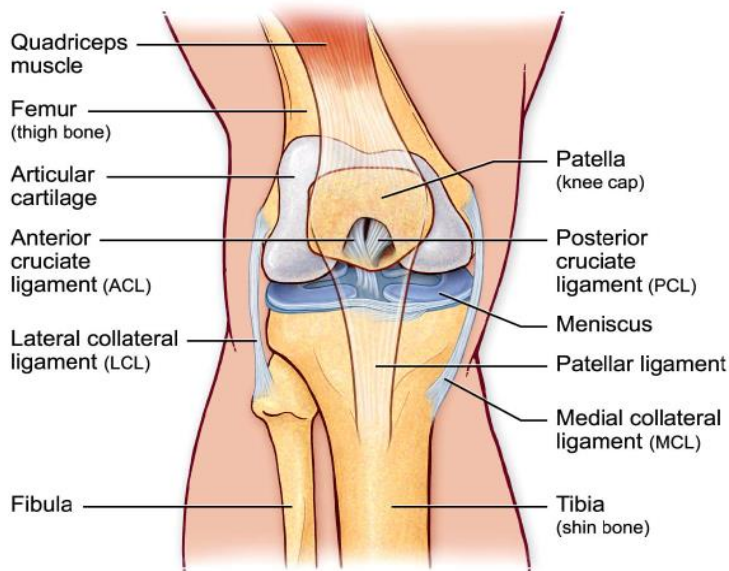


## PATIENT GUIDE TO ACL INJURIES



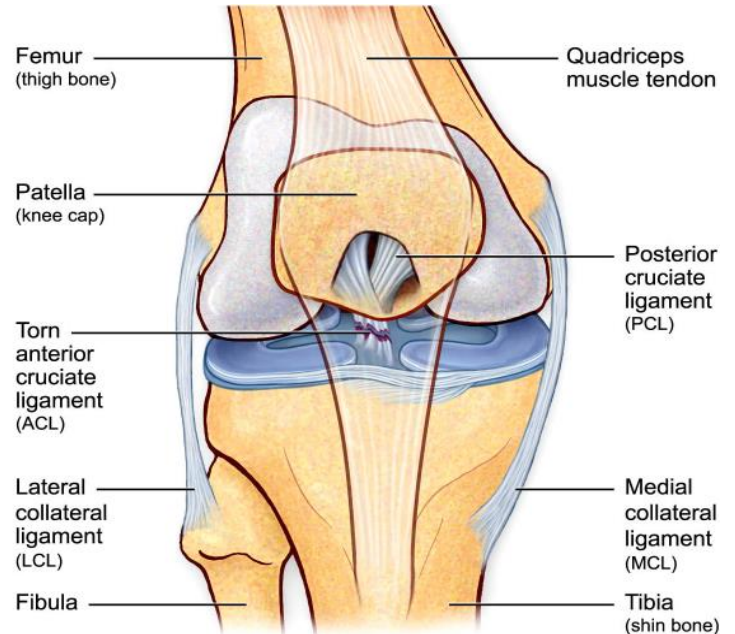
**FIGURE 1**

### What is the Anterior Cruciate Ligament (ACL)?

The anterior cruciate ligament (ACL) is the main ligament in the center of the knee (**Figure 1**). It runs from the back of the femur (thigh bone) to the front of the tibia (shin bone). It assists in proper movement of the knee joint and prevents the tibia from shifting out from underneath femur. Abnormal slippage can create an unstable knee that “gives way” during activity, especially cutting and pivoting sports.

### How is the ACL injured?

The ACL is most commonly injured during a pivoting or twisting injury to the knee when the foot is planted on the ground. This can occur during such sports as football, soccer, basketball, or skiing. It can also be injured during a direct blow to the knee, or with hyperflexion or extension of the knee.



