You have just been told that your anterior cruciate ligament (ACL) is torn. I'm sure that this raises many questions in which we will try to answer. We hope the following pages will help you to better understand the ACL, its injury, and the treatment process.

The knee is quite complex when looked at in an overall perspective. We will limit our considerations to the ACL and those structures affected by its presence or absence. The ACL is one of two crossed ligaments in the center of the knee. It is located at the front of the central portion of the upper surface of the shinbone. It runs upwards and backwards to attach to the back of the central portion of the thigh bone, slightly to the outer side. The posterior cruciate ligament (PCL) is the remaining ligament that crosses the ACL in the center of the knee.

Although these two ligaments appear to be in the center of the knee joint, they are actually outside of the fluid-containing portion of the joint and, therefore are covered by joint lining from which they receive their blood supply. Significantly, this explains the poor healing properties of the ACL when it is torn. It is not unusual for "partial injuries" of the ACL to result in a slow shrinkage of the ligament due to the loss of blood supply. As a result of this, we generally consider that there is no such thing as a partial tear of the ACL.

The ACL is one of the prime stabilizers of the knee. It provides both anterior and posterior (front and back) stability, and also rotational stability.

The rotational instability that results from its injury is the reason that it has received the name, "ATHLETE'S CRUCIAL LIGAMENT." Its loss causes difficulty with any activity that requires quick stops, turns, twisting or jumping. All of them are critical functions in the majority of athletic activities. Although some people are willing to limit their athletic activities, others find that they still have significant instability problems during normal activities of daily living. As a result, reconstructive treatment of their ACL is required. Certain occupations place an increased demand on the stability of the knee, which makes it necessary that reconstruction be carried through because of the physical risk to the well being of the patient.

The diagnosis of a torn ACL can be established in several ways. The experienced knee surgeon usually does it by means of the history supplied by the patient and physical examination. An x-ray examination is used to rule out other associated injuries that can occur at the same time, i.e. fractures or loose pieces of bone in the knee. Testing of the knee with devices is often helpful to determine its looseness. An MRI (magnetic resonance imaging) is beneficial and offers the opportunity to evaluate the meniscus cartilage as well. The ultimate evaluation is the visual inspection of the ACL by means of an arthroscopy, which also gives the best evaluation of other intra-articular structures, such and the meniscus cartilage.
Assuming that you are a candidate where reconstructive surgery has been recommended, it is important for you to have a concept of the different options available. It is also important that you understand the general concepts that enter into these recommendations.

The question that is asked frequently is "do I need to have the ACL reconstructed at all?" The answer to that is that you should. Some people are able to "cope" with their ACL deficient knee, and decide to give up sports or activities that require a lot of knee movement and action. That certainly is an option. If someone tries to be active on a ACL deficient knee, then the chance of the knee "giving out" and having further damage done to the knee is almost inevitable. Many people today were left alone 10, 15 and 20 plus years ago to cope with their ACL deficient knee. The majority of those people now have an arthritic knee that is not as functional as their normal knee. We know that the natural history of an ACL deficient knee is this:

\[
\begin{align*}
\text{Injury} & \quad \downarrow \\
\text{Unstable knee} & \quad \downarrow \\
\text{Re-injury} & \quad \downarrow \\
\text{Re-injury} & \quad \downarrow \\
\text{Re-injury} & \quad \downarrow \\
\text{Deterioration} & 
\end{align*}
\]

If you stabilize your knee, then we hope to have the natural history of an ACL reconstructed knee return to a normal functioning knee.

\[
\begin{align*}
\text{Unstable Knee} & \quad \downarrow \\
\text{Restoration} & \quad \downarrow \\
\text{Bracing} & \quad \downarrow \\
\text{Education} & \quad \downarrow \\
\text{No Deterioration} & 
\end{align*}
\]

In order to have a reconstructive surgery procedure for a torn ACL, a decision on the type of graft material to be used needs to be made. The various types of graft material will be explained to you in greater detail.
GLOSSARY

FEMUR: The bone in your thigh that extends from your hip down to form the top half of your knee.

