



ACL Reconstruction Book

Thomas Conner, MD

Shawn H, Care Coordinator

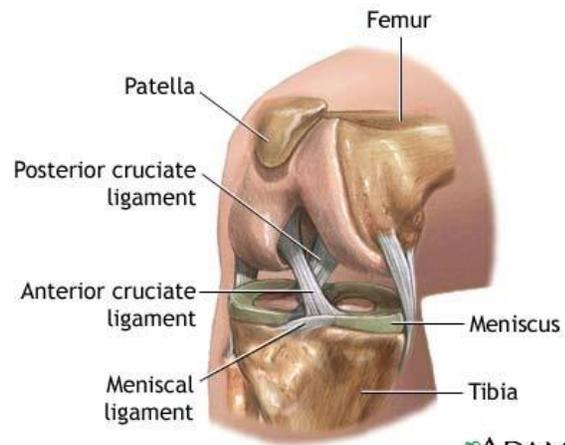
Phone: 763-520-7870

Fax: 763-302-2401

ThomasConnerMD.com

Normal Knee Function

Knee pain is a very common complaint patients have in orthopedics. There are many structures that can cause pain in the knee, and there are many different reasons pain can occur in and around the knee joint. One of the structures that can be injured in active patients is the anterior cruciate ligament (ACL). The function of the ACL is to provide stability to the knee joint and prevent your shin bone (tibia) from translating too far forward in relation to your thigh bone (femur).



ADAM.

<http://orthopedics.about.com/od/aclinjury/tp/acl.htm>

ACL Rupture

An injury to the ACL can occur during severe trauma to the knee, usually during athletic activity, but this is not always the case. If the patient is twisting and/or coming to a sudden stop, or if there is an awkward blow to the knee that forces the joint in an abnormal position, the ACL may be injured. There are different levels of severity of ACL injuries. A strain to the ACL is a more mild insult on the ligament and will not require surgical intervention. When there has been enough force to rupture the ACL, there will be immediate pain in the knee.



The signs and symptoms associated with ACL injuries include immediate pain and instability, especially with weight-bearing activities. The knee will also have some swelling associated with it shortly after the injury. Weakness, clicking, popping, stiffness and bruising may also appear after an ACL injury.

These signs and symptoms warrant an evaluation by an experienced orthopedic provider. A thorough history and physical examination will be used to assess if a possible meniscus tear is present. X-rays will be used to evaluate any possible bony source of the symptoms,

but an MRI is the gold standard when evaluating the soft tissues of the knee. After this test is performed, the results are viewed with you in person to generate a more definitive plan of care.

If surgery is the decided treatment modality, a discussion with your surgeon about which type of graft will be used for your surgery will be needed. There are methods that use a patient's own tissue (autograft) or methods that make use of a cadaver donation (allograft). Discuss with your surgeon the benefits and draw-backs of each so you can make the best decision for your situation.



Before Surgery

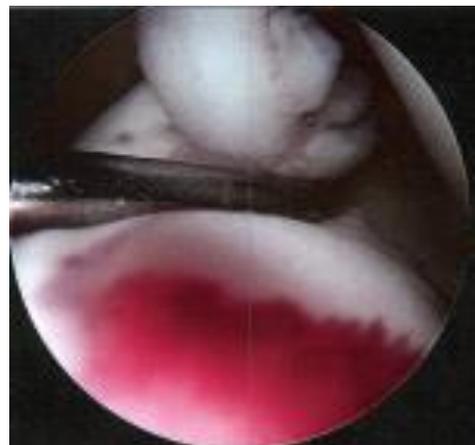
Before we can perform any surgical procedure, we need you to see your primary care provider for a pre-operative history and physical exam to make sure that you are healthy enough to tolerate the stress of the surgery. Your primary care provider may do some additional testing to assess your health in preparation for the surgery.

We ask that you refrain from using any non-steroidal anti-inflammatory medications (NSAIDs), such as ibuprofen, naproxen, Aleve or Advil for 10 days prior to your surgery. We also ask that you stop taking aspirin 7 days before your surgical date. Please contact your primary care provider regarding taking your other medications on the day of surgery. You may take Tylenol or Celebrex as needed up until the day before surgery.

