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Mosaicplasty / Cartilage Transplant Post-Operative Guidelines and Frequently Asked Questions

This document will help you plan for your post-operative recovery course following surgery. **Please read and retain this information for future reference.** Many of the questions you may have later can be answered by referring to this information.

Post-Op Brace: A hinged brace **must be worn for 2-3 weeks after surgery**. Sleep with this brace on for the **first 5 days after surgery**. Your physical therapist will let you know when you no longer need the brace.

Crutches: **Week 1:** Toe-touch weight-bearing with 2 crutches
Approximately 20 lbs - lightly resting the foot on the floor.
Week 2: Full weight (wearing the brace) as tolerated.
Wean to 1 crutch during the 2nd week, then discontinue crutches or transition to a cane.
You may discontinue the crutches when you can comfortably walk with full weight on the leg.

Wound Care: Keep the site clean and dry as it heals*. You may remove the outer bandages and shower 48 hours after surgery. **DO NOT remove the Steri-Strips (the small white strips closest to the skin) over incisions**; these wound closures will fall off automatically around 7-10 days after surgery or can be gently pulled off and discarded. Wrap the site securely with plastic during bathing to avoid wetting the Steri-Strips and incisions for 7-10 days. **Do not apply any gels or ointments to the site.** Although it is recommended to keep the brace on for your first shower, it may be removed if more comfortable for showering.
It is normal to have small amounts of bloody drainage on the dressing. Notify the office if you have any of the following: steadily increasing drainage on the dressing, pus-like or foul smelling drainage from any of the incisions, elevated temperature above 101 degrees Fahrenheit, breathing difficulties, pain in your calf when you flex your foot up and down that is unrelieved by rest or elevation, or swelling in your calf, foot or ankle.

Pain Medication: Prescriptions will be sent to your pharmacy a few days prior to your surgery. **Please pick up all prescriptions BEFORE your surgery day. Pain medication cannot be called in to pharmacies!** You will receive three (3) medications: one narcotic pain medicine (1-2 tabs to be taken every 4-6 hours as needed), one anti-inflammatory medicine (1 tablet daily for 14 days) and one medication for nausea (as needed). **Please call the office ASAP for a refill when your supply is low – All refills must be requested in the office by 4pm on Thursday afternoon.**

PLEASE DO NOT DRIVE WHILE TAKING THE PRESCRIPTION PAIN MEDICATION!

Game Ready Device / Cold Therapy: You will receive a cold therapy device on the day of surgery or the next day. You will not be able to use this device until you remove your bandages the day following surgery; do not worry if you do not have the device on the day of surgery. **Use the unit for 20 - 30 minutes at a time, 4-6 times per day** to manage swelling and pain. Frequent cold therapy is encouraged as often as possible during the first few post-operative weeks.

Follow-up Appointments: 6 weeks, 6 months, 1 year (with an MRI). **Please plan ahead to arrive on time.**
For DeNovo NT® recipients ONLY: 6 weeks, 3 months (with an MRI) and 1 year (with an MRI).

Physical Therapy:** You will receive a physical therapy prescription within a few days of surgery. Your first therapy session should be scheduled approximately 7-10 days after surgery. Facility suggestions may be found on the HSS website: https://www.hss.edu/rehab-network.asp. PT typically is necessary 1-2 times weekly for 4-5 months post-operatively. You may bend your knee to tolerance or comfort level when sitting.
For DeNovo NT® recipients ONLY: No motion for the first 5 days.
***These guidelines may be adjusted by Dr. Williams or the PA as you progress. Typical clearance for full activity occurs at the 6-month mark.*
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Frequently Asked Questions: Cartilage / Mosaicplasty Surgery

1. What is Cartilage?
   Articular cartilage is the cushion that lines the ends of all our bones within each of our joints. This cartilage is smooth and allows for easy, near frictionless movement of one bone on another. Our cartilage has the feel of "gristle" at the end of a chicken drumstick. Cartilage has no blood supply or nerve supply. Consequently, once an area of cartilage is injured, the resulting defect has no way of healing itself. In fact, the area tends to get bigger with time.

2. Why do I need to have my injured cartilage fixed?
   Because cartilage defects do not heal spontaneously, a surgeon must replace the cartilage or stimulate healing in the affected area. As mentioned, injured cartilage areas get bigger with time, and ultimately can cause gross erosion of cartilage over the bony surface. This loss of cartilage is better known as arthritis. No doubt that one of the reasons that you consulted our practice was because of some pain or functional limitation associated with your injury. Thus, fixing the cartilage should accomplish three things: a) reduce pain, b) restore joint function, c) decrease the likelihood of cartilage loss moving forward.

3. Which is the best approach for my cartilage problem?
   This is a very complicated and nuanced question. Typically I consider many factors when determining what approach will be best for a patient: age, activity level, lesion location, lesion size, and body weight. Whether this is the first surgery for a problem or a revision scenario also plays a big role. Once Dr. Williams has the opportunity to go over all these factors he will discuss with you the pros & cons of each recommended approach.

