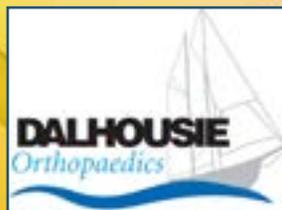




ACL INJURY

Patient Information Guide



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ACL INJURY

THE ANTERIOR CRUCIATE LIGAMENT (ACL) is one of the four strong ligaments connecting the femur (thigh bone) to the tibia (shin bone). Ligaments are strong, dense structures made of connective tissue that stabilize a joint. The function of the ACL is to provide stability to the knee and minimize stress across the knee joint. The ACL limits rotational movements of the knee joint. It also restrains excessive forward movement of the tibia in relation to the femur. The weight-bearing surface of the knee joint is covered by a layer known as articular cartilage. This articular cartilage allows the joint surfaces to move smoothly. The knee joint also has two shock absorbers known as the medial and lateral meniscus. These structures help reduce the stresses between the tibia and the femur.

In general, the incidence of ACL injury is greater in people who participate in high-risk sports such as soccer, basketball, football, rugby and skiing. However, there are some people who tear their ACLs with seemingly minor mechanisms of injury such as jumping off the back of a truck or stepping in a rut in the ground. An injury to the ACL results from overstretching or tearing of the ligament. Injuries of the ACL range from minor strains to more severe injuries when the ligament is completely torn. Any athletic

or non-athletic related activity in which the knee is forced into hyperextension and/or internal rotation may result in an ACL tear. A number of patients who tear their ACL may also injure other structures in the knee joint such as meniscus, articular cartilage or other ligaments within the knee joint. In addition, many patients have bruises of the bone beneath the cartilage surface. These bone bruises may be seen on an MRI and may indicate injury to the overlying articular cartilage.

Signs and Symptoms:

Symptoms of an ACL injury include hearing or feeling a sudden “pop” in the knee, swelling, and instability of the knee joint. Many patients have difficulty walking on their injured leg and need to use crutches for a period of time. Pain is also a major symptom especially early after an injury or with a repeat knee injuries. Continued activity on a knee that stresses the ACL can cause further damage to the knee. Many patients experience the feeling of their knee shifting or giving way especially with pivoting or twisting activities. Some patients get the sensation that their knee hyperextends.

In a certain sports such as soccer, it is estimated that 70 percent of ACL injuries occur through non

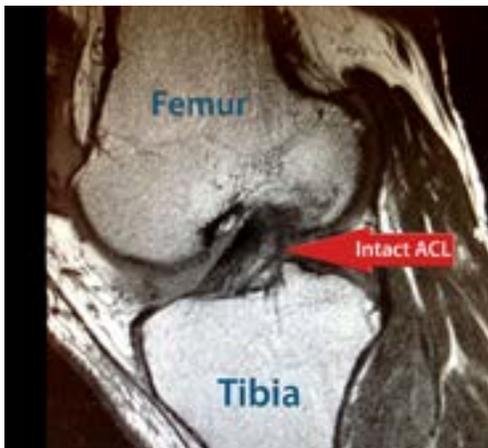
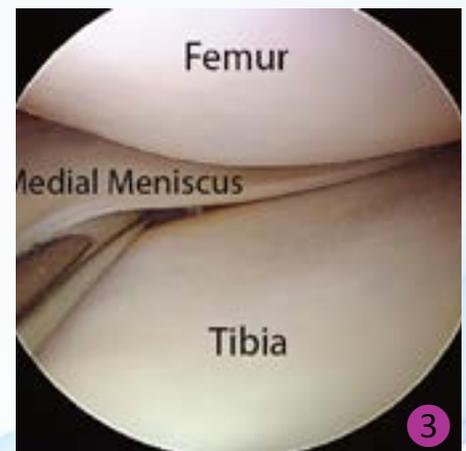


Figure 1: Scope picture of intact ACL

Figure 2: Scope picture of torn ACL

Figure 3: Scope picture of medial compartment

Figure 4: MRI of normal and torn ACLs

contact mechanisms. The mechanism of injury is often associated with deceleration coupled with cutting, pivoting or sidestepping maneuvers, awkward landings or hyperextension injuries.

Several studies have shown that female athletes have a 2 to 8 times higher incidence of ACL injury than male athletes in certain sports such as soccer and basketball. There are a number of theories to account for these differences including differences in muscular strength and neuromuscular control, limb alignment, joint laxity and possibly the effects of estrogen on ligament properties. Research is still ongoing to document a definitive cause for this difference. There are also genetic factors at play as there are many families with more than one family member sustaining an ACL injury.

