

TIBIAL TUBERCLE OSTEOTOMY

Before Your Surgery

YOUR SURGERY AT A GLANCE

SURGERY	Arthroscopic knee exam, then the bony attachment of the patellar tendon is cut, moved, and held with screws. Includes a lateral retinacular lengthening
HOW LONG	About 1–1.5 hours
ANESTHESIA	General anesthesia, with a nerve block for pain after surgery
WHERE	Proliance Surgery Center at Valley (PSCV) or Valley Medical Center (VMC), both in Renton. We will tell you which. You go home the same day
AFTER SURGERY	Toe-touch only for 6 weeks with crutches. Brace locked straight for walking. No bending past 90° for 6 weeks. PA visit at 2 weeks . X-rays at 6 weeks
PHYSICAL THERAPY	Starts 5 to 7 days after surgery, 2 times a week . Schedule it before surgery

Do these now, before surgery

- **Schedule physical therapy** for 5 to 7 days after surgery. You will get the referral at your pre-op visit.
- **Arrange a driver** and someone to stay with you for the first 24 hours.
- **Get your handicap placard** at a DMV office, using the application from your clinic visit, so you do not have to deal with it while recovering.
- **Get fitted for an ice machine** and stock up on bags of ice.

About Your Condition

Your kneecap (patella) glides in a groove on the front of the thigh bone (femur) every time you bend and straighten your knee. When the kneecap does not track properly in this groove, it puts abnormal pressure on the cartilage and causes pain in the front of the knee. This is called **patellar maltracking**.

In some people, the bony bump below the kneecap where the patellar tendon attaches, called the **tibial tubercle**, sits too far to the outside or not far enough forward. This pulls the kneecap off-center in its groove, which increases pressure on the cartilage and causes pain. The distance between the tibial tubercle and the center of the groove (the **TT-TG distance**) can be measured on imaging to confirm this.

Over time, abnormal tracking wears down the cartilage on the underside of the kneecap and in the groove. It can lead to arthritis behind the kneecap (patellofemoral arthritis). You may notice pain with stairs, sitting for long periods, squatting, kneeling, or activity.

Why surgery: surgery is recommended when other treatments have not given enough relief. These include physical therapy focused on the inner quadriceps (VMO), changing activities, bracing, and anti-inflammatory medicines.

About Your Surgery

A tibial tubercle osteotomy (TTO) moves the bony attachment of the patellar tendon on the shinbone (tibia) to improve how your kneecap tracks in its groove. A small section of bone where the tendon attaches is carefully cut and moved to a better position, usually toward the inside of the leg (**medialization**) and slightly forward (**anteriorization**). This is sometimes called a **Fulkerson osteotomy**. The bone is then held in its new position with screws.

Moving the tibial tubercle inward corrects the outward pull on the kneecap. Moving it forward lowers the pressure between the kneecap and the groove, which helps relieve pain. The amount and direction of correction are planned for your anatomy.

A **lateral retinacular lengthening** is a standard part of this surgery. It loosens the tight tissue on the outer side of the kneecap and works with the bone correction to improve tracking. Arthroscopy first checks the cartilage and confirms the tracking pattern. The osteotomy is then done through an incision on the front of the shin.

Risks of surgery

Stiffness, infection, blood clots, numbness around the incisions, continued pain and swelling, fracture through the osteotomy (rare), delayed bone healing or the bone not healing (nonunion), and irritation from the screws. About **20%** of patients choose to have the screws removed after the bone has fully healed, usually as a minor outpatient procedure. We will work together to lower these risks and make your recovery as smooth as possible.

Learn more and watch the videos

My website covers kneecap tracking problems, tibial tubercle osteotomy, and recovery in more detail. merrittsurgery.com/surgeries/patella-dislocation-and-instability



Scan to learn more
and watch videos

The Day of Surgery

What to expect, step by step.

1 A couple of days before

The nursing staff will call to confirm your check-in time and when to stop eating and drinking.

2 Check in

Check in at the front desk at your assigned time. In the pre-op area, with your family, our nurses will help you change, start an IV, and review your health history.

3 Meet the team

I will meet with you to review the plan, and the anesthesia team will explain their approach.

4 Surgery

When the operating room is ready, you will walk back with a nurse. After anesthesia is given, you will not remember anything until the recovery room. While you are in surgery, your family can pick up your post-operative medicines at the pharmacy (next to the surgery center at PSCV, or near the operating rooms at VMC).

5 Recovery room and going home

You will be monitored until you are awake, have some crackers and juice, and are comfortable. Then you will change into your clothes and be wheeled to your car. **You need someone to drive you home and stay with you for the first 24 hours.**

After Surgery: What to Expect

Pain, swelling, limited motion, and soreness around the knee are normal and improve over time. You will wear a hinged knee brace **locked straight** for walking during the first **6 weeks**. Because this surgery includes a bone cut (osteotomy), you must stay **toe-touch weight bearing**, about **10 to 15 pounds, for balance**, for the first 6 weeks so the bone can heal. This is the most important rule after surgery: the bone must heal before you put full weight on it.