In order to ensure your health and the best possible outcome from your procedure, we ask that you quit using any and all kinds of tobacco. Quitting may be difficult, but it is important for the short-term outcomes related to your surgery and the long-term health of your body. Repairs may be delayed in healing or may not heal at all if you continue to use tobacco after your surgery. If you would like assistance finding the right method of smoking cessation for you, please contact us or your primary care provider.

Risks

There are some risks associated with surgery; any time we use a needle to penetrate your skin or make an incision, there is a very low risk of contracting an infection. We do everything we can to prevent infections from occurring. There is also a



small risk of blood vessel or nerve damage, bleeding, blood clot formation, incomplete resolution of pain, swelling and stiffness in the operative knee and failure of the graft. There are also certain risks with anesthesia that will be addressed with you before your procedure.

Procedure

The day of the procedure, we ask that you do NOT eat or drink any food or liquids before coming to the surgery location. Once you are registered at the surgery center, we will start an IV in your arm and prepare you for your surgery. You will meet with the anesthesiologist and have every opportunity to ask questions you may have. You will also see and speak with Dr. Conner on the day of your procedure. Before going to the operating room, the anesthesiologist will inject a long-acting anesthetic solution next to two of the nerves that are responsible for sensation in the operative leg. These injections usually last 8-10 hours and control pain both during and after the surgery. When ready, you are taken to the operative suite and placed on a flat bed. We use a very light general anesthetic to put you to sleep, but light enough where you continue to breathe on your own. We then prep your knee and properly position it for the surgery. The surgical procedure itself takes approximately 1 hour.



During the procedure, the graft is prepared on the back table while Dr. Conner performs an arthroscopic examination of the knee. The site of the reconstruction is debrided of any excess tissue. Tunnels are drilled in the bone at the precise locations where your new ACL will be placed. The new graft is pulled into your knee and fixed in place so it heals in the proper position with the right amount of tension. The incisions are closed with absorbable sutures that do not need to be removed.

After the surgery, a long-acting numbing medication is injected into your knee to help with pain control the day of surgery. There are dressings placed on your knee and a thick bandage wrapped around your leg. An immobilizer is placed on your leg before you are taken to the post-operative area where you are allowed to recover until you are ready to go home.

After Surgery

For the first 3 days after surgery, we suggest that you pack your operative knee in ice constantly. This will help prevent swelling and lead to a much shorter recovery period. We have placed enough dressings on your knee that you will not experience any frostbite to your skin from the ice. We also ask you to elevate your leg on 3 or 4 pillows while lying down to help prevent the swelling for the first 3 days. You are able to walk

on your leg at any time, but we recommended that you only get up and move for the first 3 days to go to the bathroom, to the dinner table and to bed.

You may remove the wrap and bandages from your knee 72 hours after surgery. After removal of the bandages, there will be Steri-strips over the incisions. Keep these Steri-strips on until they fall off on their own. At this point you are able to shower, letting water and soap run the knee and patting it dry.

It is normal for your knee to be mildly warm after your surgery. This is due to the increase in blood flow to the area in response to the surgery. The knee and leg may swell up in response to the surgery as well. You may also experience a low-grade fever while recovering. This is a normal part of the inflammatory response your body mounts after an invasive procedure.

Pain Relief

After surgery, we provide you with a few different strategies for pain control. Most of the pain after surgery is associated with swelling- to prevent the swelling and discomfort, we ask that you elevate your operative leg on 3-4 pillows while lying and try to keep ice packs on the operative knee constantly for the first 3 days after surgery. We also provide you with three different prescription medications to help control your pain. Two of these medications are narcotic pain medications. Some of the side effects of the narcotic pain medications are drowsiness, dry mouth and constipation. Drink plenty of water while taking these medications. You may want to use a stool softener during the treatment period as well to help prevent any bowel discomfort.

We will also prescribe you a medication for nausea and/or vomiting that you can use if the other medications cause any discomfort in your stomach. You can use this medication as needed for nausea or vomiting that you may experience.

If there is an increase in pain after the first 3 days, rest the operative leg by staying off of your feet, elevating your leg above the heart and icing constantly for 12-16 hours. This should help calm the inflammation in your leg and your discomfort should abate.

Activity & Recovery

We ask that you restrict your activity for the first 72 hours after surgery to help reduce pain and swelling in your knee and to accelerate your recovery. After 72 hours, you may advance your activity as your body can tolerate. We ask that you slowly progress into your daily activities so you don't over-stress your knee and cause any increase in the inflammation.