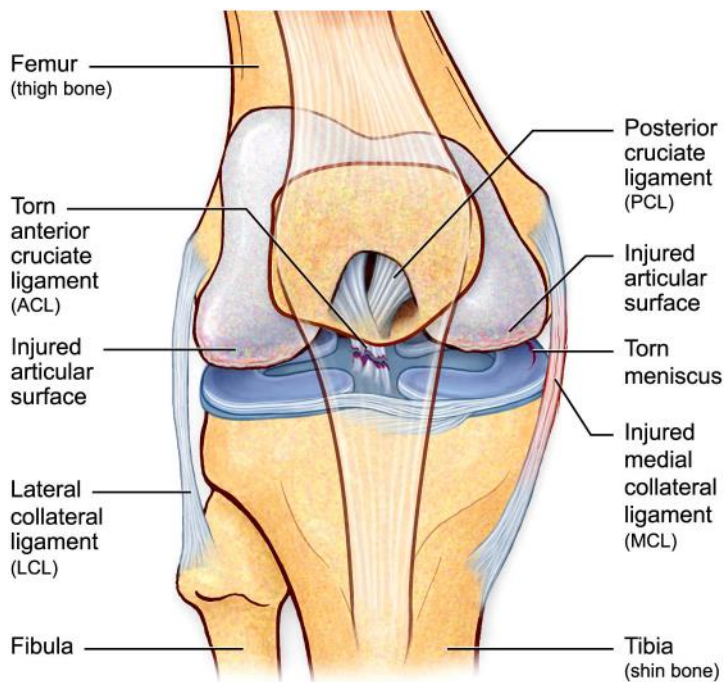
**FIGURE 2**

### How do I know my ACL is injured?

Usually a tear (**Figure 2**) to the ACL results in sudden pain and giving way of the knee. Many patients report having felt or heard a “pop” when they injure their knee. In addition, the knee commonly swells within the first 1 to 3 hours after the injury.

If the injury to the ACL is more chronic in nature, the injury most commonly leads to shifting or giving way of the knee with activity.

The examination in the office usually can almost always determine when there is a significant ACL injury, by testing the ability of the ligament to prevent the tibia from moving forward on the femur. If the injury just recently occurred, it can be difficult to tell if the ligament is injured because the patient does not like the knee to be moved around.



**FIGURE 3**

**Do I need x-rays?**

A set of x-rays is usually ordered to evaluate the bones and cartilage around the knee. The x-rays are primarily used to evaluate for a fractures or arthritis about the knee.

**Do I need a MRI?**

A MRI may be ordered to look for damage to the ACL and rule out any other injuries to the knee. Other ligament or cartilage injuries can occur in combination with injuries to the ACL, which can be seen on the MRI.

**Is there other damage to the knee when the ACL is injured?**

Other ligaments in the knee can be injured at the same time as the ACL (**Figure 3**). The most common ligament to also be injured is the medial collateral ligament, the MCL. This ligament is the ligament on the inside of the knee that prevents the leg from moving outward.

In many cases, there is a meniscus tear that occurs at the time of the ACL injury. The medial and lateral meniscus are the cartilage rings which sit on the inside and outside of the knee. Some meniscus tears can be repaired (fixed), while others need to be trimmed back so that the torn edges are smooth (partial meniscectomy). Whether or not the meniscus can be fixed or needs to be trimmed depends on the location, the size, and the age of the tear. All attempts are made to try and repair a meniscus that will heal.

In some cases, there is also injury to the articular cartilage (the cartilage surface of the knee). The MRI will usually detect this injury, but in some cases it is not seen. This injury will also be addressed at the time of surgery, if necessary.

**What are the treatment options for ACL injuries?**

The ACL cannot heal on it's own, but not all tears of the

ACL need to be fixed with surgery. Whether or not the ACL needs to be treated primarily depends on your activity level. The ACL is most important for cutting and pivoting sports, such as tennis, basketball, and skiing. People with strenuous jobs involving heavy lifting and climbing also usually need their ACL. People who are unwilling or unable to modify their activities and desire an unrestricted lifestyle are encouraged to consider ACL surgery.