During these 6 weeks you will use crutches for all walking. You may take the brace off for motion exercises while sitting or lying down. Motion exercises start on day 1 to prevent stiffness while protecting the bone. **Do not bend past 90° for the first 6 weeks.**

VMO (inner quadriceps) strengthening is a key focus throughout recovery. Quad activation and straight-leg raises start right away. The VMO is the main muscle that steadies your kneecap, and it supports good tracking in the new position. Your therapist may use electrical muscle stimulation (NMES) and blood flow restriction (BFR) training at PT to help keep your strength early on.

An important order: crutches come off before the brace. After the 6-week bone healing period, you will first work on walking without crutches. The brace comes off once you have a normal walking pattern again. The timeline below is a general guide, not a strict schedule. Everyone heals at a different pace, and I will guide your progress based on your healing.

When	What to expect
Weeks 1–2	PA visit at 2 weeks to check incisions and early recovery. Pain, swelling, and limited motion are normal. Strict toe-touch weight bearing with crutches, and the brace locked for walking. Begin motion exercises while sitting or lying down. Many people can return to desk work or school around 2 weeks if they can get around safely on crutches. PT starts 5–7 days after surgery, 2× a week.
Weeks 2–6	Continue strict toe-touch and the brace. Bending progresses toward 90° lying down, not past it. Quad and VMO exercises, straight-leg raises, and a stationary bike with no resistance, rocking in partial turns within 90°. Second clinic visit around 6 weeks with X-rays to confirm bone healing.
Weeks 6–12	Start adding weight once X-rays confirm bone healing. Wean off crutches first, then the brace. Full turns on the stationary bike once the 90° limit lifts. Mini-squats, step-ups, and leg press as tolerated. Pain and swelling decrease.
Months 3–5	Single-leg strengthening. Jogging can begin around 14–16 weeks. Two-leg plyometric exercises with PT guidance. Continue VMO and quad focus. Leg strength is compared side to side at 3–4 months.

6+ months

Return to sport at 6 months or later with PT clearance and formal testing. Full cutting and pivoting resume once you meet the criteria. At least 6 months for moderate-demand sports; **9 months recommended for cutting and pivoting sports**. You need clearance from me.

Driving

- **Right leg:** you must be off crutches, have the brace unlocked or off, be off narcotic pain medicine, and be able to brake hard. Usually about 8–10 weeks.
- **Left leg:** typically 2–4 weeks, once you are off narcotic pain medicine.

Preparing for Surgery

Medicines and supplements before surgery

- The pre-op nurse will tell you when to stop eating and drinking.
- **Stop fish oil, vitamin E, and herbal supplements 5 days before surgery.**
- **Tell us** if you take a blood thinner (such as Eliquis, Xarelto, warfarin, or Plavix) or a weekly diabetes or weight-loss injection (such as Ozempic, Wegovy, or Mounjaro). These may need to be stopped earlier.
- **No anti-inflammatory medicines.** Stop ibuprofen (Advil, Motrin), naproxen (Aleve), meloxicam, celecoxib (Celebrex), diclofenac, and anti-inflammatory creams and gels such as Voltaren **7 days before surgery**, and do not take them for **6 weeks after surgery**. They can slow bone and cartilage healing. The low-dose (81 mg) aspirin we prescribe after surgery is different: take it as directed.

Physical therapy before surgery (prehab)

Physical therapy before surgery is recommended to strengthen the VMO (inner quadriceps), improve range of motion, decrease swelling, and restore normal walking. This typically takes **4–8 weeks** after your most recent injury episode. Working on these things before surgery leads to a faster and better recovery.

Nutrition

What you eat has a direct effect on how well you heal. Start good nutrition before surgery and continue through your recovery. Our nutrition guide explains what to take and how much: merrittsurgery.com/surgeries/nutritional-optimization



Scan for the nutrition guide

Ice machine: my #1 recovery recommendation

An ice machine is the single best investment you can make for your recovery. It makes icing **20 minutes on, 20 minutes off** easy, without the risk of frostbite, and is far easier than ice bags or gel pads. Our clinic staff can fit you for one before surgery and show you how to get the most out of it. Stock up on bags of ice: the machine can use a bag a day. **Scan the code to learn more or buy one.**



Scan for recovery tools

Get your home ready

- Remove throw rugs or obstacles that might catch a crutch and cause a fall.

- Have clean sheets and comfortable clothes ready.
- Stock the refrigerator with healthy food, and buy bags of ice for the ice machine.

Day-of-Surgery Checklist

- ☐ Verify your check-in time and follow the instructions on when to stop eating and drinking
- ☐ Physical therapy scheduled for 5–7 days after surgery
- ☐ Bring your brace (you will be fitted at your pre-operative visit)
- ☐ Wear comfortable clothes that fit over a brace (sweatpants work well)
- ☐ No perfume or lotion on your skin
- ☐ Remove jewelry or leave it at home
- ☐ Ice machine and bags of ice ready at home for when you return
- ☐ A driver, and someone to stay with you for the first 24 hours
- ☐ If you are under 18: one family member must stay at the surgery center or hospital during the entire surgery

Contact Information

Questions about your surgery	(425) 656-5060
PSCV Surgery Center	(425) 226-2041
Surgery scheduling	(425) 528-7155
Pre-op nurse	(425) 291-1465
Billing	(425) 291-1414
PSCV address	4009 Talbot Rd S, Ste 200, Renton, WA 98055
VMC address	400 S. 43rd Street, Renton, WA 98055