



Banff Sport Medicine

Tibial Tubercle Transfer Patella Realignment

What is a “Tibial Tubercle Transfer (TTT)”?

The tibial tubercle is the bony bump on the front of your leg where the tendon from the patella (kneecap) inserts. In TTT surgery the tuberosity, with the tendon attached, is cut and shifted medially. The tubercle is held in its new position with 2 screws made of stainless steel. Moving the tibial tubercle medially (towards the inside of the leg) treats patellar instability by decreasing the lateral pull on the patella. This causes the patella to move in a more correct line and makes it less likely to dislocate. Moving the tibial tubercle anteriorly can decrease the pain of severe arthritis by removing stress from damaged areas of bony cartilage. Moving the patella distally will also pull down a high riding patella. During the surgery a camera is used to look inside the knee (arthroscopy) to see if the patella is in a better position and also to check for and clean up any damage inside the knee. If your patella is unstable, a TTT may be done in conjunction with another patellar stabilizing surgery, such as a medial patellofemoral ligament reconstruction or imbrication.

Diagnosis:

- A history of recurrent patellar dislocations/subluxations with malalignment of the patellofemoral joint
- Arthritis behind a maltracking patella
- A high riding patella

Why perform a “TTT”?

- To prevent further episodes of patellar instability
- To prevent further damage to the cartilage behind your patella (i.e. osteoarthritis)
- To correct kneecap alignment
- To treat chronic anterior knee pain from patellofemoral arthritis caused by maltracking

Options other than Surgery

- **Rehabilitation** - some people can strengthen and cope after dislocating their patella. This involves intensive rehabilitation to improve core, hip and quadriceps strength, as well as balance and agility.
- **Knee brace** - some people with an unstable patella can participate in work or sports using a patellar stabilizing brace
- **Adjusting lifestyle** to avoid activities that cause patellar dislocations/subluxations

Surgery Timing

- We recommend all patients stay as active as possible before surgery. We recommend you follow the pre-surgery rehabilitation program, especially if you have weak quadriceps, hip, and core. Your goals are to maintain full range of knee motion, improve your strength and balance, and build your endurance by doing straight-line activities and sports. Regaining your strength 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 conservative management of your patellar instability, please call the office to arrange a follow-up appointment before your surgery date

The Procedure

- The tibial tubercle transfer is done through a 4-6 cm incision in the front of your leg just below the knee joint.
- A surgical fracture (osteotomy) is made in the upper shin-bone (tibia) to move the tibial tubercle with the attached patellar tendon.
- The tibial tubercle is then moved to a new position that allows improved tracking of the patella and is held in place with two screws.
- An arthroscope (camera) will be placed in the knee joint and used to assess the structures in your knee, as well as to evaluate the patellar cartilage and to assess patella tracking.

RISKS OF SURGERY

Risk of Infection: less than 1-2 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% cases, a deep infection can occur in the joint. In these cases, surgery is required to wash out the infection, followed by 4-6 weeks 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 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, preventive 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

Risk of Non-union: approximately 1-5 in 100

- The gap created in your tibia bone must heal in a similar manner as a fracture. In some people, the bone healing may be delayed or not heal properly at all. This is much more likely if you are a smoker. This problem may require additional surgery with more bone grafting to encourage healing. In some situations a patient may be required to purchase or rent a bone stimulator machine to enhance healing

Risk of Compartment Syndrome: less than 1 in 100

- Usually occurs 24-48 hours post-surgery if severe swelling develops in the muscle compartments below the knee. This problem requires further surgery to release the pressure (fasciotomy).

Skin Numbness around Incision: very common

- 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 Knee Stiffness: less than 1 in 100

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

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

- The TTT improves the biomechanics of your knee but doesn't change the amount of damage or wear of bony cartilage inside your knee. Some patients will have ongoing pain and swelling from their osteoarthritis. This can be managed with injections and other non-operative treatments for arthritis.

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 a TTT 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 TTT surgery 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

- **Crutches** - can be purchased at the Banff Mineral Springs Hospital or from our clinic. If you bring your own crutches 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 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** - A hinged knee brace may be prescribed by your surgeon to protect your knee for the first 6 weeks. This can be purchased from the hospital or from our clinic.

Post-Operative 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.
- Redness and pain along the shin (caused by blood tracking into the area from the surgery) can occur 3-7 days after surgery. This usually goes away 7-10 days after surgery and is not a concern unless your incisions are also red.

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, keeping the surgery leg elevated and using ice regularly to manage swelling and pain.
- We recommend starting with 50% weight bearing, with progression to full weight as long as the knee brace is worn and crutches are used for balance
- Crutches may be used for up to 6-weeks depending on bone healing
- 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, 6 weeks, 3-months, 6-months, 1-year and 2-years.
- 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: 4-6 weeks
- Light manual work: 3-4 months
- Heavy manual work: 4-6 months

Physiotherapy

- See your physiotherapist between 1-2 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 Rehabilitation Protocol, it may also be found on our website: <https://banffsportmed.ca/resources-ortho/#surgeryinfo>

Return to Full Activities and Sports

- Your surgeon will be able to tell you when you can go back to sport. For most patients, you can start biking on a stationary bike (with a high seat and at minimal resistance) at 4-weeks and can start light impact activities 12-weeks after surgery. The type of sport and your level of strength and function (when we test you) 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 use a lot of running, jumping or pivoting. This is important to 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.