

The Anterior Cruciate Ligament (ACL)

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The ACL is one of four ligaments in the knee. The ACL connects the thighbone or femur to the shinbone or tibia. It crisscrosses with the posterior Cruciate ligament (PCL) in the middle of the knee. The other two ligaments, the medial (MCL) and lateral (LCL) collateral ligaments run on the inside and outside of the knee joint respectively. A tear of the MCL or LCL is usually treated with a brace and the ligament heals satisfactorily. Unfortunately, once torn the ACL and PCL heal do not heal on their own.

The ACL prevents the tibia from “shifting” forward or “giving out” on the femur bone. The PCL prevents the tibia from “shifting” backward on the femur bone. Many more people tolerate a torn PCL than a torn ACL.

Ouch—I hurt my knee.

Fortunately most knee injuries are not tears of the ACL, but how do you know? No one expects you to make your own diagnosis. Here are some hints on when you should see an Orthopedic specialist. First if you cannot put weight on that leg initially or within 24 hours you need an x-ray. If your knee swells up rapidly you have probably torn something.

Now here is a very important point. If your knee swells up and you go to an emergency room and are told that “it’s just a sprain give it a couple of weeks”, get your knee checked by a specialist. Most people that tear a knee ligament will feel much better in a couple of weeks, until you try to play sports. Then you may re-injure your knee and do much more damage.

Treatment

Can you live with an ACL deficient knee? The answers depend upon your activity level. If you live a sedentary lifestyle you may have no further problems with your knee. If you wish to participate in sports, particularly those requiring cutting, pivoting or jumping you may benefit from having your ligament reconstructed. If the ACL is torn when you attempt to cut or land on that knee there is a high chance the knee will not be

able to support the body and the knee will “give out”. This will not only prevent you from participating in that activity, but may very well lead to more damage to the knee. In particular the meniscus or the articular cartilage may be damaged and lead to the rapid onset of arthritis. In summary, non-active patients are generally treated with rehabilitation of the knee muscles. Active patients often require surgery to stabilize the knee.

Surgery

Once the ACL is torn it cannot be sewn back together. Thus the ligament must be replaced. There have been many studies done on the strength of various replacement tissues. The two most commonly used replacement tissues are a portion of the patient’s patellar tendon or two of the hamstring tendons. Using a patient’s own tissue is called an “autograft”. A dead or donor tendon is sometimes used; this is called an “allograft”. In the U.S. the most frequently used replacement is the patients own middle 1/3 patellar tendon.

It is often difficult to choose which graft to use. Overall, using your own patellar tendon seems to give the most consistent results. If the patient has kneecap problems or is a lower demand or recreational athlete a hamstring graft or allograft is a reasonable choice. Just remember when using someone else’s tissue there is a small risk (about 1 in 5 million) of contracting a disease.

In my practice of about 40 ACL reconstructions a year, I use 85% of patients own patellar tendons, 10% allograft, and 5% hamstrings tendons.

I have been performing ACL surgery as an outpatient for the last 10 years. You come in one hour before surgery and leave about 2 hours after surgery. Surgery typically lasts about 1 to 1 ½ hours. This usually, depends on any other damage in the knee that needs to be fixed such as meniscal tears.

Down time is typically one week to go back to school or a desk job. You will be on crutches for 4 to 6 weeks and unable to drive for a week. Manual laborers may take 3 months or more to return to work.

Rehabilitation

Rehabilitation is critical to the success of your surgery. The first six weeks require formal therapy, 3 times a week. The goal is to regain knee motion, at least 0-90 degrees, and control of the quadriceps muscle. Once motion is restored, you will work on regaining muscle strength and agility over the next 4 to 6 months. Therapy can often be tapered down over the ensuing months and you can often work out at a gym.

I have a good relationship with the high school athletic trainers and they love rehabbing their athletes at school.

Generally the earliest you will be able to return to cutting sports is 6 months after your surgery. You will be able to do straight ahead activities much sooner. Generally stationary bicycle around 6 weeks, treadmill at 10 weeks and running outdoors at 4 months after surgery.

Results

Overall 95% of my patients are able to get back to their pre-injury activities. I will tell you though that the higher-level athlete that you are, the harder you have to work to get back to that level or take your ability to the next level.

I have had high school athletes get college scholarships, college athletes become captains of their teams, and policemen win gold medals in their national competitions. Each athlete will tell you it took hours of dedication to get back to his or her sport and excel. Each one will also tell you it was worth it. As their physician I couldn't be prouder to help them and all of my patients to achieve their individual goals.