



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 (403-760-2897) 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 types of grafts—autograft or allograft—can be used to reconstruct your ACL. An allograft is a leg tendon that has been donated by a cadaver. An autograft is created when your surgeon takes tendons from your leg. This process is called harvesting. The tendons that are most commonly

- harvested to create your ACL autograft are your gracilis and semitendinosus hamstring tendons. A portion of your patellar tendon, including some bone from your patella (knee cap) and some bone from your tibia at either end of your patellar tendon, may be harvested instead to construct a stiffer graft. In less common instances a portion of your quadriceps tendon including some bone from your patella may be harvested to reconstruct your ACL. In the vast majority of patients the tendons that are harvested from the muscle to make the autograft will grow back over time. In patients where the tendons do not regrow, the muscles will attach to another one of the nearby muscle tendons. Your surgeon will explain the advantages and disadvantages of each graft option to 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 screwed 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 9-24 months.

RISKS OF SURGERY

- *Risk of Infection: less than 1 in 100*
 - Intravenous antibiotics are given before and after 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 are not allowed to have anything to eat or drink after midnight (24:00) before to your surgery.
- If you have prescribed medications that you take each day, the nurse from the Pre-Assessment Clinic will give you instructions before your surgery about if and when to take them.
- You will be admitted to the hospital on the day of your surgery. Your admission time will be approximately 3-4 hours prior to your actual surgery time. Report to the Admission Desk of the Banff Mineral Springs Hospital, unless instructed otherwise. Your surgery will take approximately 2 hours.
- You can have your ACL reconstruction with either a general anaesthetic (go to sleep) or spinal anesthetic (freeze from the waist down). Your anaesthetist will discuss these options with you on the day of surgery.
- Most patients are allowed to go home the same day as their surgery, however you should come prepared to stay the night just in case your surgeon recommends that you remain in hospital after your surgery.
- If you have insurance forms please bring them to our office before or on the day of, your surgery. This will ensure that your forms are completed and posted back to you in time. Alberta Health Care does not cover the cost of completing insurance forms and a fee will be charged

Medical Aid Products

- Crutches can be purchased at the Banff Mineral Springs Hospital. If you bring your own with you please make sure they are clearly labeled.
- 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 (www.banffsportmed.ca/shop). 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

- Rest, ice, compression, and elevation of your surgery leg
- You will be given a prescription for pain medication (Tylenol 3 or Percocet) before you leave the hospital. You may also be told to take an anti-inflammatory medication along with your pain medication. If you have any questions about the medications please ask your surgeon.

Postoperative Wound Care

- The nurses will check the dressing on your knee before you go home, and replace it if necessary. You should take this dressing off four (4) days after your surgery. If the tensor bandage on your leg rolls-up or causes pressure in one area you should take it off and have someone reapply it for you.
- You may shower four (4) days after surgery and should dry your incisions gently with a clean towel.
- Due to the risk of infection, do not fully immerse the incisions in bath water for 2-3 weeks after your surgery and do not enter a swimming pool or hot tub for at least 3-weeks after surgery.

Your Bandage

- When you remove your bandage for the first time, you may notice a clear string that looks like fishing line sticking out of the skin near the incision(s). This is a biodegradable suture that is used to close the skin incision. It will eventually fall off. However, you may snip these off at the level of the skin as early as 2 weeks post-operatively, or you can wait to have this done by your surgeon at your first follow-up appointment after surgery. After removing your bandage, avoid the temptation to touch your healing incisions as your own hands are the most common source of bacteria that can cause wound infections.

White Strips of Tape

- These are called “Steri-strips” which are used to reinforce the stitching of the skin incision. You may peel these off yourself after 2 weeks post-operatively when the incisions should be healed.

Discharge from Hospital

- Ensure you have your prescriptions for pain medication, anti-inflammatory medication and physiotherapy 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
- 2-4 weeks on crutches, or until you can walk without a limp
- Discuss any travel plans with your surgeon because long trips can increase the risk of blood clots

Follow-up Visits with Dr. Heard/ Buchko/ Hiemstra

- Your surgeon will follow you after surgery at: 2-4 weeks, 3-months, 6-months, 1-year and 2-years. Your surgeon’s medical office assistant will give you the time, date and location of your first post-operative appointment when they call you before your surgery. Please make note of the appointment on the orange sheet in your surgery folder.
- You will complete balance, hopping and jumping tests starting at your 6-month post-operative appointment to assess your knee function. Full functional recovery from your surgery can take up to 2-years.

If you have concerns please call our office at 403-760-2897 during business hours. If it is during an evening or weekend please call the Banff Mineral Springs Hospital at 403-762-2222 to speak with the orthopaedic surgeon on call. You should also review the post-operative concerns document you received in your surgery folder, at the hospital or off our website.

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.
- The hospital physiotherapist will give you the Banff Sport Medicine Post-operative ACL Rehabilitation Protocol. Please take the protocol to your physiotherapist for him/her to follow. If you or your therapist has any questions, please call our office at 403-760-2897.
- Based on your goals and your insurance coverage, you should discuss an appointment plan with your physiotherapist during your first post-operative visit. If you have limited funding for physiotherapy please make sure you space your visits out over the first year after surgery.

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 (when we test you at your 6 and 12 month follow-up appointments), 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.