Treatment:

The natural history of an ACL injury without surgical intervention varies from patient to patient and depends on a number of factors including age, activity level, degree of injury, instability symptoms, as well as associated injuries.

The prognosis for a partially torn ACL is often favorable with the appropriate recovery and

rehabilitation period to strengthen the surrounding muscles. However, there are some patients with partial ACL tears who go on to develop recurrent instability symptoms.

The prognosis for complete ACL tears is variable. There are some rare patients with complete ACL tears who are able to participate in full sports without any symptoms of instability. Some patients choose to modify or avoid high-risk activities and/or wear a custom fit knee brace. There are some people who are unable to participate in cutting or pivoting type sports while others individuals have instability during even normal activities such as walking.

Some patients who have ACL injuries have associated damage to the meniscus, articular cartilage or other ligaments in the knee. Secondary damage may occur in patients who have repeated episodes of instability due to ACL injury. In patients with chronic instability, up to 90 percent of them will have meniscus damage > 10 years after the initial injury. An unstable knee often increases the risk of other knee injuries such as a torn meniscus. Thus, sports with cutting and twisting motions are strongly discouraged if you have an unstable knee and choose non-surgical management.

1. Nonsurgical Management:

Nonsurgical management of isolated ACL tears is likely to be successful or may be indicated in the following patients:

- With partial tears and no instability symptoms.
- With complete tears and no symptoms of knee instability during low-demand sports and who may have to give up high demand sports.
- Who do light manual work or live sedentary lifestyles.
- Possibly in select young children with isolated ACL tears whose growth plates are still wide open who are compliant with wearing a custom ACL brace and who are not experiencing recurrent instability.

It is very important that patients who chose nonsurgical treatment of their ACL injuries adhere to a progressive rehabilitation program that will restore their knee to a condition close to its pre-injury level. Patient education and understanding regarding how to prevent future instability is important. A custom fit knee brace may be of benefit to some patients especially to those patients who have high-risk occupations and/or who participate in high-risk sports. Patients may develop recurrent instability episodes or re-injure their knee in the future and if they are symptomatic, they may choose to have ACL surgery.

2. Surgical Management:

Treatment decisions for ACL tears are always individualized. The decision whether to offer surgery is based on the person's knee instability, activity level, age, and whether other structures in the knee have been injured.

Patients treated with surgical reconstruction of the ACL have long-term success rates of 85% to 95%. Recurrent instability and graft failure are seen in approximately 5% to 10% of patients. The goal of the ACL reconstruction surgery is to prevent instability and restore the function of the torn ligament, creating a stable knee. This allows the patient to return to sports. There are certain factors that the patient must consider when deciding for or against ACL surgery. Another concern is that once an individual tears an ACL in one knee, there is an increased risk that they may in fact tear their ACL in the opposite (contralateral) knee.



(A) PATIENT CONSIDERATIONS:

If the ACL tear is complete and the knee is unstable, an ACL reconstruction may be recommended. The ACL typically cannot regenerate itself or heal back to its normal state after a significant injury.

Active patients involved in sports or jobs that require pivoting, turning or hard-cutting as well as heavy manual work are encouraged to consider surgical treatment. This includes “older” patients who have previously been excluded from consideration for ACL surgery. Activity level and degree of instability, not age, should determine if surgical intervention should be considered.

In young children with ACL tears, early ACL reconstruction creates a possible risk of growth plate injury, leading to bone growth problems. This is less of a risk in adolescents who are closer to skeletal maturity. In some cases, the surgery may be delayed until the child is closer to skeletal maturity or the ACL surgical technique may be modified to decrease the risk of growth plate injury.

A patient with a torn ACL and significant functional instability has an increased risk of developing secondary knee damage and should consider ACL reconstruction. It is common to see ACL injuries combined with damage to the menisci (50 percent), articular cartilage (30 percent), collateral ligaments (30 percent), joint capsule, or a combination of the above. The “unhappy triad,” frequently seen in football players and skiers, consists of injuries to the ACL, the MCL, and the medial meniscus. In cases of combined injuries, surgical treatment may be warranted and generally produces better outcomes.

