

CLOSING-WEDGE HIGH TIBIAL OSTEOTOMY

Before Your Surgery

YOUR SURGERY AT A GLANCE

SURGERY	A small wedge of bone is removed from the top of the shin bone, the gap is closed, and it is held with a plate and screws. The MCL is tightened
HOW LONG	About 2 hours
ANESTHESIA	Anesthesia for surgery, plus a saphenous nerve block that numbs the inner knee and shin 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	Hinged brace, locked for walking until your quad is strong, and crutches. Full weight from day 1 with crutches. PA visit at 2 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.
- **If you smoke, stop completely** at least 2 weeks before surgery, and do not smoke for at least 3 months after.

About Your Condition

A knee osteotomy corrects leg alignment by precisely cutting and repositioning bone. This shifts where body weight travels through the knee.

A straight line from your hip to your ankle is your **mechanical axis**. When your leg alignment is off, this line passes to one side of the knee. That side carries too much body weight, and its cartilage wears down over time.

A **high tibial osteotomy (HTO)** cuts the shin bone (tibia), removes a small wedge of bone, and closes the gap. This shifts your weight toward the healthier side of your knee. The knee isn't replaced. It is mechanically rebalanced.

In a closing wedge procedure, bone is removed rather than added, and the bone ends are brought together in direct contact. This gives built-in compressive stability, which is the key difference from an opening wedge. **You can put weight through your leg from day 1.**

About Your Surgery

In a closing wedge HTO, a precise wedge of bone is removed from the tibia. The remaining bone surfaces are brought together in direct contact and secured with a **plate and screws**.

I use a CT scan and NewClip technology, with a custom 3D-printed cutting guide, for every osteotomy. This makes the cut and the wedge removal precise, matched to your anatomy and your alignment correction goals.

Other procedures can be done at the same time. The **MCL** (medial collateral ligament) is tightened (advanced) as part of the surgery, to keep the inner side of the knee balanced after the alignment change. This is a small step, and the usual osteotomy rules apply. You will wear the brace for walking for **at least 6 weeks**.

Surgery usually takes about **2 hours**. It is an outpatient surgery at Proliance Surgery Center at Valley (PSCV) or Valley Medical Center (VMC), and you go home the same day.

Risks of surgery

Infection, blood clots, numbness, stiffness, delayed healing, overcorrection or undercorrection, hardware irritation, peroneal nerve injury (this nerve runs near the surgical site and needs careful protection), and continued pain. Smoking significantly impairs bone healing. We will work together to lower these risks and make your recovery as smooth as possible.

Learn more and watch the videos

My website explains leg alignment, the types of osteotomy, and what recovery looks like in more detail. merrittsurgery.com/surgeries/alignment-osteotomy



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, and limited motion are normal after surgery. You will be in a hinged knee brace and use crutches. For walking, the brace is **locked straight until you can do a straight-leg raise without the knee sagging (no lag)**, then unlocked. Once unlocked, the hinge is set at 0–90° the first week, 0–105° the second week, then fully open. Wear it unlocked for sleep.

The key advantage of a closing wedge: you can put weight through your leg from day 1. The bone ends are in direct contact, so the bone has built-in compressive stability. Your crutches are there while your quad muscle wakes up, not because the bone needs protecting.

Your jobs in the first weeks

- **Wake up your quad from day 1.** This is the most important thing you can do. **Quad sets every hour**, plus electrical muscle stimulation (NMES) that your therapist starts at PT. Blood flow restriction (BFR) training speeds up quad recovery.
- **No hamstring exercises for the first week.**
- **Ice 20 minutes on, 20 minutes off**, as often as you can in the first 2 weeks. Swelling control is needed before your quad can fire.
- **Keep the knee fully straight from day 1.** No pillow under your knee.
- **Bending goals: 90° by 1 week, 105° by 2 weeks, 115° by 3 weeks, and 125° by 4 weeks.** Don't force past these goals, but don't fall behind either.
- **Physical therapy** starts 5 to 7 days after surgery, **2 times a week**. You will get a PT referral at your pre-op clinic visit. Schedule your first visit before surgery.

Your recovery may be faster or slower depending on your overall fitness and any additional injuries.

When	What to expect
Weeks 1–4	Full weight as tolerated with crutches from day 1: the crutches support you while your quad wakes up. Brace locked for walking until your straight-leg raise has no lag, then unlocked (hinge 0–90° week 1, 0–105° week 2, then fully open); unlocked for sleep. Quad sets every hour; electrical stimulation at PT. No hamstring exercises the first week. Bending goals as above. PT 2× a week. PA visit at 2 weeks.
Weeks 4–8	Wean off crutches when quad control and walking allow: most people are crutch-free by weeks 4–6 . Brace worn for walking at least 6 weeks. Brace weaned by weeks 6–8, after you are off crutches. Stationary bike, leg press, and step-up training begin.
Months 2–4	Progressive strengthening: squats, lunges, and a walking program. Cycling, swimming, and elliptical from about 2–3 months. Limb symmetry testing guides progression. Return to low-impact activity as strength improves.
Months 4–12	Running begins at 5–6 months with a walk/jog program. Cutting and pivoting sports at 9 months with surgeon clearance and passing strength and hop testing (≥90% limb symmetry). Most patients reach full function by 6–12 months.

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 4–6 weeks.
- **Left leg (automatic car):** 2–4 weeks, once you are off narcotic pain medicine.

Hardware: the plate can stay in permanently or be removed. About 20% of patients feel some irritation from it. Removal is a straightforward outpatient procedure, done 12–18 months after your osteotomy.

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)

Starting physical therapy before your surgery helps you recover faster afterward. Focus on decreasing swelling, activating the quadriceps, restoring range of motion, and improving overall strength. **Start prehab as soon as possible.**

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

Stop smoking

Smoking significantly impairs bone healing. If you smoke, you must stop completely at least **2 weeks before surgery** and not smoke for at least **3 months** after. Your bone's ability to heal directly affects your outcome.

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