TIBIA: The large bone in your lower leg (shinbone) that forms the lower half of your knee.

ANTERIOR CRUCIATE LIGAMENT (ACL): One of two major ligaments in the middle of the knee that provides front, back and rotational stability. It attaches to the shinbone (tibia) in the front and to the thighbone (femur) in the back of the knee. Also known as the athlete's crucial ligament.

POSTERIOR CRUCIATE LIGAMENT (PCL): One of two major ligaments in the middle of the knee that provides front, back and rotational stability. It attaches to the shinbone (tibia) in the back and the thighbone (femur) in the front of the knee.

MEDIAL COLLATERAL LIGAMENT: The main ligament located on the medial or inner aspect of the knee that connects the femur to the tibia.

LATERAL COLLATERAL LIGAMENT: The main ligament located on the lateral or outer aspect of the knee that connects the femur to the tibia.

MENISCUS CARTILAGE: Two "C" shaped cartilages that are within the knee joint. They are intervened between the femur and the tibia, where one is located on either side of the knee. Hence, their names medial and lateral meniscus. They are frequently torn with or after an injury to the ACL.

ARTICULAR CARTILAGE: The weight bearing surface cartilage that covers the ends of the femur and tibia, and on the back of the kneecap. It becomes permanently damaged with pivot shift episodes. Any damage to this cartilage is called "chondromalacia", and therefore referred to as "arthritis".

PIVOT SHIFT: The abnormal shifting and rotating of the femur over the tibia that occurs after an injury to the ACL.

PIVOT SHIFT TEST: A test that the surgeon does which is confirmatory of the loss of normal function of the ACL.

LACHMAN TEST: A test that demonstrates abnormal front to back motion in a knee after an injury to the ACL.

KT-2000 TEST: A test that documents the amount of forward movement a knee has with an injured ACL. It demonstrates the relationship between the injured knee and the uninjured knee.

ARTHROSCOPIC EXAMINATION: The visualization and inspection of the inside of the knee. This allows the surgeon to actually view any damage to the bearing surfaces, meniscus cartilage, cruciate ligaments, and the overall knee joint.
CONCENTRIC STRENGTH: Muscle strength related to the ability to actively shorten a specific muscle. The knee is straightened against resistance.

ECCENTRIC STRENGTH: Muscle strength related to the ability to resist the lengthening of a muscle. The knee is resistant with bending.

ALLOGRAFT: Tissue from another human being that is used in surgery.

AUTOGRAFT: Tissue from your own "self" that is used in surgery.
OUTPATIENT ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION

You have been scheduled to have surgery by Dr. Prohaska. The following information is provided so that you will know what to expect before, during, and after the surgery. You may also check our website at www.drprohaska.com for more information.

Before the Surgery

Do not take ibuprofen, naproxen, aspirin or any medication that contains aspirin for 7 days before your surgery. You may take a non-aspirin pain reliever, such as Tylenol®, Mobic®, or Celebrex®. You may take 2 extra strength Tylenol every 4 hours up until 12 midnight. Do not take any other medication the day before surgery unless your doctor says you may.

If you are taking Coumadin or other blood thinners, you will need to stop taking it 7 days before surgery. You may restart your blood thinners after surgery. Make sure that your family doctor is aware of this since they may need to monitor your Coumadin levels after surgery.

Discontinue all herbal medications/supplements and diet pills/medications 2 weeks before surgery.

Do NOT eat or drink anything after midnight the night before your operation. You may brush your teeth and use mouthwash the morning of surgery, but do not swallow any liquid.

You should have been told what time to report to the surgery center at the time of your pre-op. Please remember to bring the knee brace, crutches, slings, or any other surgery-related items that you have received. You will use these items after your operation.

Preoperative Evaluation

Dr. Prohaska’s physician assistant (PA) will review your medical history with you when you schedule your surgery. He will determine whether or not you need to be evaluated by your family doctor/cardiologist and have lab work done prior to surgery. Most people will not require any preoperative lab work, but some will. This is based on your previous health history, current medications, and the type of surgery you are having. If it is necessary for you to obtain lab work or be evaluated by your doctor, you will be given a piece of paper listing what needs to be done prior to surgery. Please have this done as soon as possible. You should follow-up with your physician to make sure that they have sent it to our office. They may fax it directly to us at (316) 631-1666. Failure to have this done in a timely manner may make it necessary to postpone your surgery.