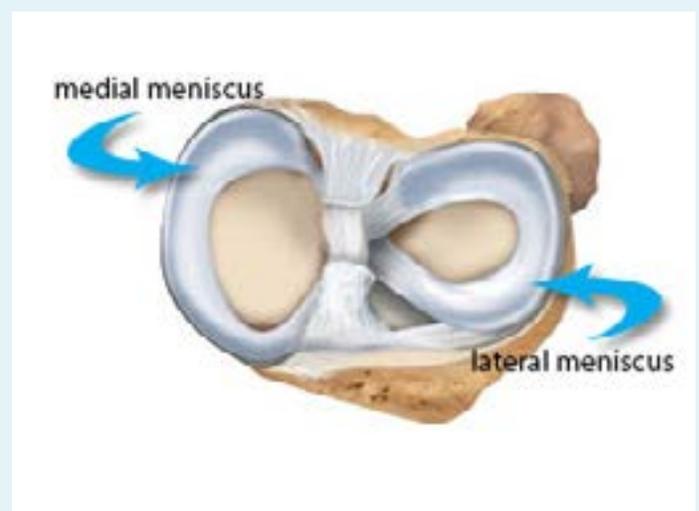
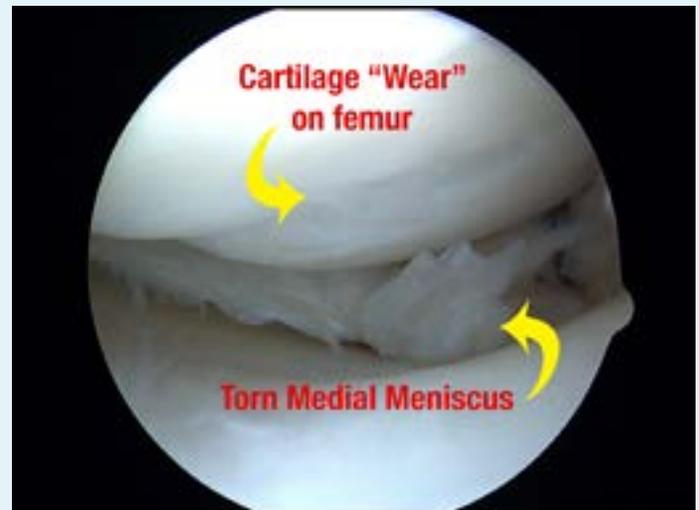
The Swedish ACL registry has found that patients who **smoke** are at higher risk for ACL graft failure. Smoking has a negative effect on surgical results as it has a deleterious effect on wound healing and graft healing. A smoking cessation program is important to discuss with your family physician prior to your ACL reconstruction.

(B) SURGICAL CHOICES FOR ACL RECONSTRUCTION:

AUTOGRAFT VS. ALLOGRAFT:

After deciding to undergo surgical reconstruction of the ACL, you must decide from where the reconstruction tissue will come. When the tissue comes from the same patient, it is called an autograft. When the tissue is taken from a different human donor, it is called an allograft. Tendons, such as the hamstrings tendons, quadriceps tendon and the patellar tendon can be used for autografts. At this time, I typically

use hamstrings tendons for autograft ACL reconstructions. The tibialis tendons, Achilles tendon, patellar tendon, hamstring tendon can be harvested from human donors and used for allograft ACL reconstructions.



Autograft Reconstruction of the ACL

One or two of the hamstring tendons from the back of the thigh are used to reconstruct the ACL. The most common hamstring tendons used are the semitendinosus and the gracilis tendons. The donor hamstring muscles seem to tolerate the removal of their tendonous attachment. Patients will develop hamstring weakness after ACL surgery however this usually improves significantly over time if you properly **rehabilitate** your hamstrings muscles after surgery. Other autograft choices include patellar tendon and quadriceps tendon grafts.

The major disadvantage of autograft tendons is that the graft is taken from the patient to replace the ACL that is torn. In essence, you have to “**rob Peter to pay Paul**”. In some patients, the donor site can be a source for weakness and potentially a source of pain. The donor site can possibly take longer to heal in some patients than the reconstructed ligament. It is very important to protect the hamstrings early in the rehabilitation period. Once it is safe, it is also very important to build your hamstrings muscles so that you have the best chance to regain the strength in your leg. The hamstrings muscles do help protect your ACL graft.

The major advantage of using autograft tendons are that they have been used for the longest period of time and because they come from the injured person they do not have any chance of carrying organisms, which may cause infectious diseases. In general, in my practice, autograft hamstrings tendons are preferred for younger patients as there have been some research studies that have indicated that young patients undergoing allograft ACL reconstruction may have a higher failure rate than autograft tissue.

