BANFF SPORT MEDICINE
Orthopaedic Surgeons

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Banff Sport Medicine

Anterior Cruciate Ligament (ACL) Reconstruction

What is an "ACL" tear?

The Anterior Cruciate Ligament (ACL) is a stabilizing ligament in the centre of the knee that is most commonly injured in high speed or pivoting sports such as skiing, soccer and basketball, or in contact sports such as football and rugby. The ACL rarely heals on its own and may require surgical reconstruction.

Diagnosis:

- A history of an acute twisting or pivoting injury, usually with immediate pain and rapid swelling
- Episodes of 'giving way' or feelings of knee 'going out'
- Physical assessment shows looseness in the knee with front/back and rotational movements
- MRI (magnetic resonance imaging) is only used for diagnosis when the extent of the tear is unclear, or to determine the amount of damage to other structures (i.e. meniscus, other ligaments)
- Arthroscopy (knee surgery through small incisions with a camera) can be used to treat meniscal injuries so that knee range of motion and strength can be rehabilitated before an ACL reconstruction. Arthroscopy can also be used to assess the extent of other injuries such as an ACL tear or other ligament injuries

Why fix an "ACL"?

- To prevent further episodes of knee instability
- To prevent further damage to knee structures (i.e. meniscal tears)
- To possibly prevent further damage to the articular (bony) cartilage (i.e. osteoarthritis)

Options other than Surgery

- **Rehabilitation**: some patients can cope with a torn ACL following intensive rehabilitation
- **Knee brace**: some people with a torn ACL can be stable in a brace for sport and work
- **Lifestyle modifications**: some people with a torn ACL will decrease the intensity of their activities, or stop all pivoting and contact sports

About the Surgery Timing

- To prevent stiffness, surgery is not usually performed until at least 6-12 weeks after the ACL injury, when there is no swelling in the knee and full range of motion has returned.
- We recommended all patients stay as active as possible before surgery by following the pre-surgery rehabilitation program that is in your surgery folder. You can gain full range of knee motion, improve your strength and balance, and build your endurance by doing straight-line activities and sports. Regaining the strength and movement in your knee before surgery and maintaining your fitness will prepare you for surgery and also help you to recover faster after surgery.
- If your knee symptoms improve significantly while you are preparing for surgery and you would like to discuss non-surgical management of your ACL injury, please call the office to arrange a follow-up appointment before your surgery date.

The Procedure

- Attempting to repair your injured ACL itself is not very successful; therefore, a tendon graft is used to reconstruct this ligament. Graft tunnels (holes) are drilled in your tibia and femur to place the graft. These tunnels are placed so that the graft will run between your tibia and femur in the same direction as your original ACL.
- Two main types of grafts can be used to reconstruct your ACL:
    1. The more common graft is referred to as an autograft, which is a tendon harvested from your own leg, usually from the same side as the surgical knee. Occasionally, a tendon from the other leg can be used depending on the situation. The most common autograft used is a hamstring tendon, primarily the semitendinosus which often requires the addition of the gracilis tendon to make a large enough graft. The next most common autograft used is a portion of the patellar tendon, followed by the use of a portion of the quadriceps tendon.
    2. The second type graft that can be used is an allograft. This is a tendon that is harvested from a donor or cadaver. It is generally only recommended for patients over the age of 40, as many studies show that there is a significantly higher graft re-tear rate when allograft is used in younger, more active patients. However, over the age of 40, most studies do not show any difference in surgical outcomes when comparing allografts to autografts. Allografts can also be used for revision ACL surgery when the desired autograft tendons have already been used.
- Your surgeon will discuss the various graft options with you and recommend which graft is best suited for you.
- The majority of the surgery is done arthroscopically by using a camera to look inside the knee through two small incisions. However, an additional 3-4cm incision is needed to harvest the hamstring graft just below your knee toward the inside of your lower leg. A patellar tendon harvest requires a longer, 8-10cm incision as does a quadriceps tendon harvest. A smaller incision (2cm) is used for an allograft reconstruction.
- The new ACL graft is fixated into a tunnel in the tibia (shin bone) with a bio-absorbable screw. The other end is attached through a tunnel drilled in the femur (thigh bone), with a metal button that sits on the outside of the bone. The graft will grow into the bone in 3-4 months, however full recovery for return to sports can take anywhere from 12-24 months.
- Another procedure that is sometimes used in combination with the ACL reconstruction is called a lateral extra articular tenodesis (LET). An LET is a procedure performed on the outside lateral aspect of the knee joint using a portion of your iliotibial band (ITB) to add extra rotational stability for the knee. In the LET surgery a small slip of your ITB is passed deep to the lateral collateral ligament and then secured in place with a small metal staple to your distal femur (thigh bone). The LET is not a new procedure, and research has shown that it can reduce the rate of reinjury after ACL reconstruction in high-risk patients with significant knee instability. It is also commonly used in revision (repeat) surgery to treat an ACL graft tear.