   Here is a brief summary of some approaches used in the area:

   a) Microfracture: The gold standard in the U.S. In this approach, the surgeon cleans out the cartilage defect and then makes holes in the bone at the base of the defect to promote bleeding. This is done to facilitate the movement of bone marrow cells into the defective area. The resulting clot ultimately changes over to fibrocartilage over several months. This approach is best for smaller lesions (less than 400 mm^2) this approach requires that patients stay on crutches for several weeks following surgery. The total rehab time is approximately 6 months.

   b) OATs (osteochondral autograft transfer system) Mosaicplasty procedure: In this procedure, the surgeon moves small cylinders of bone and cartilage from a healthy part of the knee to the defective area. Usually several of these cylinders are needed to fill a defect. This is done using a small incision. Because there is only a limited amount of donor tissue available to transfer, this approach is best for smaller lesions (less than 400 mm^2). This approach requires that patients stay on crutches for several weeks. Once healed, the OATs treated lesion is very strong as the repair is made of mature articular cartilage. The total rehab time is approximately 4-6 months.

   c) Synthetic Scaffold Mosaicplasty: In this procedure, the surgeon fills the cartilage defect(s) with a synthetic, biphasic implant that mimics the structure and strength of a bone-cartilage plug. This biologic is designed to promote the formation of bone and cartilage in the treated area over time. Typically the plugs are pre-loaded with marrow blood (taken at the time of surgery) from the patient, and then inserted into the cartilage defect using a small incision. This facilitates the placement of marrow-based stem cells into the area of damage; this also speeds healing of the lesion. Over several years, the plugs disappear and the area is replaced with new cartilage-like tissue. This approach allows for the treatment of several lesions, and patients are typically fully weight bearing about a week after surgery. The total rehab time is approximately 4-6 months.

   d) Osteochondral allograft: In this procedure, the surgeon fills a large cartilage defect(s) with a large bone-cartilage cylinder that is obtained from a donor specimen. We reserve the use of this cartilage repair technique for large lesions (greater than 400 mm2), and for the treatment of lesions that have failed other methods of treatment. These are fresh grafts where the specimen must be implanted with four weeks of retrieval. All grafts are thoroughly tested for bacteria, virus and fungus prior to release for use. As they are fresh grafts, the cells in the cartilage maintain the grafts structure into perpetuity – this makes this approach very durable. If

opting for this approach, please note that these grafts must match size and shape of your knee. Dr. Williams' staff will submit your MRI or X-ray studies to the organ donor network for matching. When a graft is available, you will be contacted. The surgery is usually performed within two weeks of this notification. Patients are usually on crutches for one to two weeks, and a brace is used for approximately the same duration.

e) FDA trials: From time to time, Dr. Williams participates in FDA sponsored trials that are designed to test the clinical effectiveness of new implants and devices for the treatment of cartilage lesions. Please check with Dr. Williams' staff as to the current offerings. Please note that most of these studies are randomized (Dr. Williams does not assign the treatments being compared), and require a significant time commitment in exchange for participating in the study.

4. How long is cartilage surgery rehabilitation?

   One can expect to use crutches for about a week to two weeks after surgery, depending on the procedure. We recommend the use of a post-operative knee brace for about two to three weeks after surgery. You do NOT have to sleep in this brace after the first week.

   In all, the rehabilitation takes approximately six months. This is the time needed for the treated cartilage to mature to a point where Dr. Williams is assured that the graft strength is suitable for you to resume all activities. Your diligent participation in fitness exercise and PT during this period is crucial to your timely full recovery from surgery. If you have had symptoms for a year, plan on a year of rehabilitation. If you have symptoms for two years….. (you get the idea). Recovery is a combination of pain relief and restoration of strength. I will do the job of fixing the lesion; patients tend to the work of restoring their fitness in order to maximize the surgery's benefit.

   On average plan on two visits to PT a week. An additional two independent work-outs should be scheduled per week to adequately address the involved limb.

5. What are the risks of cartilage surgery?

   There are two primary risks associated with cartilage surgery. The first risk is infection. While very uncommon, infections do occur and are typically associated with poor wound healing. As such, we recommend keeping these wounds dry for at least 2 weeks after surgery. Please do not use ointments or other compounds on these wounds until instructed to do so by the staff. Again, smoking interferes with wound healing, so discontinuing smoking 2 weeks prior and following surgery is recommended.

   Blood clots (DVT, deep vein thrombosis) occur rarely following all types of surgery. Your best bet in decreasing likelihood of a clot is to GET UP and MOVING following surgery. Moving your feet and ankles, ambulating, ranging your knee, doing leg lifts etc. all contribute to keeping the blood in your legs circulating. This in turn helps to prevent clotting. If you feel pain in your calf area, or note swelling there – immediately notify the office staff. A quick and painless test (ultrasound) can be arranged to see if you have a DVT. Again, these issues are rare, but if you do experience a clot, you will need to take a blood thinner (Warfarin, Coumadin) until the clot disappears.

6. Is there anything else that I need to do following surgery?

   Plan to return to the office at 6 weeks, 3 or 6 months (depending on the type of graph used), and 1 year following surgery. These are quick visits designed to go over your progress and address issues germane to your recovery. The first postoperative appointment should be made when a date for surgery is confirmed. **Please plan ahead to arrive on time.**

   We typically will have you get an MRI of your surgically repaired knee approximately one year following surgery. This will allow Dr. Williams to assess the progress of your cartilage repair. He will let you know if more studies are required. Also, a strength test (Isokinetic Test) or Quality Movement Assessment (QMA), usually done at HSS, may be requested prior to your final clearance**.**