Allograft Reconstruction of the ACL

The primary advantage of allograft tissue is that there is no additional damage to the knee and potentially larger grafts can be used. There are certain patient populations that may benefit from using allograft tissue such as people with multiple ligament injuries (knee dislocations) requiring surgery, revision ACL surgery and possibly in patients with significant loose jointedness.

The most common allografts that I use at this time are the tibialis tendon, the Achilles tendon and the patellar tendon. Allograft tissues are taken from tissue donors through tissue banks. The donors are screened by the Capital Health Regional Tissue Bank



and are tested for infectious diseases. Screening histories, blood tests and cultures are obtained during tissue processing. These screening procedures must be clear of infectious disease or the tissue bank rejects the tissues.

The risk of disease transmission through allografts while never non-existent is extremely small. Allografts are poor vectors for disease transmission. The graft tissue has no living cells. It is frozen and kept in a deep freezer until used. The fact that the tissue has only a few cells and no living cells makes the donor graft tissue a poor transmitter of living bacteria or viruses that are responsible for transmitting most diseases. As this tissue has no living cells, it is not necessary to match the donor and recipient, nor is it necessary for you to take anti-rejection drugs if you are having an allograft ACL reconstruction.

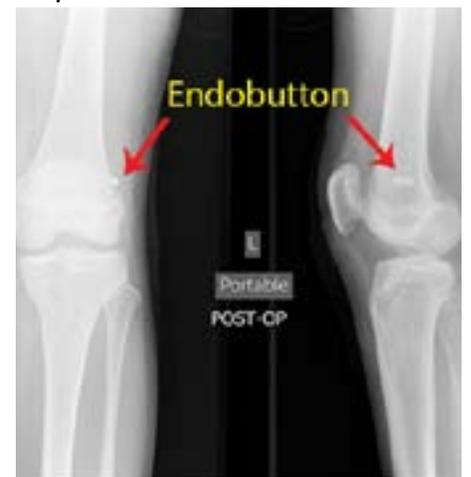
If you would like more information on the Capital Health Regional Tissue Bank please visit their website at: www.cdha.nshealth.ca/regional-tissue-bank



(c) SURGICAL PROCEDURE:

ACL surgery is performed arthroscopically. The knee is examined clinically and through the arthroscope. An arthroscope is a thin pen shaped instrument to which a small video camera is attached. The arthroscope allows the surgeon to carefully inspect the knee, looking at and evaluating each key structure in the knee joint. During this portion of the procedure, any additional damage to any of the other knee structures can be identified, and where appropriate, correctly surgically.

The hamstrings tendons are then harvested (if using autograft) and the graft (autograft or allograft) is then prepared for implantation. Once the grafts are ready, tunnels are drilled in the femur and tibia using the arthroscope to re-create the original ACL attachments in the knee. The graft is then placed into position and held in place. A variety of fixation devices are available. I typically use a metal endobutton on the femur. The graft is secured on the tibial side using a screw (usually a bio-absorbable screw) and possibly a metal staple on the tibia. The knee joint is then tested for stability.



It takes at least 5 – 6 months for the graft to become secure in the bone tunnels, which is why it is very important to follow the steps of the ACL rehabilitation program. Most patients do not regain their maximal strength and balance sense (neuromuscular control) in their leg until 12 – 24 months after surgery. A custom fit knee brace may be advised to protect the knee while doing any pivoting or twisting for at least one year after surgery.

REHABILITATION:

The rehabilitation process is an **EXTREMELY** important part of having your ACL reconstructed. It can be a long and rigorous process to get back to your pre-injury knee function thus it cannot be overemphasized how important it is for you to be dedicated to your rehabilitation and to follow the **ACL Rehabilitation Protocol**.

The goals for rehabilitation of ACL reconstruction include reducing knee swelling, regaining full range of motion of the knee, strengthening the quadriceps and hamstring muscles, regaining neuromuscular control in your leg as well as preventing further injury to the knee. Your sense of balance and control of the leg must be restored through exercises designed to improve neuromuscular control.

You may return to sports when there is no longer pain or swelling, when full knee range of motion of your knee has been achieved, and when muscle strength, endurance, neuromuscular control and functional use of the leg have been fully restored. This usually takes a minimum of 6 - 12 months or longer to achieve. If you partake in sporting activities that involve pivoting, twisting and/or uneven ground, it is preferable that you wear your custom fit ACL brace until advised otherwise.