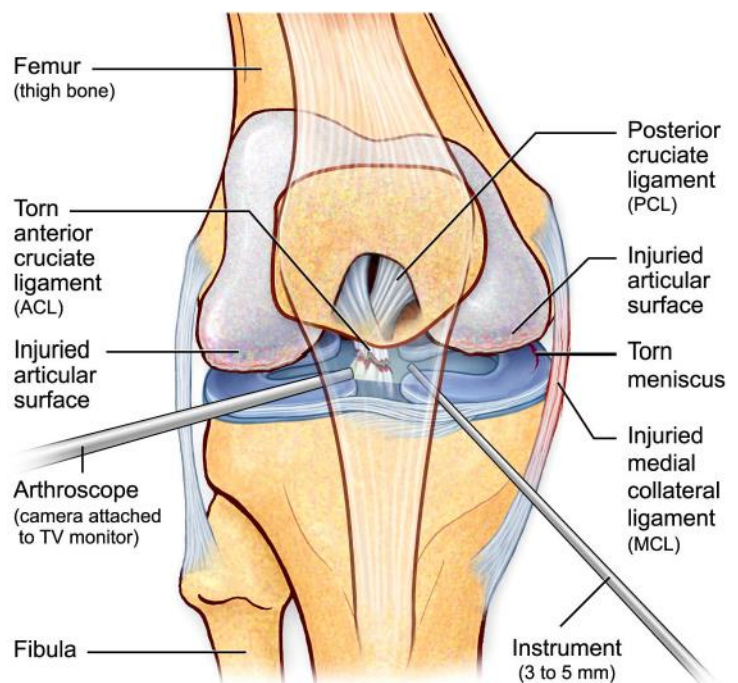
People who lead a more sedentary lifestyle may be able to get by with exercise and a brace to stabilize the knee. However, some people may experience giving way with simple activities such as going down stairs or stepping off a curb. In these cases, surgery is recommended to restore normal every day activities and prevent further damage to the knee.

**If I don't have my ACL fixed am I likely to injure my knee further or get arthritis?**

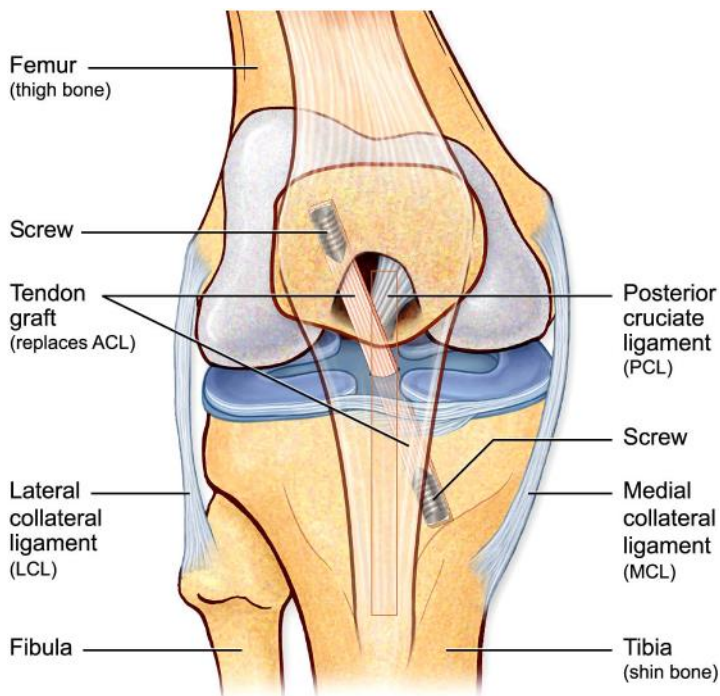
If you do not have ACL surgery and your knee does not give way, there is no evidence that not having an ACL lead to further problems. However, if you return to sports that cause the knee to give out, you can cause further damage to the knee. This most commonly includes a meniscus tear or an articular cartilage injury. There is no evidence that people who have surgery on their ACL get less arthritis than those who do not have surgery. The most important reason to have the surgery is the desire to return to a high activity level.

