

MACI Cartilage Restoration — Pre-Operative Patient Guide

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Kneecap (Patella) or Trochlea Cartilage Defect — Matrix-Induced Autologous Chondrocyte Implantation

Your Condition & Procedure

The condition

Articular cartilage covers the back of the kneecap (**patella**) and the groove it glides in (**trochlea**). A **cartilage defect** there—from injury, kneecap dislocation, or wear—heals poorly and causes pain at the front of the knee with stairs, squatting, and sitting, plus swelling and grinding.

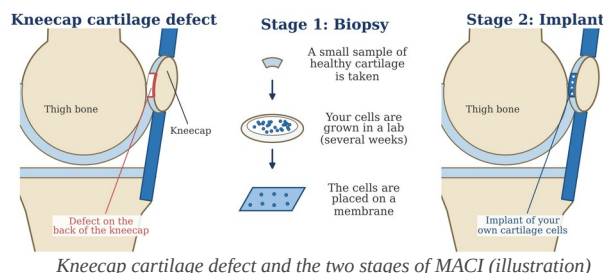
The surgery

MACI repairs the defect with your own cartilage cells over **two surgeries**, both typically outpatient. **Stage 1 (biopsy)**: a small sample of healthy cartilage is taken with a camera, and your cells are grown in a lab. **Stage 2 (implant)**: usually 4–6 weeks later, the cells, on a thin membrane, are glued into the defect through an open incision. The bump on the shin bone may also be shifted (**TTO**). The final plan is determined during surgery.

Risks & benefits

Benefits: Most patients have less pain and better function, with lasting results in long-term studies.

Risks are uncommon and include infection, blood clots, the implant not bonding or coming loose, overgrowth of the new cartilage (which may need trimming), a reaction to the implant materials, injury to nearby structures (such as nerves, blood vessels, or cartilage), stiffness, persistent pain, and the need for further surgery. These will be reviewed with you in detail before surgery.



Kneecap cartilage defect and the two stages of MACI (illustration)

Before Surgery

- **Medications**: We will tell you what to stop and when (e.g., blood thinners, anti-inflammatories, some supplements, weight-loss injections).
- **Fasting**: Follow the instructions from your surgery coordinator/facility. In general, you should have nothing to eat or drink starting at midnight the night before surgery.
- **Nicotine**: Stop all nicotine products—they slow healing.
- **Equipment**: For Stage 2, a knee brace (locked straight), crutches, and a motion (CPM) machine are typically arranged beforehand. Practice with crutches.
- **Physical therapy**: Starts within a week after Stage 2.
- **Home**: Plan for a helper at first and remove trip hazards.
- **Medical history**: Let us know if you or anyone in your family has a history of blood clot disorders or a malignant hyperthermia reaction to anesthesia, or if you are allergic to gentamicin or pork/beef products.
- **Health**: Call us if you develop a fever, illness, or skin problem near the knee.

Day of Surgery

- If instructed, take blood pressure/heart medications with a small sip of water.
- Arrive at the time given by your surgery coordinator.
- Bring your medication list, insurance card, photo ID, and brace/crutches if you have them.
- Wear loose clothing; leave jewelry and valuables at home.
- A responsible adult must drive you home. You may **not** drive yourself.

Immediately After Surgery

- You will recover in the recovery area; most patients go home the same day.
- Your surgeon will discuss the procedure with you and your support person.
- Your care team will review wound care, restrictions, medications, follow-up, and warning signs before discharge.

Milestone	What to Expect After Surgery (General Timeline)
After Stage 1	Quick recovery: walking as tolerated (crutches for a few days if needed); desk work and daily activities within ~1 week.
Weight-bearing	After Stage 2 : weight as tolerated with crutches and the brace locked straight, full by 6 weeks (with a TTO: touch-down for ~6 weeks). The brace comes off at ~6 weeks.
Motion	A motion (CPM) machine is used daily for 6 weeks (if no TTO). Bending advances slowly to protect the implant: 30° for 2 weeks, 90° by 4 weeks, 125° by 6 weeks; full by ~8 weeks.
Daily life	Desk work often within 2–4 weeks. Deep squats and lunges are avoided for months; cycling and swimming from ~3 months. No driving while taking narcotic pain medication.
Running & sports	The new cartilage matures over 1–2 years. Jogging begins at 6–9 months, once cleared. Impact, cutting, and contact sports no sooner than 12 months; full release typically 12–18 months.
► Please note : This is a general guide only. Detailed post-operative instructions will be provided on the day of surgery, and your restrictions and timeline may change based on the findings and procedures performed.	

Learn More

We **strongly recommend** reading these pages from the American Academy of Orthopaedic Surgeons (OrthoInfo) before your surgery:

- **Your condition and procedure: Articular Cartilage Restoration** — <https://orthoinfo.org/en/treatment/articular-cartilage-restoration/>
- **Related reading: Unstable Kneecap (Patellar Instability)** — <https://orthoinfo.org/en/diseases--conditions/unstable-kneecap/>

Video: You may find a video demonstrating an example (not the exact technique) of your surgery at <https://www.youtube.com/watch?v=VulRXuPK3j4>

Questions before surgery? Call our office at (972) 378-1438. For a medical emergency, call 911.