Return to strenuous activities after major knee ligament surgery carries the definite risk of a repeat injury or the potential of compounding the original injury. These risks cannot always be prevented. Patients are warned to return to athletic activities carefully and to avoid any activity in which pain, swelling, or a feeling of instability is present.



PREVENTION:

Research has shown that partaking in regular neuromuscular training exercises that are designed to enhance proprioception (knowing where your joint is in space), balance, proper movement patterns and muscle strength can reduce the incidence of non-contact ACL injuries.

There are a variety of ACL prevention programs and their focus is on reducing the risk of ACL injuries by performing training drills that require balance, power and agility. The Santa Monica Sports Medicine Foundation developed an ACL injury Prevention Program. The program is known as the **PEP Program (Prevent Injury and Enhance Performance)**. The following is the website URL for the **PEP Program**: <http://smsmf.org/pep-program>. Another great resource for soccer players is the FIFA 11 plus ACL warm up program. The URL is: <http://f-marc.com/11plus/home/>

To reduce your chance of an ACL injury, follow these tips:

- ◆ Improve your conditioning. Training programs that have been shown to be effective in helping to reduce the risk of ACL injuries typically include strengthening and stability exercises, aerobic conditioning, plyometric exercises, “jump training” and risk-awareness training.
- ◆ Exercises that improve balance also can help when done in conjunction with other training exercises.
- ◆ Strengthen your hamstrings. Women athletes in particular should make sure to strengthen their hamstring muscles as well as their quadriceps.
- ◆ Use proper techniques. If your sport involves jumping, learn how to land safely. Studies have shown that if your knee collapses inward when you land from a jump, you are more likely to sustain an ACL injury. Technique training along with strengthening of some of the hip muscles can help to reduce this risk.
- ◆ Check your gear. In downhill skiing, make sure your ski bindings are adjusted correctly by a trained professional so that your skis will release appropriately when you fall.
- ◆ Follow an ACL prevention program like the **Fifa 11 Plus** program or the **Santa Monica PEP** program as outlined above.

PROGNOSIS:

Patients treated with surgical reconstruction of the ACL have long-term success rates of 82-95%. Recurrent instability and graft failure is seen in approximately 5% - 8% of patients.

Patients with ACL ruptures, even after successful reconstruction, are at risk for osteoarthritis. The goal of surgery is to stabilize the knee, decrease the chance of future meniscal injury, and delay the arthritic process.



Frequently Asked Questions

1 *What are the indications to fix my knee?*

As outlined above, there are a number of factors to consider when deciding to proceed with an ACL reconstruction. Generally, if you have an unstable knee, you are younger, you participate in high-risk activities, and/or you have associated injuries in your knee such as meniscus tear, chondral injuries and other ligament injuries, you are a good candidate to proceed with ACL reconstruction surgery.

2 *Why is the ACL reconstructed and not repaired?*

The distinction rests in the fact that when you tear your ACL it is no longer possible to "sew" it back together. This has been attempted in the past and simply does not work. Therefore, the ACL is reconstructed (replaced) with a new graft.

3 *What kind of graft options are there?*

There are two main types of graft options: autograft (your own tissue) or allograft (donor tissue). An autograft (your own tissue) is used in most cases. Autograft options include one or two hamstring tendons graft(s), a patellar tendon graft with bone plugs from your patella and tibial tubercle, and a quadriceps tendon graft. At this time, my preferred choice for autograft tissue is the hamstrings tendon autograft. Allograft (donor tissue) options are numerous. These include soft tissue grafts (tendons) and composite grafts of bone and tendon (patellar tendon and Achilles tendon). The advantages of using allografts for ACL reconstruction include unaltered patellofemoral tracking, no donor-site morbidity, decreased overall surgical morbidity, decreased operative time, improved cosmesis with smaller surgical incisions, less postoperative pain, and an easier rehabilitation. Allografts are particularly useful in patients for whom a previous autograft ACL reconstruction has failed, patients with excessive joint laxity, patients who need a complex multiple ligament reconstruction and in "older" patients. A primary disadvantage of allografts is the risk of viral or bacterial disease transmission. This risk is very low and is estimated to be approximately a 1 in 1.5 million chance of viral disease transmission. Allografts are not my first graft of choice in younger patients with isolated ACL tears as there are literature reports that indicate that this patient

population has a higher allograft failure compared to the "older" patient population. Some patients are treated with bone tendon bone autografts.