**How are ACL injuries treated with surgery?**

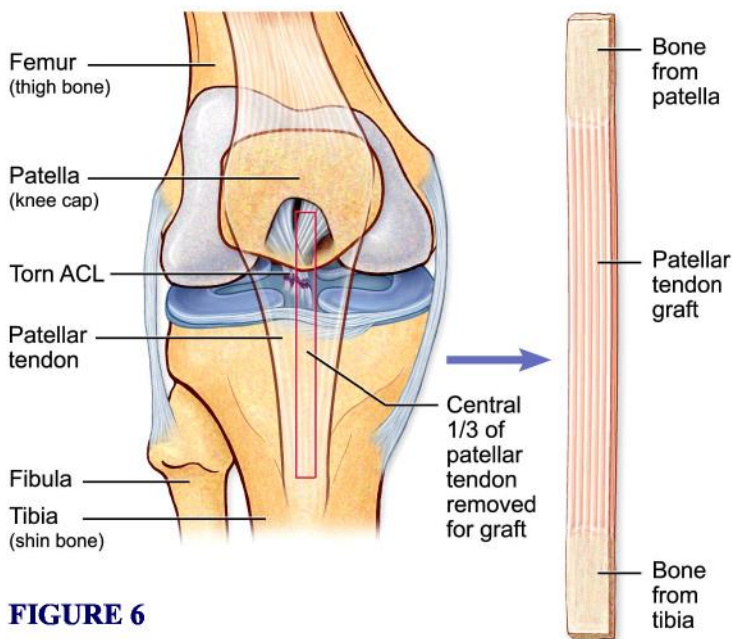
Since the ACL does not heal, the ligament needs to be replaced (reconstructed). The ACL is reconstructed using arthroscopic techniques (**Figure 4**). The arthroscope is a fiber



**FIGURE 4**



**FIGURE 5**



**FIGURE 6**

optic instrument which is placed into the knee joint through a small incision. A camera is used and the image is viewed on a TV monitor to look and take pictures. The arthroscope allows evaluation of the entire knee joint, including the knee cap (patella), the cartilage surfaces, the meniscus, the ligaments (ACL & PCL), and the joint lining. Small instruments ranging from 3-5 millimeters in size are inserted through additional incisions so that the joint structures can be evaluated for any damage, any injury can be diagnosed, and damaged tissue can be repaired, reconstructed, or removed.

In ACL reconstruction, a replacement ligament (graft) is placed in the joint at the site of the old ACL and

then fixed to the bones (**Figure 5**). In many cases, the ligament is attached with screws. The screws can be either metal, bioabsorbable screws (screws that dissolve in the body with time), or plastic. Although the ACL reconstruction is performed primarily with arthroscopy, a small open incision is needed to place the new ligament in the knee. Depending on the type of ligament graft used, and incision may be needed to obtain (harvest) the graft from your knee.

**What kind of graft is used for the new ligament?**

Choices for the type of replacement graft include autografts (using your own tissue) or allografts (donor tissue from a cadaver).

Autograft tissue used for ACL reconstruction can either be from your patellar tendon (central 1/3 patellar tendon) or the hamstring tendons.

The central 1/3 patellar tendon is taken with a small piece of bone from the patella (kneecap) and the tibia (**Figure 6**). It requires an incision on the front of the knee. It is the graft that has been used the longest, and is the most common graft performed. It has excellent long-term results, and is the graft used for most NFL football players. The disadvantage of a patellar tendon graft is that it can cause more pain for the first several weeks after surgery, and can lead to pain in the front of the knee or with kneeling. In addition, there is some data to show that there's a higher risk of arthritis in the long-term.

