

Anterior Cruciate Ligament (ACL) INJURIES

The Anterior Cruciate Ligament (ACL) is one of 4 major ligaments that help stabilize the knee. The ACL is commonly injured in sports when the knee is twisted or hyper-extended. The ACL controls how far the tibia (shin bone) slides anteriorly (forward) in relation to the femur (thigh bone). If the tibia moves too far, the ACL can tear. This tearing of the ligament results in a loud pop, immediate swelling, and the feeling of instability of the knee. The ACL may not be the only ligament injured when the knee is twisted violently. It is not uncommon to see both the Medial Collateral Ligament (MCL) and the ACL injured together. The meniscus (cartilage) of the knee can also tear.

INFORMATION SHEET

Symptoms

The symptoms following a tear of the ACL are variable. Usually, there is swelling of the knee within a short period of time following the injury. This is due to bleeding into the knee joint from torn blood vessels in the ligament. The instability caused by the torn ligament leads to a feeling of insecurity and giving way of shifting of the knee, especially when trying to change directions.

The pain and swelling from the initial injury will usually resolve after 2-4 weeks, but the instability remains. Because the ACL fibers run at an angle through the knee joint, the torn ends of the ligament cannot reattach themselves. The symptoms of instability and the inability for the patient to trust the knee for support are why treatment is required. Also important in the decision about treatment, is the growing realization by Orthopedic Surgeons that long term instability may lead to arthritis of the knee. Each time the knee gives out, more damage to the meniscus and the articular cartilage may occur.

Diagnosis

The history and physical examination is the most important tool in diagnosing an ACL tear. In the acute injury, the swelling is a good indicator. Swelling that occurs within two hours of the knee injury usually represents blood in the joint (hemarthrosis). If swelling occurs the next day, the fluid is probably not blood but is instead an inflammatory response to the injury. During the physical exam the amount of anterior translation of the tibia on the femur is evaluated. A ligament testing device, called the KT-1000, is used to measure the amount of anterior knee laxity of the injured knee compared to the uninjured knee. A difference greater than 2 millimeters indicates an ACL tear.

X-rays of the knee, to rule out a fracture (broken bone), will also be ordered on the initial examination. Ligaments, tendons and meniscus do not show up on x-rays, but a fracture will be visible on the x-ray. Bleeding into the joint can occur either from a fracture or an ACL tear.

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In some cases, an MRI (Magnetic Resonance Imaging) may be needed to further evaluate your knee injury. The MRI uses a computer and magnetic waves to show the soft tissues in the knee. With the machine, we are able to “slice” through the area we are interested in and very clearly see the anatomy and any associated injuries. This test is painless and takes 30-45 minutes to complete. It does not require any needles or special dyes. Most ACL tears can be diagnosed by physical examination; the MRI helps to confirm the diagnosis and reveal any associated injuries.

Treatment

Initial treatment for ACL injuries includes crutches, ice, and knee range of motion exercises until the swelling resolves and the motion and strength improve. A good rehabilitation program will help to strengthen the hamstrings and quadriceps muscles to help stabilize the knee after an ACL tear. An exercise bicycle is especially good for this.

Some people can function well in their daily activities without an ACL and do not require surgery. However, surgery may be suggested to you if the symptoms of instability or shifting are occurring with normal activities or if you have a significant amount of laxity and are planning to go back to cutting and twisting sports. Most Orthopedic Surgeons reconstruct the torn ACL using a section of tendon or tendons from the same knee. The surgery is done using an arthroscope (camera) and the joint itself is not opened. The surgery is usually done as an outpatient. You can go home the same day as the surgery. You will have a knee brace and be put on crutches for 4-6 weeks after surgery.

Anterior Cruciate Ligament Reconstruction Surgery

In the typical ACL reconstruction surgery, the torn ends of the ACL must first be removed. The intercondylar notch is enlarged to create a space for the new graft. The process is referred to as a notchplasty. Once this is done, holes need to be drilled in the tibia and the femur to place the graft. These holes are placed so that the graft will run between the tibia and the femur in the same direction as the original anterior cruciate ligament. The graft is pulled into position and held in place with screws. There are three types of grafts used to replace the torn ACL: the hamstring tendons, a section of the patellar tendon, or allograft tissue (tissue from a cadaver).

ACL surgery does not make the knee perfect, but in most cases it can make it more stable. The majority of patients can return to their pre-injury level of activity. Recovery time after ACL reconstruction varies from 6-12 months or longer. **The rehabilitation process is the most important part of this procedure. The best surgery will be a failure if you do not follow your post-operative instructions specifically.** After surgery a set of instructions will be given to you to begin immediately on your own. Physical Therapy will usually begin approximately 2 weeks after your surgery and continue twice per week for the first 4 months. Depending on how well you progress in your rehabilitation, you should be able to return to sports approximately 8-12 months after surgery.

Bracing

Depending on the type of sports you play, you may need an ACL brace after surgery. Wearing a brace does not guarantee that you will not re-injure your knee, but it may help increase your confidence and give you some extra protection. The decision regarding a brace will be made as you are getting ready to return to sports.