Fraser Orthopaedic Institute &
Fraser Orthopaedic Treatment Clinic
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FRASER ORTHOPAEDIC INSTITUTE

Tibial Tubercle Osteotomy

Preparing for Surgery

- Getting healthy before surgery, eating a balanced diet, adequate hydration and rest.
- Smoking cessation program - quit smoking, stop using nicotine products. Nicotine use slows healing, increases risk of infection and contributes to an overall poor outcome after surgery.
- Making necessary changes to ones home for arrival post operatively: securing loose cords, removing potential tripping hazards, placing essential items at arms reach.
- Find a physiotherapist for post op therapy.
- Rent/purchase ambulatory aids and helper items: crutches, bath chair, practical shoes etc. These items can be purchased at health stores, pharmacies and/or your local Red Cross.

What you should expect after your surgery?

- You will be admitted to the hospital the day of your surgery. Please ensure that you have nothing to eat or drink at least 8 hours before surgery.
- Take your regular medications (except for blood thinners and insulin) the morning of surgery with a sip of water.
- When surgery is complete you will be cared for in the recovery room for 1-3 hours before being transferred to the orthopaedic ward for your overnight stay. Some patients will be able to be discharged on the same day of surgery if their pain is well controlled.
- After surgery you should expect to be NON-WEIGHT BEARING on your affected leg for 6-8 weeks (to be decided by Dr. Stone depending on health status and degree of correction).
- Tibial osteotomy surgery is a painful procedure. You will be provided with a prescription for pain medication on discharge from hospital. You should never take more medication (higher dosage or more frequently) than prescribed.
- It is acceptable to take acetaminophen (Tylenol) in combination with medications such as Oxycodone, you should avoid Tylenol medications if you are taking Tramacet, Percocet, Tylenol#3 or Emtec as they all contain Tylenol and too much can cause liver damage.
- Rest, elevation and ice can help with decreasing post op pain and swelling.
- Avoid Non Steroidal Anti-inflammatories (also known as NSAIDS) - these medications are recognized to slow and interfere with bone and soft tissues healing. Some examples include Advil, Motrin, Ibuprofen, and Naproxen.

Things you NEED to have for your Surgery/Recovery

1. Crutches
2. CPAP or BiPAP respiratory unit for hospital stay if you currently use one.
3. Someone to pick you up at the hospital after surgery (you will not be released on your own) and preferably someone who will stay with you for the first 24 hours after you return home

Things you might find Helpful for your Surgery/Recovery

1. Cryotherapy unit with ice
2. Bath chair
3. Practical shoes

Medical Equipment Rental

- Red Cross Rentals **www.redcross.ca**
- Orthopaedic Equipment **www.bonefoam.com**

Community Resources

- Health Link BC – Health Hotline Dial 8-1-1
- Health Link – **www.healthlinkbc.ca**
- Canadian Orthopaedic Association – **www.canorth.org**
- Osteoporosis Canada – **www.osteoporosis.ca**
- Physiotherapist Association of BC – **www.bcphysio.org**
- Physical Activity Line: Community Programs – 604-241-2266
- Physical Activity – **www.physicalactivityline.com**

Things you should avoid after your surgery

1. Non Steroidal Anti-inflammatories (also known as NSAIDS) - these medications are recognized to slow and interfere with bone and soft tissues healing. Some examples include Advil, Motrin, Ibuprofen, and Naproxen.
2. Smoking - has been shown to slow bone healing by 30-50%.
3. Avoid rubbing creams or ointments (Antibiotic or otherwise) on the surgical site unless requested by your surgeon.

Follow-up

- Your first follow up visit will be approximately two weeks after your surgery in your orthopaedic surgeon's office/clinic. At this visit your surgeon will assess the healing of the wound and remove any sutures or staples that are present.
- Subsequent follow up visits will be arranged at 6-8 weeks, 12 weeks and 26 weeks post operatively. Additional visits will be arranged if required.
- X-rays will be required to assess healing at the 6-8, 12 and 26-week visit.
- You are expected to enroll in an outpatient physiotherapy program after your surgery. This program should begin between 7-14 days post op.
- Physiotherapy programs should focus on the following
    - 0-2 weeks - swelling reduction
    - 2-6 weeks - knee range of motion, may be full weight bearing with knee brace locked in extension, the brace may be unlocked to do range of motion exercises
    - 6-8 weeks - wean out of brace for weight bearing and start quadriceps strengthening.
    - 6-8+ weeks - progress strengthening of quadriceps, hamstrings and hip abductors

Potential Complications

Infection

Signs of infection include increasing redness, swelling, temperature and pain. All of these symptoms can occur normally in the post op period, the main differentiation between normal post op healing versus infection is that in normal healing these symptoms improve with time. Individuals with diabetes, smokers and those who have had a prior infection in this area are at higher risk of developing an infection. Potential infections should be reported to the surgeon's office. To help prevent infection you should wash your hands regularly, keep your incision site and bandages clean and dry. Do not touch, rub or scratch your incision site.

