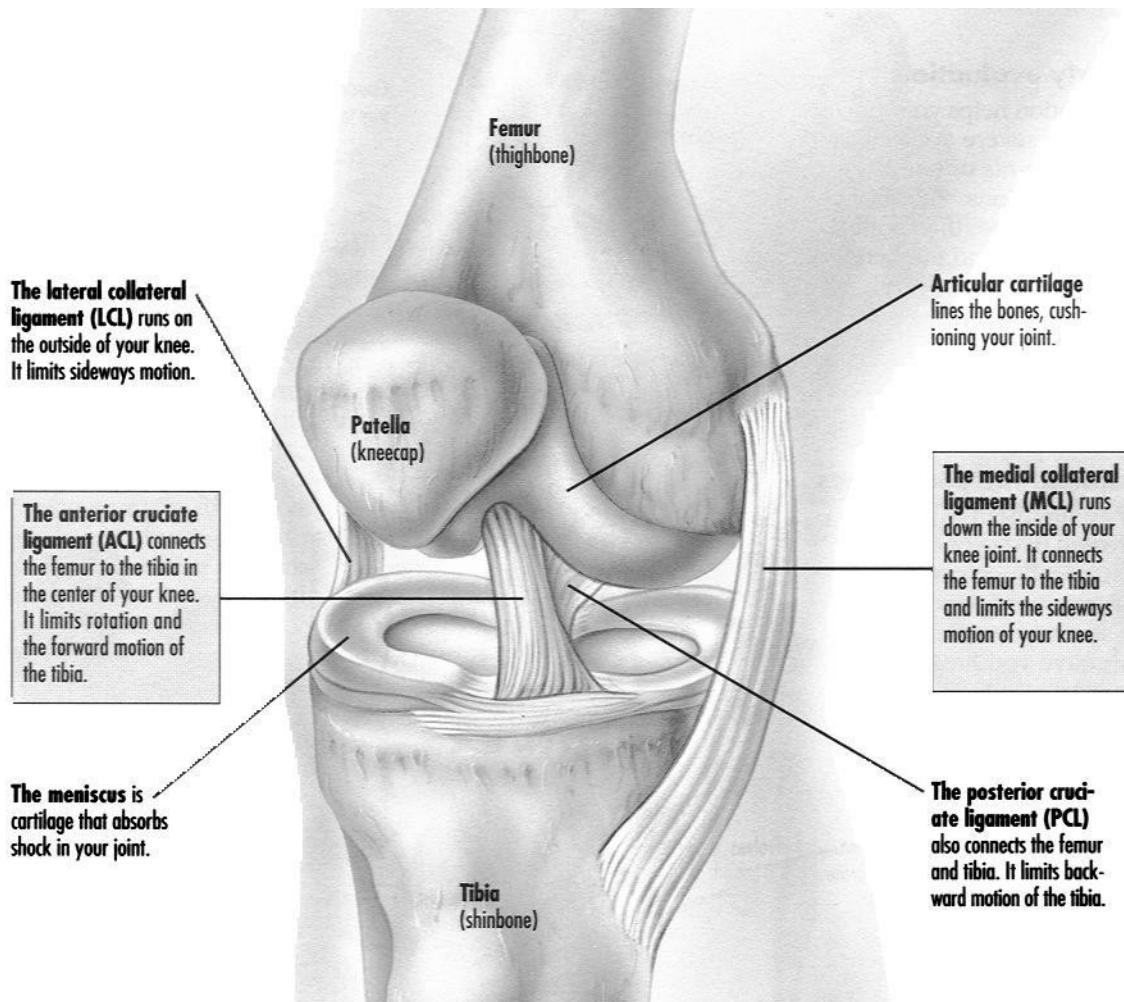


# The Anterior Cruciate Ligament

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## The Knee Ligaments

A ligament is a structure that connects one bone to another. The four main ligaments that stabilize the knee joint are the medial collateral ligament (MCL), lateral collateral ligament (LCL), anterior cruciate ligament (ACL), and posterior cruciate ligament (PCL). The ACL is located near the center of the knee joint. It prevents the tibia (shin bone) from sliding forward and rotating on the femur (thigh bone).



### **Mechanism of Injury**

There are several ways of tearing your ACL. The most common is a noncontact twisting or pivoting maneuver. Another is a blow to the outside of the knee with the foot planted. Associated damage to the meniscus cartilage is not uncommon. Sometimes a pop can be heard at the time of injury. There can be a significant amount of pain, however this is variable. The person usually is unable to continue performing the activity that they were doing when the injury occurred. Swelling occurs within the first couple of hours. After several weeks, people are able to walk comfortably and may even be able to do light exercise, however any sporting activities may cause the knee to buckle and give way.

### **Diagnosis**

An ACL tear is usually diagnosed with an accurate history and physical examination. The physical examination is less helpful in the acute setting with pain, swelling and guarding. Associated injuries may include additional ligament sprains, articular cartilage damage, and meniscal tears. X-rays help to determine if there are any fractures or underlying arthritis. A magnetic resonance imaging scan (MRI) is used to confirm the presence of an ACL tear and evaluate the knee for associated meniscal or ligamentous pathology. However, it often does not affect treatment recommendations and is ordered at the discretion of the treating physician.