4 *How are the grafts fixed to the bone?*

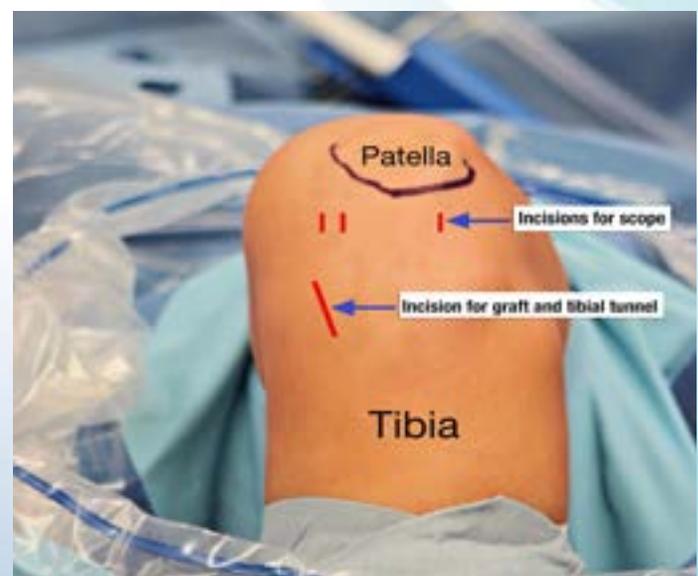
The graft needs to be secured in the tunnels that are created to reconstruct the ACL. There are numerous fixation techniques available. My preferred technique for hamstrings autograft involves an endobutton (small metal button) on the femur (thigh bone) side and a bio-absorbable or a PEEK screw tibia (shin bone) side. A metal staple may be added to the tibial side if additional fixation is required. In patients with bone tendon bone autograft, there will be two metal screws used to secure the graft in the tunnels.

5 *How long is the surgery?*

Depending on the presence of other injuries to the cartilage, meniscus or ligaments, the actual surgical procedure usually takes around 1 – 1.5 hours.

6 *Where are the incisions?*

For hamstrings tendon autografts and allograft reconstructions, there are two- three <1 cm incisions around the kneecap tendon for the arthroscopy portion of the procedure. There is a small 2.5 - 3 cm incision about 4 cm below the joint along the inside of your knee where the graft is harvested (if using autograft hamstrings) and the tibial tunnel is drilled. A similar incision on the tibia is used for tibial drilling for allograft surgery as well. There is also a small pin-hole just above and on the outside of the knee where a pin used to pull the graft through the tunnels. These incisions are small and generally cosmetically acceptable. For patellar tendon autograft surgery, there is an incision in the anterior aspect of the knee centered over the patellar tendon.



7 Risks of anterior cruciate ligament surgery?

All surgeries have inherent risks even though these risks are low. The major risks are infection, swelling, wound healing problems, numbness, blood clots, stiffness, neurovascular injury, growth plate injury (children), recurrent instability, painful hardware and arthritis.

INFECTION: The risk of infection is reportedly about 0.8%. Preventative measures are taken such as: cleansing of the skin prior to surgery, careful surgical technique, small incisions, joint irrigation and peri-operative antibiotics. In the rare instance that an infection develops, it is treated with cleaning out of the joint and antibiotics.

SWELLING: Swelling around the knee joint is the norm after ACL surgery. This can be alleviated by applying ice to the knee or using a Cold Therapy Unit. In very rare cases, patients may need to have the fluid drained from their knee if it limits their motion or if it is persistent. Some patients develop a painful swelling down the front of their leg, which is secondary to blood tracking underneath the skin from the surgical site. This is known as periostitis. This can be very painful if it develops. Once again, the best treatment for this is to apply ice to the leg, elevate the leg and make sure that the brace is not too tight on the lower leg. It would be very rare for a patient to develop an acute compartment syndrome (excessive swelling around the lower leg muscles) after ACL reconstruction surgery.

WOUND HEALING PROBLEMS: The incisions are quite small and therefore complications are rare. If you have a genetic predisposition for keloid formation, you may notice a hypertrophic scarring later in the healing process.

NUMBNESS: There are many skin nerves that supply the sensation to the skin throughout the leg. Despite the very small incisions, there is a small risk that you may develop temporary or permanent numbness around your knee or down along the inner or outer aspect of your lower leg. This does not affect the ability to use your leg (your motor power), it affects your ability to feel the skin in that area (the affected area feels numb to the touch). This may disappear slowly over time, or become less bothersome slowly over time.

