimal to moderate knee discomfort for several days and even weeks following the surgery. Patients often only need prescription narcotics for a few days following surgery and then can switch to over-the-counter medications Tylenol or Ibuprofen.
- Ice bags and elevation should be utilized to decrease swelling and pain. Keep ice on for 15 minutes and off for 45 minutes during the initial postoperative period and following exercises.
- At the completion of surgery, you will have a brace placed on your leg. The brace should be locked for 24 hours. You may unlock the brace after 24 hours, which will allow your knee to bend and straighten. The brace may only be removed when sitting with your leg elevated and in an extended position. It should be secured tightly in an unlocked position during all other times, including walking and sleeping.
- You should be comfortable walking independently with crutches before leaving the hospital or surgery center. You will be able to put as much weight as tolerated on your knee.



- If the bandage is draining, reinforce it with additional dressings for the first 48 hours. After 48 hours remove the bandage and place band aids over the incision sites. Showering is acceptable at this time. Do not submerge or scrub the knee.
- Rehabilitation starts the day of surgery. Set aside 3-4 times a day for range of motion and exercise strengthening program. **Make an appointment to start physical therapy during post-operative week.** See exercises at end of packet.

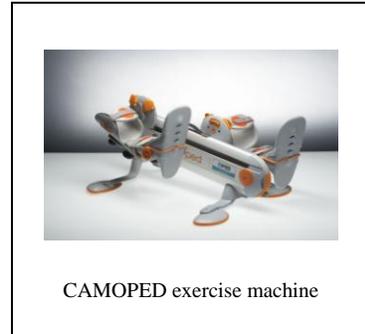
A Camoped exercise unit and an electrical stimulation unit may be delivered to your home. A representative will instruct you on the use of this equipment and provide all necessary instruction. Utilize the Camoped unit 3 times a day in 15 minute sessions.

- Take one 325 mg (full strength) aspirin daily for 14 days (unless otherwise instructed) to prevent blood clots.
- Follow up with Dr. McKeon or Jason Rand PA-C within 2 weeks from the date of surgery
- Eat a regular diet as tolerated and please drink plenty of fluids.
- You may drive once you establish full control of your extremity (able to perform a straight leg raise, etc.). If your right knee was operated on, this may take several days to achieve
- Call office for Temperature >102 degrees, excessive swelling, pain or redness around the incision sites.
- Plan at least 2-3 days away from work or school. Utilize this time to decrease swelling and participate in your home exercise program. You may be able to resume work once the pain and swelling resolves (this varies based on job activity).

Meniscal Repair:

If your meniscus was repaired during the surgery, your rehabilitation will be slightly altered.:

- 1) Maintain only 10% of your normal weight through you leg and utilize crutches for 6 weeks.
- 2) Brace instructions: Brace must be locked in extension until quadriceps control is good. Once this is achieved, you may unlock the brace with ambulation. For 4 weeks post-op, wear the brace unlocked when out of the house.





Post-op Rehabilitation Protocol – ACL reconstruction with allograft

Phase 1 (Weeks 0-2):

Goals: Minimize effusion, maintain full terminal knee extension, Flexion to 120°, Normalize gait pattern/balance and proprioception abilities.

Treatment plan:

- 3) Utilize camped and electrical stimulation as directed by company representative and physical therapist.
- 4) Swelling Control with ice and compression wrap
- 5) Maintain full knee extension
- 6) Initiate quadriceps and hamstring muscle activation and general leg control
 - Quad setting, SLR, heel slides, isometric hamstring/quadriceps contraction
 - Ankle pumps
- 7) WBAT with crutches

Phase 2 (Weeks 2-4):

Goals: Full knee ROM in extension and flexion, progress quadriceps/hamstring strengthening, good patella mobility, independent mobility

Treatment plan:

- 1) Continue with swelling control
- 2) Full knee ROM (half to full revolution on exercise bike)
- 3) Wall slides/ ball squats/ progressive step-ups
- 4) Balance and Proprioception: Single leg stance/weight shifting
- 5) Independent ambulation

Phase 3 (Weeks 4-12):

Goals: Full lower extremity strengthening/conditioning program, Agility and Plyometric drills, Full activity in gym

Treatment plan:

- 1) Progress CKC strengthening – lunges/ reverse lunges/ single leg squats
- 2) Full ROM – Full revolution on bike
- 3) Progress dynamic balance training

Phase 4 (Month 3-6):

Goals: Agility and Plyometric drills, Sports specific training,

Treatment Plan:

- 1) Progress lower extremity strengthening and control
- 2) Plyometric drills including lateral movements, quadrant exercise
- 3) Sports specific strengthening and conditioning
- 4) Treadmill/bike light jogging
- 5) Transition to self directed exercise program

Phase 5 (Month 6 -)

Goals: Continue with home exercise program to maintain strength of lower extremity. Return to sports of choice and independent gym activity.

Treatment Plan:

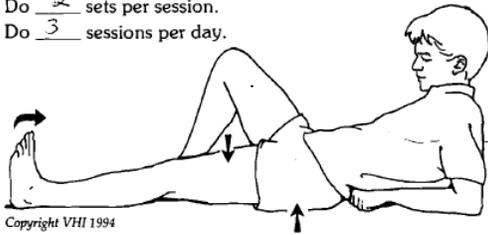
- 1) Progress plyometric and agility training
- 2) Progress sport specific training
- 3) Fit for functional stability knee brace as needed

Post-op exercise program until formal physical therapy is started:

HIP / KNEE - 64
Antiemboi Isometric

Extending toes toward knee, tense the muscles of the front of the thigh and simultaneously squeeze buttocks. Keep leg and buttock flat to the floor. Hold ____ seconds.

Repeat 10 times per set.
Do 2 sets per session.
Do 3 sessions per day.



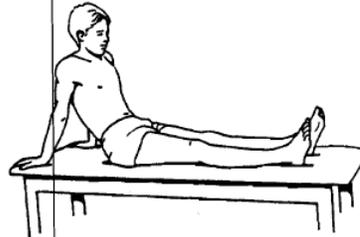
ANKLE/FOOT - 18 Range of Motion:
Plantar/Dorsiflexion



Relax leg. Gently bend and straighten ankle. Move through full range of motion. Avoid pain.

Repeat 10 repetitions/set. Do 2 sets/session.
Do 3 sessions/day.

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Tighten muscles on top of thigh by pushing knees down into floor or table.

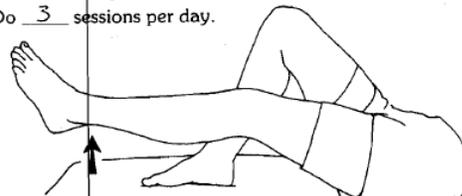
Hold 5 seconds. Repeat 10 times.
Do 3 sessions per day.

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Straight Leg with Bent Knee

Lie on back with opposite leg bent. Keep involved knee slightly bent at knee and raise leg 4-6". Hold ____ seconds.

Repeat 10 times per set.
Do 2 sets per session.
Do 3 sessions per day.



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