If you have diabetes, COPD, asthma, cardiac problems, reflux, seizures, sleep apnea, or smoke, here are further instructions that you should follow:

**Diabetics:** Eat a hearty meal the night before surgery and take usual P.M./H.S. dose of insulin. For surgery before noon, do not eat or drink anything after midnight and omit the usual A.M. insulin injection or medication. For surgery after noon, take clear liquids before 6:30 A.M. and take ½ the usual A.M. dose of insulin. If an insulin reaction occurs then drink 6-12 oz. of juice to relieve symptoms.
**Metformin** — If you are taking metformin (Glucophage) or combination drugs that contain metformin (GlucoVance, Metaglip, or Avandamet), you need to stop this 24 hours before surgery. This means that you can take your morning dose the day before surgery but NOT the evening dose the night before surgery.

**Cardiac Problems/Medications:** Take usual A.M. medications with sips of water upon rising. If using Nitro Stat tabs, have immediately available and bring the bottle to surgery. Tell the anesthesiologist if any significant chest pain has occurred within the past 48 hours.

**COPD/Asthmatics:** Take all medications on A.M. of surgery with sips of water upon rising. Use all inhalers and bring them to surgery. Inform the anesthesiologist if having difficulty breathing.

**Seizure Medications:** Take all seizure medications on the morning of surgery with sips of water upon rising.

**Reflux Medications:** Take all reflux medications on the morning of surgery with sips of water upon rising.

**Smokers:** Stop all smoking at least 24 hours prior to surgery.

**Sleep Apnea** — If you have sleep apnea there is a chance you will have to stay overnight, depending on your condition following the surgery. Make sure you are prepared for this. If you have a CPAP machine, bring it with you and leave it in your car in case you need it.

**The Day of Surgery**

At the hospital, a nurse will ask you questions about your medical history. You will be given a consent form to sign that states you understand the risks and benefits of the surgery and agree to have it done. Ask your doctor or nurse any questions you may have about the procedure. You will be asked to remove all jewelry and other valuables and to give them to a family member to hold. An intravenous (IV) line will be started in your arm. You will receive fluids and medication through your IV during your operation. You will be escorted to the operating room on a wheeled cart.

**After the Surgery**

You will be taken to the recovery room when the operation is over. During this time, nurses will check your blood pressure, breathing, pulse, and temperature. They will also check the circulation and movement of your extremities. When you are fully awake and have recovered from the anesthesia you will be discharged from the hospital (outpatient procedures) or moved to your hospital room (inpatient procedures).
After Discharge from the Hospital

Pain Control:

You will receive prescriptions for pain (Oxycontin and OxyIR) when you are discharged from the hospital. You should take the pain medications as prescribed to keep your pain under control. It is better to prevent pain rather than to try and relieve it, after it occurs. If necessary, set an alarm to awaken you in the middle of the night to take your pain medication. You should start this immediately after surgery. After the first two or three days, you may no longer require pain medication on a regular basis. At that time, you should take your other prescribed pain medication as needed for pain. We also recommend that you take your medications with food or at least crackers or milk.

You will NOT be given an anti-inflammatory after your ACL. You should avoid taking any anti-inflammatory (ibuprofen, naproxen, aspirin, Mobic, Celebrex, etc.) for a minimum of 3 three but preferably 6 weeks, unless prescribed by Dr. Prohaska.

The Oxycontin and OxyIR can cause constipation. To avoid this you should drink plenty of fluids and take Colace 100mg every day. This may be purchased over the counter at your pharmacy. These medications may also cause itching. Take Benadryl 25-50mg every 4-6 hours for itching, if needed.

You will also receive a prescription for Phenergan suppositories to use for nausea and vomiting. You may elect not to get this prescription filled unless you are having problems with nausea or vomiting.

