

ACL Reconstruction Surgery

Arthroscopic anterior cruciate ligament (ACL) reconstruction is a minimally invasive method to restore ACL function to an injured knee in order to allow participation in sporting activities. The goal of surgery is to reproduce this important anatomical structure to prevent the abnormal forward and rotational slipping of the tibia. This abnormal slipping prevents participation in sports that require cutting and pivoting. In addition this abnormal slipping is likely to injure other knee structures, like the meniscus and gliding surface cartilage.

Overview

The ACL is replaced with a tendon either taken from the patient or a cadaver, then secured in bone tunnels in the shin bone and thigh bone. The new ACL becomes a biological replacement. In the early healing period the knee is protected with a brace and physical therapy is important to regain full knee function which occurs 6-9 months after surgery.

Tendon Graft

The ACL can be constructed with tendon taken from the patients own knee (autograft) or from a cadaver donor (allograft). Since the body does not have an “extra” supply of normal tendon, and the fact that about 40% of the early rehabilitation is for the donor site, the use of cadaver tendon makes the initial rehab easier. The tendons are procured and processed at Northwest Tissue Bank and tested for diseases, however there is still some small risk that the test could miss the disease and the disease be transmitted by the graft. The risk is very low: approximately one in one million for HIV and one in 500,000 for hepatitis. Blood typing and other matching of the tissue is not necessary since rejection is not generally an issue because of the lack of living cells in these types of grafts. Patella, quadriceps, hamstring, Achilles or tibialis anterior may be selected.

Autograft is a tendon graft taken from the patient’s own knee. Common graft sources include patella, quadriceps and hamstring tendons. Each of these has some relative advantages and disadvantages but similar overall outcomes. Dr. Green prefers quadriceps tendon, since this is well tolerated, taking advantage of the long duration of quadriceps weakness after ACL injury. The quadriceps tendon graft includes a small piece of bone from the patella on one end, and is obtained through a small horizontal incision over the top of the knee cap.

The decision to use a graft for the patients own knee or that from a cadaver is based on patient’s individual situation and risk tolerance and is made by the patient and surgeon prior to the surgery.

Technical Aspects

Exam under anesthesia is a physical exam done under anesthesia when the body is relaxed which confirms the diagnosis of ACL instability and tests the other ligaments of the knee as well.

Diagnostic arthroscopy is performed first to thoroughly examine the inside of the joint to evaluate for other abnormalities. The arthroscopy is performed through 3 small incisions over the knee joint which will allow inflation of the knee with fluid and allow passage of small camera and other instruments. Torn meniscus will be removed or repaired. Loose fragments of gliding surface cartilage removed and other problems addressed.

ACL Reconstruction

The goal of ACL reconstruction is created a new ACL using a tendon graft, passed thru 9-10mm tunnels made in the bone, in the position of the natural ACL which connect the back of the femur to the mid portion of the tibia. This keeps the tibia from slipping forward and prevents rotation. The graft is passed and secured in the bone tunnels. The bone will eventually fill in and heal around the graft. The technique of passage and securing of the graft depends on the type of graft chosen.

Using **Allograft tendon**: Additional incisions are made on the shin and the outside of the thigh for making tunnels into the bone which will allow for passage of the graft. The graft is secured typically in the tunnels by bio-absorbable screws in both the femoral and tibial tunnels. Additional fixation can include tying the sutures over a plastic button or metal screw and washer near the tunnel.

Using **Quadriceps tendon autograft**: An additional incision is made on the shin to make tunnels into the bone which will allow passage of the graft thru the tibial bone tunnel. The femoral tunnel is drilled through the tibial tunnel. The graft is passed thru the tibial tunnel and secured on the femoral side with a device called an endo-button, a metal clip that lies on the outer shell of the femur securing on the femoral side. Fixation on the tibial side includes an absorbable screw in the tibial tunnel and sutures tied over a stainless steel washer.

The incisions are closed using both absorbable suture and sutures that will be removed about 2 weeks after surgery.

Anesthesia

ACL reconstruction is done under general anesthesia which means that you will be “asleep” during the procedure. General anesthesia is well tolerated by most people. Please let us know if you have had any problems with previous anesthetics or have family history of anesthetic issues.

Risks

All surgery has risks. There is likely nothing that you could imagine could go wrong that has not gone wrong at some time. That being said ACL surgery is safe procedure with lo complication rate. The most common complications involve skin nerves around incisions, the vast majority of which

Risks (continued)

resolve without additional procedures by three months post surgery. Injury to larger nerves and blood vessels and blood clots are also rare risks. Knee stiffness is slightly more common and in rare cases requires additional surgery. Infections occur in less than one percent and require repeat surgery, antibiotics and in rare cases, graft removal. Other problems like continued pain is uncommon but can occur.