You will use your knee immobilizer at all times until you are seen in Dr. Conner's clinic or directed by your physical therapist. We also ask that you use your crutches to help with balance and to help prevent any falls that may cause further injury to your surgically-repair knee. You are able to put as much weight as you want on your operative leg as long as the immobilizer is securely in place.

After surgery you may return to your regular diet. We recommend that you start with something light, such as soup or crackers. If you are able to tolerate this without any issues, you can advance your diet as you would like.

Follow-up

You will follow up with Dr. Conner 10-14 days after surgery. This appointment is made for you at the time you schedule your surgery. At this appointment, your pain control, restrictions, incisions, work/school status and bracing will all be discussed. Your intra-operative photos of your surgery will be reviewed with you at this appointment as well. You will have a follow up appointment with Dr. Conner 6-8 weeks after your surgery.

If you miss any of your post-operative appointments, we reserve the right to deny any medication refill requests you have until you are seen in clinic.

If any questions, concerns or issues arise, feel free to contact Shawn, our care coordinator at **763-302-2225** during regular business hours, or call our main number at **763-520-7870**.

Physical Therapy

We ask that you make your physical therapy appointments prior to your surgery date. You should start your therapy within one week of your reconstruction. We will provide you with a referral and rehab protocol with your surgery paperwork on the day of your procedure. If you would like to set-up physical therapy with Twin Cities Orthopedics, please call 763-520-7870. The rehab protocol is attached to the end of this book as well. Feel free to bring it with you to your physical therapy appointments.

When to Call

There are certain situations after surgery in which you should contact your surgeon. Please call if you experience any of the following:

- Fever over 101 degrees for more than 24 hours
- Foul drainage, redness or warmth at the operative site
- Large amounts of bleeding or drainage
- Severe or uncontrolled pain
- Persistent nausea or vomiting
- Hives, rash or medication intolerance

*** Call 911 or go to the nearest Emergency Room if you experience shortness of breath, redness, warmth and extreme pain in the calf. These are signs of a blood clot.***

ACL Reconstruction Rehab Protocol

- **Weight-bearing:** Weight bearing at tolerated with brace locked in extension
 - **Use crutches for balance and to prevent falling- progress as follows:**
 - Full weight-bearing in immobilizer using crutches
 - Full weight-bearing in immobilizer without crutches
 - Full weight bearing without immobilizer or crutches

- **Phase I (Weeks 0-3)**

- **Range of Motion**
 - **Start POD # 2**
 - Full extension to flexion as tolerated
 - Patellar mobilizations
 - Use ice to reduce swelling and effusion after exercises

- **Therapeutic Exercises**
 - Weeks 0-2: Straight leg raise/Quad sets, Hamstring isometrics
Perform exercises in the brace if quad control is inadequate
 - Establish normal gait pattern early
 - Weeks 2-8: Begin progressive isometric closed chain exercises, stationary bike for ROM

- **Phase II (Weeks 3-6)**

- **Weight-bearing:** Full weight-bearing with a normal gait pattern, no limping
- **Range of Motion** – Advance to full/painless ROM
- **Therapeutic Exercises**
 - Advance bilateral and unilateral closed chain exercises
 - Emphasis on concentric/eccentric control
 - Stationary bike/Treadmill/Stairmaster/Elliptical
 - Start sport cord lateral drills
 - Ice after exercises

- **Phase III (Weeks 6-10)**

- **Weight-bearing:** Full weight-bearing with a normal gait pattern- no crutches
- **Range of Motion** – Full/painless ROM
- **Therapeutic Exercises**
 - Advance strength training
 - Progress to balance/proprioception exercises
 - Start light plyometric exercises
 - Start jogging and basic running program at 8 weeks

- **Phase IV (Weeks 10+)**
- **Weight-bearing:** Full weight-bearing with a normal gait pattern
- **Range of Motion** – Full/Painless ROM
- **Therapeutic Exercises**
 - Continue closed chain strengthening exercises and proprioception activities
 - Emphasize single leg loading
 - Sport-specific rehabilitation – running/agility training at 9 months
 - Return to impact athletics – 16 months (if pain free)
 - Maintenance program for strength and endurance