When you have taken all of your prescription pain medications, you may begin to take over the counter Extra Strength Tylenol to control any discomfort you may be experiencing. If the medications, ice and elevation do not provide pain relief, call your surgeon's office.

Ice Man:

Apply the Iceman to your knee continuously for the first 48-72 hours and elevate your leg (above the level of your heart) as much as possible. The use of ice will decrease the amount of swelling, which in turn will decrease the pain. IT IS VERY IMPORTANT TO APPLY ICE (ICEMAN) FOR 20-30 MINUTES AFTER PHYSICAL THERAPY OR ANY ACTIVITY.

The iceman will use a lot of ice so you will need to buy some ice and have it available when you get home.

Dressing Change:

Your dressing will need to be changed on the 2nd or 3rd day after surgery. This can be done by the therapist or you may do it yourself. If you decide to do it yourself then follow these procedures:

1. Wash your hands with warm water and soap.

2. Open the brace around your knee.
3. Remove the dressing and discard it.

4. Check the incision for signs of infection, such as redness, swelling, unusual pain, or drainage.

5. Gently clean around the incision with warm water and soap. Do not get the incision or stitches wet.

6. Apply a clean gauze dressing and tape the edges. Do not apply ointment to the incision.

7. Wash your hands.

**It is important to keep your incisions dry until then.** You should sponge bathe or wrap the knee with saran-wrap when you shower to keep the incisions dry.

**Suture Removal:**

Normally, you will not have any VISIBLE sutures. If you do, you should **keep them clean and dry.** They will be removed approximately 6 to 10 days after surgery, during your first postoperative visit with Dr. Prohaska.

**Rehabilitation Knee Brace:**

After surgery you will be placed in a brace to protect your knee. During the first week this brace should be locked straight except while performing your range of motion. After the first week after surgery you may unlock the brace for all activities, AFTER you have been cleared by Dr. Prohaska or your physical therapist. You will wear the brace until the motion in your knee has improved to 90° to 100°. Generally this will require you to wear the brace for 4 to 6 weeks after surgery.

**Activity/Crutch Walking:**

After surgery you should use both crutches when walking. You may put as much weight on the operative leg as tolerated unless you are instructed otherwise. During the first week your brace should be locked in the fully extended position. After the second week you may begin walking with the brace unlocked. You should continue to use your crutches until you are told to discontinue them by your physician or physical therapist.

You should begin doing straight leg raises, quadriceps sets, ankle pumps, and heel slides to 90 degrees **STARTING THE DAY OF THE SURGERY.** You should do 10-15 repetitions of each exercise three times a day. These exercises are shown on the last page of this handout. You will have to unlock the brace to do these exercises. Make sure you lock it in extension when you finish doing the exercises.

**Physical Therapy:**

You will receive a physical therapy prescription on the day of surgery. This will explain to the therapist your diagnosis, what treatment was performed, and what they need to do to treat you. **Be sure to take this form with you to your first physical therapy appointment.**
If you need a referral from your primary care doctor, please be sure to take that along also.

Please make your PT appointments as soon as you can so that you are able to get an appointment 2 or 3 days after your surgery. It is a good idea to take your surgery pictures with you to the first post-op therapy appointment.

You may want to go your physical therapist one time before your surgery for crutch training and post-op exercise instructions.

We want you to safely learn how to use your crutches and would like PT to show you how to go up and down stairs correctly as well as basic crutch ambulation. The staff at the surgery center will ask you if you have had crutch training. If so, then please let them know. This may speed your dismissal.

Returning to Work or School:

You may return to sedentary work activities or school two to three days after surgery if pain is tolerable. Returning to heavy physical work will be determined by your physician.

Driving:

During the first week after surgery no driving is permitted. Driving a car with an automatic transmission may begin when the rehabilitation brace is unlocked at all times if you have more than 90° of flexion and are able to control the leg. If you had surgery on your right knee, driving will usually begin three to four weeks after surgery unless instructed otherwise by your physician. Generally you will be able to return to driving sooner if you have had surgery on your left knee.