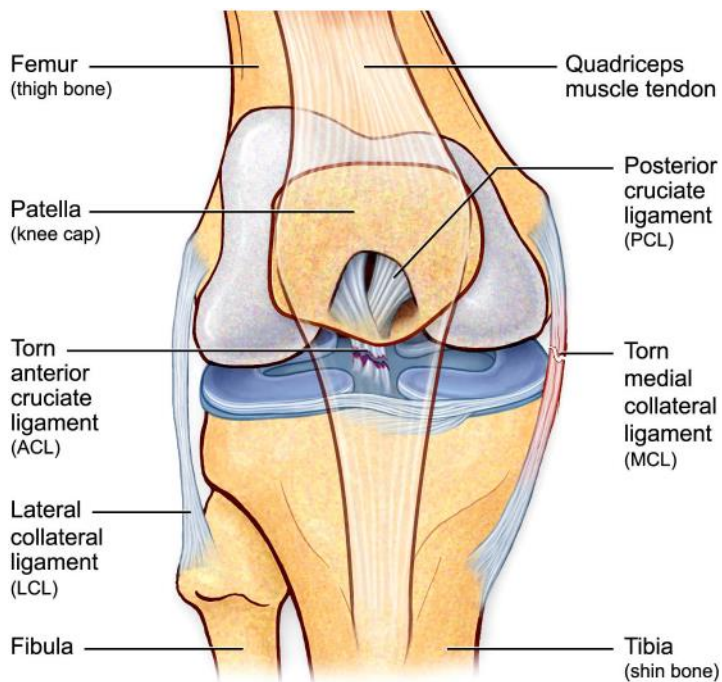
A hamstring autograft is taken from a small incision towards the inside of the knee. The graft also has excellent results, and most studies comparing patellar tendon and hamstring grafts show little differences. It has not been shown to lead to any weakness of the hamstring muscles. It is commonly used in patients who may be predisposed towards pain in the front of the knee.

Allograft tissue is tissue donated from a cadaver. They are also strong grafts with excellent results for ACL reconstruction. Because the tissue is not taken from your body, the surgical time and operative pain is less. The tissue is rigorously screened for infections, such as bacteria and viruses, including HIV and Hepatitis. The risk of contracting an infectious disease from an allograft is extremely low. Allografts have been shown to have a higher failure rate in young athletes, so it is not typically chosen for these patients.

Nearly all graft choices can be used successfully, and the decision should be discussed with your surgeon.

**What if I tore my ACL and my MCL?**

It is common for people to have an injury to the MCL (medial collateral ligament) that occurs at the time of an ACL injury (**Figure 7**). Nearly all MCL tears will heal without surgery. They are generally treated with a brace to protect the ligament while it heals. When combined with an ACL tear, most surgeons will treat the MCL in a brace to let it heal for 6 weeks. Then, once the MCL is healed, the ACL is reconstructed. If the MCL is still unstable at the time of ACL surgery, then this ligament will be fixed as well.



**FIGURE 7**

**What are some of the possible complications of surgery?**

Possible complications of the surgery include stiffness of the knee after surgery or continued pain. In addition, there is a risk of continued instability or rupture of the ACL graft. Other complications include an infection, bleeding, nerve damage, blood clots, or problems with the anesthesia. The use of arthroscopic techniques attempts to limit these complications.

**When should my surgery be performed?**

ACL surgery is not an emergency. In fact, it is extremely important that we delay your surgery until some of the inflammation in your knee quiets down. The goal of waiting is to allow you to regain full motion back in your knee prior to surgery. In general, this takes 2 to 3 weeks for most patients, but can vary. The reason to wait until full motion is achieved is that loss of motion before surgery can make it more likely for the knee to become stiff after surgery.

**What kind of anesthesia is used?**

ACL reconstruction is usually performed with general anesthesia (going to sleep). This may also be supplemented with a nerve block, to help with post-operative pain.

**What do I need to do to prepare for surgery?**

Our staff will help to set up the surgery through your insurance company and will instruct you on any paperwork that may be necessary.

Prior to your surgery, you may be asked to get several medical tests, done on an outpatient basis. Most patients need some minor blood tests and a urinalysis. If you are over age 50, you may require an EKG and chest x-ray. Some patients need to see an internist or their family doctor to obtain clearance for surgery.

The night before the surgery, a member of our staff will contact you about what time to arrive for surgery. You may not eat or drink anything after midnight the night before your surgery.

**Can I continue to take my medications?**

You should STOP taking any aspirin or anti-inflammatory medication (Motrin, Advil, Relafen, Naprosyn, etc.) at least seven days prior to your surgery. You continue to take Tylenol as needed.

Continue to take any other prescribed medications, such as blood pressure pills, up until the day of surgery. You may also take these medications the morning of surgery with a sip of water.

**How long will I be in the hospital?**

Almost all patients are able to have surgery and go home the same day. In some cases, you may need to stay overnight in the hospital.