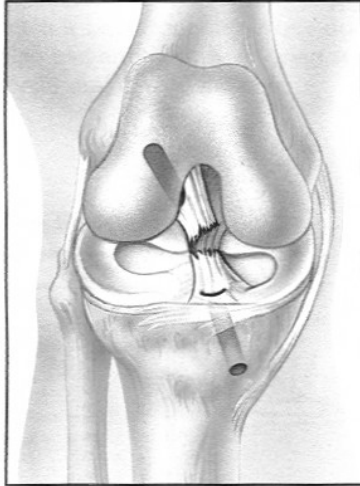
### **Treatment Options**

Treatment for an ACL tear is dependent on many factors, including age, activity level, associated injuries, and the desire to return to previous activities. Non-operative treatment includes physical therapy, bracing, and activity modification. Surgery is recommended for athletes, younger patients, those with associated injuries that require surgical management, and people who experience instability or giving way with daily activities. One of the main reasons to have surgery is to prevent further injury to the menisci and articular cartilage, which can lead to the development of arthritis.

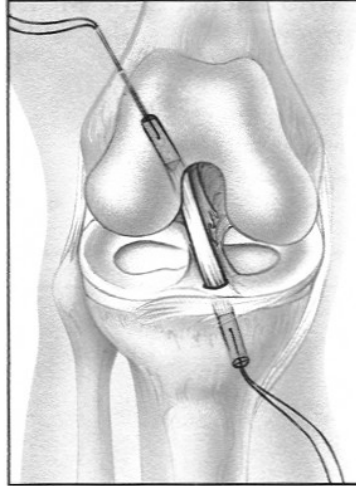
### **Surgical Treatment**

Surgery involves an arthroscopy to replace the torn ligament with a tendon. The tendons that are used to reconstruct the ligament are called grafts. The two main classes are autografts (ones own tissue) and allografts (from another persons body). The choice of autograft vs. allograft is dependent on many factors. Some of these factors include age, previous surgery, the availability of allografts, cosmetic appearance, and patient and surgeon preference. The most common tendon (autograft or allograft) used is the central third of the patella tendon with a small block of bone at each end. This is known as a bone-patellar tendon-bone graft. When an allograft is used it is first carefully screened for diseases and infection. The risk of disease transmission is very low (<1:1,667,600), with no

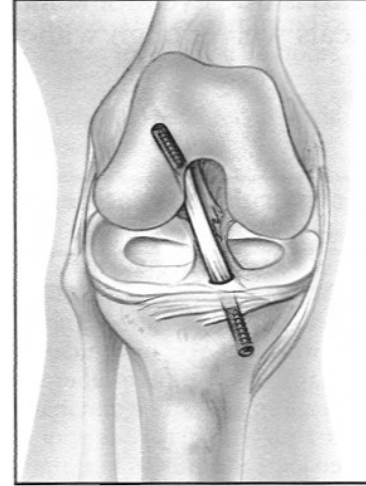
reported cases of AIDS or hepatitis using today's current testing standards. There is very little difference in the long-term outcome between autografts and allografts



**Arthroscopy.** Your doctor may first use an arthroscope and surgical tools to find and treat any other injuries, such as a torn meniscus. Then small holes are drilled in your bone.



**Placement of the graft.** The graft will be passed through the drilled holes to replace the ligament that was torn.



**Fastening the graft.** The graft is fixed in place with screws, staples, or a special type of button. Then your incisions are closed.

During surgery, a routine arthroscopy is performed and a thorough inspection of the joint is carried out. Any associated cartilage damage (meniscus or articular cartilage) is addressed at this time. The findings during arthroscopy will help to determine the regimen after surgery and the expected long-term results. Small tunnels are drilled in the tibia and femur at the original ACL attachment sites. The graft is then pulled in through the tibial tunnel and into the femoral tunnel to reconstruct the ACL. The bony plugs are secured using screws that wedge the bone blocks of the graft into the tunnels. This restores normal knee stability. The screws most often used today are made of a bio-absorbable material that dissolves over several years.

The procedure is done on an outpatient basis. You will go home the same day. The knee is injected during surgery with a local anesthesia to reduce initial post-op pain. At home, a rehab care unit is used to decrease pain and swelling. Prescriptions are given for pain medicine which can be taken as needed. Patients are seen in the office 1 week after surgery. Crutches are used as needed for ambulation for the first several weeks. Weight bearing as tolerated is allowed. Patients can usually return to light duty work after 1 week. Braces are not generally needed unless there are other associated ligament injuries. Follow up is every other month for 8-12 months.

## **Rehabilitation**

The rehabilitation program may be slightly different from patient to patient. Physical therapy begins 1 week after surgery in a supervised setting with trained therapists. The therapy is generally divided into three phases. The initial phase consists of controlling pain and swelling, as well as restoring motion to the knee. A light-strengthening program may also be initiated. This phase lasts about 6 weeks. The second phase consists of increasing muscle strength. Cycling, treadmill exercises, and light jogging can be advanced during this phase, which generally lasts 3-4 months. The final phase is a gradual return to previous activities. Full motion, strength of at least 85% of the other extremity, and absence of swelling are needed before return to sports is recommended. This generally occurs 5-8 months after surgery. It often takes 12 months before the patient does not feel like they had an operation. The surgeon and therapists monitor the patient's progress closely. Returning to activities too soon could cause persistent swelling or compromise graft healing and stability.

## **Outcomes**

Complications are extremely rare (<1%), but can include anterior knee pain, loss of motion, infection, DVT, and graft failure. The sports medicine surgeons at the Reno Orthopaedic Clinic have extensive experience with reconstructive knee surgery. Our success rate for returning patients to pre-injury activity level after ACL reconstruction is approximately 90%. The remaining patients may have some limitations. Most patients who aren't able to return to their previous level of activity usually have other associated injuries (extensive meniscal tears, cartilage damage, or associated ligament injury) that affect the ultimate surgical outcome. As our patient, you can be assured of the best state-of-the-art medical treatment available today.