

MACI CARTILAGE REPAIR OF THE KNEECAP OR TROCHLEA

Before Your Surgery

YOUR SURGERY AT A GLANCE

SURGERY	MACI: your own cartilage cells, grown in a lab on a special matrix, are implanted into the cartilage defect on the kneecap or trochlea
HOW LONG	About 1–1.5 hours , depending on complexity
ANESTHESIA	The anesthesia team will review their plan with you, including 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	Brace locked straight for 6 weeks . Full weight in the locked brace, crutches for 2–3 weeks . PA visit at 2 weeks
PHYSICAL THERAPY	Starts 5–7 days after surgery, 2 times a week . Schedule it before surgery

Do these now, before surgery

- **Schedule physical therapy** for 5–7 days after surgery.
- **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 Injury

Cartilage is a smooth, slippery tissue that covers the ends of the bones in a joint. Unlike bone, cartilage has no blood supply of its own, so it is **very hard to heal once damaged**. Think of a cartilage defect like a pothole in a road. Over time, it gets bigger and rougher.

Your imaging shows a cartilage defect on the **patella (kneecap)** or the **trochlea** (the groove at the front of the thigh bone where the kneecap rides). These surfaces take a lot of force during squatting, stairs, and kneeling.

Why you can walk on it: the joint between the kneecap and the thigh bone is unloaded when you walk with the knee straight. So you can put weight on the leg from day 1 in a brace locked straight. Certain bending activities must be limited to protect the graft.

About Your Surgery

MACI stands for Matrix-Assisted Autologous Chondrocyte Implantation. It is an FDA-approved procedure done in two stages:

- **Stage 1:** a small sample of your healthy cartilage is taken, usually at an earlier surgery. A lab separates and grows your cartilage cells, then applies them to a special biological matrix.
- **Stage 2 (your upcoming surgery):** the cell-seeded matrix is implanted into your cartilage defect. I will repair the bone underneath if needed, and carefully position the graft so it heals properly.

This is a very precise surgery. The new cartilage cells are carefully placed into the defect. Over time, while the knee is protected, the new cartilage grows into the bone. Because these are your own cells, the goal is to recreate the normal cartilage you had before the injury.

Healing occurs in four stages (over 12–18 months)

- **Days 0–6:** the graft settles in and new blood vessels grow in.
- **Weeks 1–6:** the cartilage matrix organizes and the cells multiply.
- **Weeks 6–12:** the cartilage steadily matures and remodels.
- **Months 3–18:** long-term maturation, alignment, and integration.

MACI has strong long-term success. **85% of grafts are successful at 5 years.** If the kneecap does not track well or is unstable, other procedures such as an MPFL reconstruction or a lateral retinacular lengthening may be done at the same time. These do not change the rehabilitation protocol.

Risks of surgery

Infection, blood clots, and fluid buildup. 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 cartilage injuries, MACI and other cartilage restoration options, and recovery in more detail. merrittsurgery.com/surgeries/cartilage-repair-restoration



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

After surgery, you will be in a hinged knee brace **locked straight (0°)**. The brace must stay locked straight for all walking, standing, and sleep **for 6 weeks**. This is non-negotiable. After 6 weeks it is opened a little at a time, and most people stop it around **8–10 weeks**. Take the brace off only for seated or lying-down bending exercises and to wash.

You may put **full weight on the leg from day 1, with the brace locked straight**. Use crutches for **2–3 weeks**, then wean off as comfort allows. For pain, Tylenol (acetaminophen) and your prescribed narcotic are safe to use.

The key rule

Avoid bending with weight on the leg between 45° and 90°. This is where the kneecap presses hardest on the thigh bone. Bending without weight (seated or lying down) has no limit from day 1. Your goal is **90° by 2–3 weeks**.

Physical therapy starts 5–7 days after surgery, 2× a week. Your therapist will teach you quad activation, kneecap mobilization, and bending exercises for each stage of healing.

When	What to expect
Weeks 0–4	Full weight as tolerated with the brace locked straight. Crutches for 2–3 weeks, then wean as safe. Brace locked for all walking and sleep. Bending without weight from day 1, with goals of 90° by weeks 2–3 and 105° by weeks 3–4. NMES at PT, quad sets, straight-leg raises, heel slides, kneecap mobilization. Weight shifts and calf raises on both legs (brace locked) from weeks 2–3.
Weeks 4–6	Brace stays locked straight for walking and sleep through week 6. Bending goal 120° by week 6. Begin isometric leg press (0–10° only) and light band exercises for straightening (90° to 40° arc). No resisted straightening before week 4. Pool exercises once the incisions are healed.
Weeks 6–8	Brace opened a little at a time for walking; most people stop it around weeks 8–10. Begin recumbent bike, mini-squats (0–45° only), and leg press (0–60° only). Straightening exercises in the 90° to 40° arc only, low resistance. No leg-extension machine until about week 14.
Weeks 10–14	Mini-squats progress to 0–90° as tolerated. Upright cycling, stair machine, and elliptical added. Strengthening in gradually deeper arcs. Watch for swelling after activity.
Months 3–5	Progressive strengthening. No loaded deep bending past 90° until month 5. Straightening exercises progress to the full arc after month 5, with careful loading.
Months 9–12	Walk-jog running program. Plyometrics at month 12.

Months 12–18**Return to sport** after meeting all criteria and with my clearance. MRI at 12 months.**Driving**

- **Right leg:** not while the brace is locked straight, so **at least 6 weeks**. You must also be off crutches, off narcotic pain medicine, have good knee control, and be able to brake hard.
- **Left leg (automatic car):** 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)

Starting physical therapy before 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.**

Stop smoking

Smoking greatly impairs cartilage healing and increases the risk of infection. **Stop smoking at least 2 weeks before surgery**, and ideally much longer.

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