**What happens the day of surgery?**

The day before surgery you will be told what time to report to the hospital. You will be admitted and taken to a pre-operative holding area where you are prepared for surgery.

**You will be asked several times which extremity is being operated on, and the surgical site will be initialed by the surgeon. Please note that you are asked this question many times on purpose.**

After the operation, you will be taken to the recovery room to be monitored. Once the effects of anesthesia have worn off and your pain is under good control, you will be taken to another area where you can see your family and finish recovering. You will be given all of your post-operative instructions and pain medication before leaving.

Please be aware that the process of getting checked in, prepared for surgery, undergoing the operation, and recovering from anesthesia takes the majority of the day. We would recommend that you and your family members bring along some reading material to make the process easier for all.

**How should I care for my knee after surgery?**

Prior to your discharge, you will be given specific instructions on how to care for your knee. In general, you can expect the following:

**Diet:**

Resume your regular diet as soon as tolerated. It is best to start with clear liquids before advancing to solid food.

**Medication:**

You will be given a prescription for pain medication.

**Bandage:**

You will have a thick dressing on the knee. You will be

instructed on when it can be removed, usually in 3 days. After your dressing is removed, you should cover your sutures with a Band-Aid to protect the area from irritation.

***Showering:***

You may shower after your dressing is removed, after 2 – 3 days. You cannot take a bath until the wounds are completely sealed, usually 2 – 3 weeks after surgery.

***Crutches:***

You will have crutches after surgery, and will be instructed on how to use them. For the first week, you will use crutches for walking. After the first week, you can stop using the crutches as tolerated.

***Brace:***

You will receive a brace for your knee. When walking, you will keep the brace locked straight for 2 weeks. When you are not walking, you will be able to unlock the brace for motion as tolerated. In addition, you will sleep with the brace locked straight for two weeks.

***Ice:***

You may receive an ice machine that continually surrounds your knee with cold water. If not, you may apply ice over the dressings for 30 minutes every hour for several days. Do not use heat.

***Suture removal:***

Your stitches will be removed at your office visit 7-10 days after surgery. In many cases, sutures are used which absorb and do not need to be removed.

***Follow-up office visit:***

You will be instructed on when to follow-up in the office. This is usually 7-10 days after surgery.

***Exercise:***

You will be instructed on exercises you can do immediately after surgery. You will start physical therapy within the first several days after surgery.

***Return to work or school:***

You can return to school or work within 3 – 5 days using the crutches. If your job involves more extended walking or heavy activity, you may be out of work or school for a longer period of time.

**What will rehabilitation involve?**

The rehabilitation is based on several goals: 1) allowing the tissue to heal; 2) regaining motion; 3) regaining strength; and 4) return to sports. The most important part of the rehabilitation program at first is making sure the knee gets complete extension (totally straight). Following this, the emphasis is to regain flexion of the knee. The rehabilitation program is just as important as the surgery in achieving a good result. The protocol for the physical therapist is enclosed, showing the progression of therapy for the first six months after surgery.

**When can I return to sports?**

In general, you will be allowed to return to sports in six to nine months after surgery. You must have good motion, strength, and control of your knee. How quickly you return to sports depends on several factors, including: 1) your own rate of healing; 2) the damage found at surgery; 3) if you have any complications; 4) how hard you work in rehabilitation. In most cases, it will take seven to eight months to return to cutting and pivoting sports.

**How do I know I am ready to return to sports?**

We have developed a program at Rothman to minimize your risk of re-injury after returning to sports. This program tests your knee function and stability prior to return. We are currently doing research on this program, and it is showing a decreased risk of injury to both the injured and un-injured knee.

**Will I need a brace after surgery for sports?**

After a successful surgery, you should be able to return to all activity without using a brace. However, many patients feel more secure for the first year after surgery wearing a brace for sports.

**Success**

Overall, ACL reconstruction is a highly successful operation. The advances in surgical techniques and rehabilitation have led to a 95% success rate for achieving a stable knee following surgery.

**Questions?**

If you have questions about your injury or possible surgery, please don't hesitate to contact me or my team.

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