Effectiveness

In the hands of an experience surgeon, ACL reconstructions is successful in returning patients to their desired level of activity in 90% of patients. After the graft heals in the bone tunnels, the body repopulates the ligament with new cells, so the graft is a living biologic structure that will not wear out. It can however, be re-injured which occurs in approximately 5%.

The Team

One advantage of choosing to be treated at an academic medical center is the experience of the attending surgeon. Since 1996 Dr. Green has concentrated his orthopaedic surgery practice in the area of sports medicine, taking care of athletes from professional, elite, amateurs and weekend warriors. Focusing of sports medicine has allowed a robust knee surgery experience, instead of performing a half dozen ACL reconstructions per year as a general orthopaedic surgeon, Dr. Green performs nearly one hundred ACL reconstructions each year.

Both physician assistants and orthopaedic surgery residents assist Dr. Green in surgery. Our residents are in their 3rd year of a 5 year orthopaedics program while on the sports medicine service. A benefit of having surgery in a teaching hospital is the availability of a doctor on call 24 hours a day 7 days a week. Residents work closely with the attending physicians to provide comprehensive care.

Physician assistants are board certified mid level practitioners who complete a 2 year intensive program in medicine and then receive additional training in a specific discipline. Physicians assistants can diagnose and treat orthopaedic problems and assist in the operating room under supervision of the surgeon.

Urgency

ACL reconstruction is an elective procedure. In fact, patients do best when the initial injury is rehabilitated prior to surgery. It takes 4-8 weeks to get over the pain, swelling and stiffness associated with an ACL tear, and the operation is best performed anytime after the knee recovers. In the interval between recovery and surgery, activities are modified to decrease the chance of another giving way episode which may cause additional injury to the meniscus or gliding surface cartilage of the knee.

Hospital stay

ACL reconstruction is an outpatient surgery performed at _____. The total estimated time, from check in to check out is between 4 and 6 hours. Typically patients arrive one and a half hours before surgery. You will be notified of your surgery time by phone the day before your surgery. Please keep in mind that these surgery times are estimated and that your actual surgery time may differ. The procedure is generally 90 minutes to 2 hours in duration. Patients will spend at least 45 minutes in the recovery room and will be discharged when pain control is adequate and you are able to tolerate something to eat and drink.

Activity level

Patients will be permitted to bear weight on the leg right away, but most require crutches for support the first few days to a week after surgery. Taking it easy the first few days after surgery will allow for a speedier recovery, so plan to take at least a few days off work.

Time off work

Depending on your job function, you may be able to return to work about one week after surgery. If your job requires walking or standing for long periods you may need more time off or light duty, temporarily. This should be worked out with your employer prior to surgery. Please bring any forms that require physician statements or signature to your appointment prior to surgery or you can mail or fax your requests to our office. Please allow 1 week turn around time.

Driving

Driving after your surgery partly depends on which leg you had surgery on, and whether you drive a manual or automatic transmission. The general rule of thumb is no driving a minimum of 2 weeks if you had surgery on your non-driving leg with an automatic transmission. 1) You absolutely cannot drive until you are completely off of narcotic pain medication. 2) If the operative leg is necessary for driving you cannot drive until you gain good control of your extremity. 3) If you are a professional driver, you may not return to professional driving until at least 12 weeks after your operation.

Rehabilitation

The three early post operative goals are: 1) getting the knee out completely straight, 2) decrease swelling and 3) regaining quadriceps muscle control. Patients are encouraged to do straight leg raises in the brace immediately after surgery. The brace is initially used to walk with the knee in extension. Range of motion is started soon after surgery, but getting the knee out straight is much more important than working on bending particularly early, when the knee is swollen. The brace is unlocked and weaned off when good quadriceps control is demonstrated, usually around six weeks after surgery. Strength and power are developed between 6 and 12 weeks, after which the emphasis turns towards functional activities. Return to sports is permitted when rehabilitation goals have been met, usually between 6 months and 9 months after surgery. The assistance of a physical

therapist is very helpful in achieving a rapid and full recovery. Therapy will consist of both one on one therapy visits and a home program. Sports medicine clinic has experienced physical therapists who regularly guide patients through ACL surgery rehabilitation. Since many patients come a long distance for our expertise, we have developed working relationships with many therapy clinics in the surrounding area to make therapy more convenient.

Follow up visits

The post operative visits will occur in the week following surgery, at weeks 1, 2, 6 and 12 weeks post op then again at 6 months.

Scheduling your surgery

There is no convenient time for surgery, but since this is an elective procedure, it can be scheduled at a time that is least inconvenient. Please call 210-450-9300 to schedule your surgery.