RISKS OF SURGERY

Risk of Infection: less than 1 in 100

- Intravenous antibiotics are given before surgery to help prevent infection.
- If an infection occurs, it will usually happen within 5-7 days of your surgery. Some minor wound infections can be treated with a short course of oral antibiotics, whereas more severe wound or skin infections may require a longer course of intravenous antibiotics. In less than 1 in 400 cases, a deep infection can occur in the joint. In these cases, surgery is required to wash out the infection, followed by 2-3 months of intravenous antibiotics.

Risk of Clot in Leg Veins (deep vein thrombosis): less than 1 in 100

- If severe calf, ankle and foot swelling occurs 3 days to 2 weeks after surgery, you could have a clot in a deep vein of your leg (DVT). See a doctor as soon as possible. Treatment for a blood clot is usually blood-thinning medication (anticoagulants) for 3-6 months.

Risk of Clot in Lungs (pulmonary emboli): less than 1 in 500

- It is possible for a blood clot to travel to your lung; this is called a pulmonary embolism. If you suddenly get short of breath or have chest pain, go to the nearest emergency room or call 911. A pulmonary embolism is a medical emergency and can cause death.
- In certain patients with risk factors for a blood clot, preventative blood thinners will be prescribed for a short period of time after surgery.

Risk of Injury to Artery or Nerve: less than 1 in 1,000

- This is a very rare occurrence and the risk is greatest in complex knee reconstructions with multiple ligament tears (e.g. dislocated knee).

Risk of Graft Failure: approximately 5 in 100

- One of the causes of early ACL graft failure is an injury such as a slip or fall after surgery. Another common cause of graft failure is returning to sport too early. Even with excellent rehabilitation there is an increased risk of graft failure if you return to high-speed or pivoting sports sooner than a year after your reconstruction. If necessary, you can have another ACL reconstruction surgery on the same knee.

Risk of Knee Stiffness: less than 1 in 100

- Some patients have problems with knee stiffness after ACL surgery. These patients will need intensive physiotherapy and may need another surgery to mobilize the joint.

Skin Numbness around Incision

- Every patient gets some numbness around their incision because some small surface nerves are cut during surgery. This can be along the incision or can affect a larger area of the leg (up to 20 sq. cms). This may disappear slowly over time, depending on the patient.

Risk of Persistent Swelling and Pain: less than 5 in 100

- Knee swelling and pain are common for up to 3-6 months after surgery. Some patients will have ongoing pain and swelling from damage to knee structures when the ACL injury occurred. Patients with more osteoarthritis or chondral damage in their knee often have more long-term pain and swelling.

Risk of Hematoma: less than 1 in 50

- Some patients will get a hematoma (collection of blood) at the harvest incision. These patients should rest with their leg elevated and may need more intensive physiotherapy. The hematoma usually absorbs after 3-4 weeks. A hematoma rarely needs surgery. Occasionally it will drain or be drained by your surgeon and require packing and wound care for several weeks.

Your Stay in Hospital

- You will be admitted to the hospital on the day of your surgery. Your admission time will be approximately 2-3 hours prior to your surgery time. Your surgery will take approximately 2 hours. You will be called approximately 5 days prior to your surgery date with your arrival time.