Blood clots

Signs of a blood clot in the leg include calf pain, swelling of the calf and/or foot. These can be normal post operatively and is particularly concerning if the swelling does not decrease with limb elevation. If one has the symptoms of a blood clot they should report them to the surgeon's office immediately. If it is after hours or your surgeon's office is closed, report to the Emergency Department.

Swelling and numbness

Are very common after a tibial tubercle osteotomy surgery. Swelling may last for prolonged periods following the operation depending on the complexity and degree of correction of the tibial osteotomy. Limb elevation and ice therapy can help reduce swelling. If one experiences increasing numbness it is important to report this to the surgeon's office.

Failure to resolve all symptoms

Some pain, instability or stiffness may still be present even after a successful tibial tubercle osteotomy. It is important to appreciate that there are many different potential sources for symptoms.

Neurovascular injury

Numbness over the incision site is very common and will improve with time. Nerve injuries affect muscle control, sensory control, numbness and/or burning. Progressive numbness or weakness should be reported to your surgeon's office

Leg Length Discrepancy

Leg length discrepancy occurs in some individuals post tibial osteotomy. Factors include but are not limited to prior leg length inequality, hip contractures, pelvic obliquity (misalignment/tilting of the pelvis), scoliosis, and/or a prior poorly healed fracture in the femur. This is typically treated with a shoe lift to help counter the discrepancy. Most symptoms of leg length discrepancy in the first weeks/months post operatively resolve without treatment. If you are concerned about this it should be discussed with your surgeon.

Delayed/Nonunion
Tibial osteotomy involves cutting the tibia bone under the patellar tendon insert. If the bone has not healed in the anticipated mount of time typically four to six months, it is called a delayed union. Many delayed unions go on to heal; limited non-weight bearing may be required to resolve this. When a delayed union goes on to have unsatisfactory evidence of healing it is called a nonunion. Risk factors for nonunions include smoking, diabetes, previous nonunion in that area, poor blood supply and/or noncompliance of non-weight bearing protocol (walking on your operated leg before the surgeon advised to do so). Rate of nonunion varies, however in a healthy and compliant patient the literature would suggest a nonunion rate of 5% depending on specifics of the operation. If a nonunion is present further surgery may be necessary to achieve full bony healing, such as bone grafting. There is some evidence that therapies such as oral vitamin D supplement and/or low intensity pulsed ultrasound can improve recovery rates.

Compartment Syndrome
Is a painful condition that occurs when pressure within the muscles builds to high levels. This pressure can result in decreased blood flow, which can prevent nourishment and oxygen from reaching nerve and muscle cells. Symptoms include increasing pain in the affected region, tingling or burning sensation in the skin; the muscles may feel tight/full and/or numb. Individuals that experience these symptoms should contact the surgeon's office or go to the emergency room. This is differentiated from normal post op pain as it is rapidly progressive despite rest, elevation, ice and appropriate pain medication.

Muscle atrophy
Is when muscles waste away due to disuse. It is common to experience muscle atrophy as a result of an osteotomy or any other surgery. Specific strengthening exercises should be carried out with the physiotherapist to regain musculature.

Intraoperative Fracture
Although the risk is minimal, intraoperative fractures are possible. If a fracture does occur intraoperatively, your surgeon will perform an internal fixation procedure to secure the fracture and will discuss this with you post operatively. In most cases this will change the postoperative activity profile, for example non-weight bearing status.

Asymmetric gait
While recovering from osteotomy surgery there is the chance that disproportional loading of other parts of the body may take place (ankle, knee, back). This can lead to irritation of tendons, muscles and ligaments, which can be painful. This pain typically resolves without treatment once the normal gait pattern is restored.

Heterotopic Ossification
Is when bone tissue forms on the outside of the skeleton. Heterotopic ossification occurs when the body mixes up signals for creating new bone cells, thus bone is generated in areas that it usually wouldn't be. The most common symptom of heterotopic ossification is stiffness of a joint and pain. This can be common in small quantities after an osteotomy. In very rare cases the heterotopic ossification may need to be removed.

Delirium
Is an acute state of confusion and disorientation and can be caused by medications used in surgery for postoperative pain. This is most common in the first days following surgery. The best ways of preventing delirium are getting enough sleep, wearing appropriate glasses/hearing aids, limiting alcohol intake, reading and socializing. If you feel that you are experiencing delirium, your family physician should be contacted.

Constipation
Difficulty or inability to pass bowel movements. Constipation is a common side effect of the pain medication you are given to help with postoperative pain. Ensuring that you eat a balanced high fiber diet (including bran, prunes, whole grains, fruits and vegetables) will help to prevent constipation. Remaining well hydrated is another great preventative measure for constipation. If constipation is ongoing or recurrent, laxatives may be prescribed. Contact your family physician or pharmacist if you are experiencing constipation for longer than 3 days.

Driving Protocol
The American Academy of Orthopaedic Surgeons recommends no driving for a minimum of 6 weeks post operatively, regardless of which side was operated on and whether your car is an automatic or manual - no driving is advised.