BLOOD CLOTS: Blood clots (deep vein thrombosis) are a concern and patients at risk include patients with family history of clotting, a history of a prior clot,

patients over 40, obesity, cigarette smoking, women, birth control pills, history of cancer, and immobility. Preventative measures include a careful documentation of any of these factors, early mobilization, smoking cessation, and discontinue the use of birth control pills for a week before surgery and for at least 1 – 2 weeks after surgery. Other birth control techniques should be used while off birth control pills. You may take 1 or 2 Aspirin (81 mgs) per day (as long as you do not have any contraindications to using ASA type products) is used for period of 2-3 weeks after surgery. If you have had a blood clot in the past, have an inherited risk of developing blood clots and/or a direct relative has had a blood clot in their leg or a pulmonary embolism, **please advise us before surgery.** If you are at high risk, in some cases, use of a low molecular weight heparin (such as Fragmin) or Coumadin (Warfarin) is considered in the peri-operative period

KNEE STIFFNESS: Approximately 5% of patients having ACL surgery develop significant stiffness in their knee after ACL reconstruction. Loss of motion is less frequent now that earlier motion after surgery is the rule. Patients are initiated and instructed to start moving their knee joints immediately after surgery. If you are admitted to hospital, a continuous passive machine (CPM), may be used to help you with your early range of motion. In extremely rare circumstances, if your motion does not progress occasionally a repeat arthroscopy or manipulation is needed. This is considered around 3+ months after your initial ACL surgery and is based on your progress with therapy.

INJURY TO ARTERY OR NERVE: Very rare occurrence and usually in only very complex knee reconstructions with many ligament tears (such as a dislocated knee).

GROWTH PLATE INJURY: In young children with isolated ACL tears, early ACL reconstruction creates a possible risk of growth plate injury, which may lead to bone growth problems and a possible angular deformity of the leg. In select patients, there is a possibility that the ACL surgery can be delayed until the child is closer to reaching skeletal maturity. Alternatively, the surgeon may be able to modify the technique of ACL reconstruction to decrease the risk of growth plate injury by avoiding the growth plates. Risks and benefits of ACL surgery in a young child will be discussed with the family per-operatively.

RECURRENT INSTABILITY: An ACL reconstruction is intended to replace your original ACL. However, in some instances, the graft does not heal to the bone or it stretches during the healing process. This may result in recurrent instability. There is also a possibility that you may tear your ACL graft later on with a repeat injury. If you develop recurrent instability from stretching of a graft or a repeat injury, revision surgery may be needed. Fortunately this is infrequent.

HARDWARE PAIN: Occasional patients develop pain on the tibial side related to the screw and/or the tibial staple. If this does not resolve over time, the hardware may need to be removed after the ACL has healed.

ARTHRITIS: Once your knee is injured, no matter what you do, the joint is at risk for arthritis in the future. This is due to the ACL tear and the associated injuries to the rest of the joint at the time of injury and with subsequent injuries. Undertaking a reconstruction and being educated about your limitations as a result of your injury, may help to retard the development of arthritis.

COMPARTMENT SYNDROME: This occurs where excessive fluid build up forms in the muscle compartments of the leg and it may require surgery to release the pressure in the compartment. This is extremely uncommon in patients undergoing isolated ligament reconstruction such as an ACL reconstruction.

8 *When can I drive?*

You should not be taking any prescription narcotic pain medications as these can affect your ability to drive. If you drive an automatic car and the ACL reconstruction is on your left knee then you can drive when you feel comfortable getting in and out of the car and you are “safe” to drive. In many patients this is around 3 - 5 weeks after surgery. If the surgery is on your right knee and/or if you have a standard car, it may take 4 - 6 weeks before you have adequate quadriceps or thigh muscle control to be able to operate your car safely.

9 *How long is physiotherapy?*

The goal of therapy is to control pain and swelling, restore motion, develop strength, restore function and neuromuscular control, and to prepare you to return

to your sport or sports of choice. This can vary from patient to patient but most patients are in formal physiotherapy for 2-3 months. Many of the exercises can be performed in a health club and therefore a membership is recommended unless you have gym equipment at home. Physiotherapy is usually started the 1 - 2 weeks after surgery and so it is advisable for you to set up appointments with your local physiotherapist. Please follow the recommendations in the ACL rehab protocol unless advised otherwise. Progression through the ACL rehabilitation program may be quite variable between patients and may depend on the surgical procedure(s) performed.