Normal Sensations and Findings after Surgery:

After surgery you may experience the following sensations:

- Shin pain
- Swelling and warmth of the knee for three to four weeks
- Small amount of bloody drainage
- Numbness in the area of your incision. When the incision was made small nerve fibers in the skin were cut. These nerves must regenerate before sensation returns to normal.
- Soreness in the Achilles tendon area may develop. This is the area immediately above your heel.
- Soreness and swelling in the back of knee.
- Bruising of the lower leg that is evidenced by black and blue marks.
- Swelling of the lower leg including the ankle. If this occurs you should elevate the leg above the level of your heart and apply ice to the swollen area.

- Numbness in the area of the foot. This should resolve in several days. If it persists you should contact your physician.

- A low grade temperature less than 100.5° Fahrenheit. If this occurs you should drink plenty of fluids, take Tylenol and do coughing and deep breathing exercises every two hours while awake. This will help to expel any mucus that is present in the lungs. When doing the coughing and deep breathing exercises, you should take 10 deep breaths and on the last breath hold it for several seconds and then cough forcefully a few times.

- A small amount of redness in the area where the sutures or staples insert into the skin is normal.

- A sore throat following surgery. This may be related to the tube placed in your throat while you were under anesthesia during surgery. If you experience a sore throat you should gargle with warm salt water 3 to 4 times a day to help relieve the discomfort.

**When to Call the Doctor**

If you have any of the following signs of infection, call your doctor immediately:

- Swelling or redness of the incision.
- Drainage from the incision. Fever at 101 °F or above.
- Unusual pain around the incision.

Call your doctor **immediately** if you have tenderness or deep pain in your calf that becomes worse when you pull your foot toward your knee. Watch for increased swelling or warmth in your calf. These signs could indicate a possible blood clot deep in your calf, a condition that requires immediate attention.

If you have any questions please feel free to contact us at 631-1600. If you are unable to contact the physician you can call the Physician Exchange at 262-6262 and page Dr. Prohaska or his PA.
ROUTINE REHAB PROCESS

DAY 1 (Surgery Day)
Your reconstruction is an out-patient surgery procedure. That means you will come into the hospital that morning and go home that afternoon. You will have a bulky dressing with a DonJoy Iceman cooler, and an TROM or ELS full leg brace on the affected leg. You will need to use crutches to ambulate. If using an ELS keep the brace locked unless exercising until your therapist or Dr. Prohaska tells you that you may unlock it for ambulating. We encourage you to take it easy for the next couple of days. You should try to get up and move around the house as often as possible as long as you use your crutches.

DAY 2 to 3
You will see your therapist who will remove the bulky dressing and open the hinge on your brace. They will start your exercise and help you begin your return a normal active lifestyle. IF you had a meniscal cartilage repair you will need to keep your brace locked for ambulation for four weeks, weight bearing as tolerated.

1st WEEK POST-OP:
This is your first post-op visit to see Dr. Prohaska. We will also remove the suture from the surgery site.

2nd WEEK:
At this point you should be about ready to get rid of your crutches and walking with the post-op brace on your leg. UNLESS YOU HAVE HAD A MENISCAL REPAIR. If you had a meniscal repair you will keep the brace locked for four to six weeks when walking.

3rd WEEK:
Gaining more strength in your leg and continue to wean off crutches. With meniscus repairs crutches are continued for stability.

4th-5th WEEK:
This will be your next post-op visit to the office. At this point you will start to wean from your hinged knee brace, unless you had a meniscus repair.

12th WEEK
You will continue strengthening and you your therapist will determine your physical activity level. Normally, you will be able to begin straight-ahead running. You will also have a post-op visit with Dr. Prohaska.
6th MONTH:
You will also have another visit with Dr. Prohaska. At this point if your rehab has gone as
planned and your strength is good, you will be allowed to return to competitive athletics.
Depending on your situation, Dr. Prohaska may recommend that you wear a sports brace until
you have finished your first competitive season.

On the norm, most people return to competitive athletics 6 months from the date of their surgery.
There may be some exceptions. Every attempt will be made to get you back in action as soon as
possible. Our main goal is to restore your knee to pre-injury condition. The patients that follow
our protocol and work hard and understand the ultimate goal will do the best.