- You can have your ACL reconstruction with either a general anesthetic (go to sleep) or spinal anesthetic (freeze from the waist down). Your anesthetist will discuss these options with you on the day of surgery.
- Although ACL reconstruction is usually day surgery, in rare instances, your surgeon or the anesthetist may recommend that you be admitted to the hospital overnight, so be prepared for this.
- Please provide the office with any insurance forms you have prior to the day of your surgery, as it can take up to 2 weeks to have them completed and returned to you. Please note we do charge a fee as completion of forms is not covered by Alberta Health Care.

Medical Aid Products

- **Cold Therapy Unit**: is used to help control pain and swelling after surgery. You can order a Cold Therapy Unit, complete with a knee or shoulder pad, through the Shop found on our website or at our clinic. Alternatively, you can purchase a Cold Therapy Unit from your local healthcare provider or from an online health supply store. For portable use you can purchase a battery pack, which allows you to use your Cold Therapy Unit without an electrical outlet. We recommend that you buy your Cold Therapy Unit at least a week before your surgery to make sure that you have it delivered in time.
- **Brace**: in the majority of cases a brace is not used after surgery unless other ligaments or tissues (in addition to the ACL) are repaired. If you need a brace after surgery, you will be able to purchase it from the hospital on the day of surgery.

Postoperative Pain Control and Wound Care

- Rest, ice, compression, and elevation of your surgery leg.
- You will be given a prescription for anti-inflammatory medication (ie Naproxen) and a narcotic analgesic (ie Oxycodone) depending on the surgeon's preference and the patient's history of allergies and drug intolerances, before you leave the hospital.
- Refer to the Post Op Concerns and Opioid Medications sheets included in your surgery package for more information
- We recommend you wait 4 days before removing your bandages and taking a shower. To minimize the risk of post-operative infection, please do not soak in a bathtub, swim, or go into a hot tub until your incisions are completely healed. This will be a minimum of 3-weeks after surgery.

Discharge from Hospital

- Ensure you have your prescriptions for pain and anti-inflammatory medications before you leave the hospital.
- You must have someone to drive you home.
- Minimum 1 week resting at home with leg elevated and regularly icing your knee.
- In most cases, you are allowed to weight bear as tolerated on your operative leg, but crutches are required for 2-4 weeks to facilitate pain free ambulation Discuss any travel plans with your surgeon because long trips can increase the risk of blood clots.

Follow-up Visits

- Your surgeon will follow you after surgery at: 2-4 weeks, 3-months, 6-months and 1-year. Our office will provide you with the time, date and location of your first post-operative appointment, usually included in your physiotherapy prescription email approximately one week after your surgery.

Return to Work Guidelines

- Sedentary work: 2-6 weeks
- Light manual work: 3-4 months
- Heavy manual work: 6-9 months

Physiotherapy

- See your physiotherapist between 1-3 weeks after your surgery. You will be provided with a physiotherapy prescription via email from our office approximately one week after your surgery.
- Please note if you reside in Alberta you may be eligible for physiotherapy funding, please refer to the AHS website for more information: https://www.albertahealthservices.ca/rehab/page17783.aspx
- The hospital will provide you with the Banff Sport Medicine Post-operative ACL Rehabilitation Protocol, it may also be found on our website: https://banffsportmed.ca/resources-ortho/#surgeryinfo

Return to Sport

- The surgeon will be able to tell you when you can go back to sport. For most patients this is between 12 and 18 months after surgery. The type of sport, and your level of strength and function, will help to guide the surgeon's recommendations.
- Some patients who have more damage inside their knee may be told to protect their knee by doing fewer sports and activities that require a lot of running, jumping or pivoting. Doing this will help you avoid too much load on damaged joint surfaces and may help to delay arthritis. Your surgeon will give you advice about return to sport based on the amount of damage seen inside your knee at the time of surgery**.**
- ACL reconstruction is very successful for stabilizing the knee and most patients can return to running, jumping and pivoting sports after surgery. However, the end result for each patient depends on the amount of time spent doing rehabilitation including strength, balance and agility exercises.