10 *What happens after surgery?*

You will be seen 10 - 14 days after surgery to remove your sutures and check your wound. You will be in a long leg hinged knee brace in the operating room that extends from your ankle to your thigh. Some patients can transition into their custom fit ACL brace around 2 weeks post operatively. Crutches are used for the first 10 to 14 days to protect your knee (longer if your meniscus was sutured). Initially the surgery makes your knee feel weak and unstable. This is due to the pain from the surgery and the swelling that ensues. Therefore the crutches are used for support and protection. You will be reassessed at regular intervals for one year after surgery (typically 2 weeks, 2 months, 6 months and one year post-op).

Post-Op Hinged Knee Brace



11 *When can I return to sports and do I need a custom fit ACL brace?*

There are many activities that you are allowed to do while going through the rehabilitation process. It is important that you continue with straight ahead activities unless otherwise instructed. You are allowed to bike, swim and jog early on in the rehabilitation. Any activities that involve potential pivoting or twisting should be avoided until at least 6 months post-operatively depending on how your knee is progressing and whether or not you had any other associated injuries. It is my preference that you use your custom fit ACL brace for any potential pivoting or twisting activity for at least one year after your ACL reconstruction surgery. It is extremely important that you rehabilitate **both** knees in order to prevent future injuries to either knee.

12 *Can I re-injure my knee?*

Yes, you can. Remember that you tore your own natural ligament, so it is theoretically possible to rupture your ACL graft. Fortunately, rupture of the graft is uncommon. You need to ensure that your knee has properly rehabilitated before you return to sports as there is a higher rate of re-injury if your knee is not ready to return to sports. Furthermore, once you have torn your ACL, you have an increased chance of tearing the ACL in your opposite knee. It is very important to do the strength and balance training exercises in both knees to help lessen the chance of injury.

13 *What if I choose not to have ACL surgery?*

The decision to proceed with ACL surgery is a personal one. It is very important that you are mentally and physically prepared to proceed with the surgery and the rehabilitation that is required after ACL reconstruction surgery. Some patients opt to modify their activities, and/or wear an ACL brace, and/or try physiotherapy to strengthen the muscles around the knee in an effort to avoid ACL surgery. There are many activities and sports that do not require an ACL. The ACL comes into play when you are pivoting, or making lateral movements suddenly. For example, for many people, running in a straight line shouldn't be a problem without an anterior cruciate ligament. Many sports such as jogging, cycling, swimming, and others do not always require a functional ACL.

14 *What are the risks of not having ACL surgery?*

This is also very important to consider. You need to consider the pros and cons of declining surgery. One important factor is quality of life. Many patients rely on certain activities to maintain their mental health. If an individual cannot find satisfaction without being able to participate in sports that require a functioning ligament, then ACL surgery is an option. Also, new studies have shown that degenerative (arthritic) changes in the knee may be accelerated in patients without an ACL especially if they have recurrent giving way. This means that every time the knee "gives out," you may be damaging the cartilage and/or the meniscus in your knee. This is especially important for younger patients who will need good knees for many years. Many surgeons recommend that if a young patient attempts non-operative treatment, and they have a repeat episode of instability (after the initial injury), then they should more seriously consider having the reconstructive surgery.



ACL Surgery Checklist

BEFORE SURGERY:

- You make sure that you have worked on regaining your strength and mobility in your knee before surgery
- You know the date and location of your surgery
- You have made arrangements with work / school that you will be missing time.
- You have seriously considered a smoking cessation program if you are a smoker.
- You have obtained your crutches, your post-op hinged knee brace and your custom fit ACL brace and you have a cold therapy unit (if you purchased one).
- You have stopped drinking liquids and eating food at midnight prior to surgery.

DAY OF SURGERY:

- Bring your health card
- Wear loose clothing (the post-operative brace will be placed on your knee in the Operating Room.
- Bring your post-op hinged knee brace or knee immobilizer and crutches to the hospital
- Bring all medications (or a list of medications) that you take on a regular basis with you to the hospital
- If you have sleep apnea, please bring your CPAP machine with you to the hospital.
- If you are being discharged on the same day as surgery, you have someone who will take you home and stay with you for at least 24 hours after surgery.
- If you are being admitted after surgery, please bring any necessary personal items.

AFTER SURGERY:

- You have a follow-up appointment scheduled within 10 – 14 days after surgery.
- You can make arrangement for formal physiotherapy within 7 - 10 days after your surgery.
- You understand the importance of following the recommended rehabilitation program and you understand that you should not return to high risk activities until your strength and neuromuscular control are close to normal in your leg.