

## KNEE CARTILAGE REPAIR: OSTEOCHONDRAL ALLOGRAFT TRANSPLANTATION POST-OP INSTRUCTIONS AND REHAB PROTOCOL

This protocol has been developed to help guide clinicians following repair of damaged knee cartilage with osteochondral allograft transplantation. This procedure is done to resurface a full thickness cartilage defect in the knee with hyaline cartilage using a fresh allograft. The allograft is contoured to fit the cartilage defect in your knee and is “press-fit” into place.

The goal of this rehabilitation plan is to facilitate return to the pre-injury level of function. Return to activity, sports and work depend upon multiple factors. This decision is based off the healing of the graft and the function of the knee. Return to work, sports and cutting activities is allowed after the graft is healed and the patient achieves adequate flexibility, strength and endurance of the knee equal to 80-90% of the uninjured side. Generally, return to full duty for manual labor work is around 6-9 months after surgery. Return to competitive sports is between 8-12 months.

### For patients at a glance:

- a. After surgery, the first few days are generally spent recovering and resting. When resting, work on calf pumps (moving your ankle up and down) several times per hour to reduce swelling and risk of blood clots
- b. **Take 1 tablet (325 mg) of aspirin per day**, starting the day after surgery and continuing **for 2 weeks**. This is done to decrease the risk of blood clots.
- c. The dressing may be removed 3 days after surgery, but keep the steri-strips in place. Try to keep the wound as dry as possible until follow-up.
- d. It is ok to shower after surgery, but keep the dressings and incision wrapped with saran wrap or something similar. Do not scrub or soak the incisions. Just let soap/water run over the knee and pat dry. Do not submerge incisions in bath or pool until fully healed (3-4 weeks).
- e. If you had a **nerve block at the time of surgery, it usually wears off 12-24 hrs post-operatively**. It is normal to have some numbness in the leg the first few days after surgery as a result.
- f. Take the prescribed pain medications as directed. You can supplement your pain control with ice, elevation of the affected extremity and over-the-counter Tylenol ibuprofen if needed, making sure to follow the dosage as recommended on the bottle. Use ice 30 min every 1-2 hrs.
- g. **Weight Bearing:** You will be non-weight bearing for the **first 4 weeks** (toe may touch ground for balance, but no additional weight on the leg). From **weeks 4-6**, weight-bearing is transitioned to **50% of your body weight** as you continue to use crutches. At **week 6**, you will transition to **weight bearing as tolerated**

- h. **Brace/Range of motion:** Use the brace for the first 6 weeks. When sitting down, **you may unlock the brace by pulling up on the tabs to bend the knee.** The amount of range of motion allowed will be set on your brace and guided by therapist as described below. The brace should be worn at all times except for shower/exercises. The brace can be removed for sleeping after 4 weeks.
- i. Other exercises to work on 3-4 times per day, before seeing therapist include calf pumps, straight leg raises, quad sets (contracting your thigh and holding for 10 seconds) and bending and straightening the knee.
- j. You may have been given a **CPM** following surgery. Begin 4-6 hours per day total. The CPM is set at one cycle/minute. Use in 30 minute sessions. Start at 0-60 degrees for femoral condyle lesions and 0-40 for patellofemoral lesions. Increase 5 degrees per day. **Do not exceed 90 degrees for patellofemoral lesions for the first 2 weeks.**

#### For Physical Therapists

- I. **Rehabilitation Protocol 0-6 Weeks Post-Op**
  - a. **Range of motion:** Emphasize full extension
    - i. **For Condylar Lesions:** PROM/AAROM as tolerated
    - ii. **For Patellofemoral Lesions:**  
ROM/AAROM 0-90 for 2 weeks  
Weeks 2-4: 0-105  
Weeks 4-6: 0-120  
Weeks 6+: as tolerated
  - b. **Weight Bearing: Use crutches for walking x 6 weeks.**
    - i. **Weeks 0-4: non-weightbearing.** Your foot may touch the floor to keep you balanced, but you should not put any additional weight on the leg.
    - ii. **Weeks 4-6: weight-bearing is 50% of your body weight.** Your therapist will teach you how to do this.
    - iii. **Weeks 6+: weight bearing as tolerated, wean off crutches**
  - c. **Brace:** You will wear the brace x 6 weeks. Range of motion is allowed and encouraged in the brace as soon as tolerated. You may remove the brace for CPM use and physical therapy.
  - d. **CPM:** Begin 4-6 hours per day total. The CPM is set at one cycle/minute. Use in 30 minute sessions. Start at 0-60 degrees for femoral condyle lesions and 0-40 for patellofemoral lesions. Increase 5 degrees per day. **Do not exceed 90 degrees for patellofemoral lesions for the first 2 weeks.**
  - e. Isometric program
  - f. Hip/Core resistive exercises
  - g. Patellar mobilization emphasize superior glides

- h. Gastroc-soleus stretch, hamstring stretch
  - i. Active knee extension for condylar lesions only 90-30 degrees
  - j. Modalities: cryotherapy, electrical stimulation, edema control, etc.
- II. **6-12 Weeks Post-Op**
- a. **Range of Motion:** progress ROM as tolerated
  - b. **Weight bearing:** weight bearing as tolerated, progress normalized gait pattern
  - c. **Brace:** wean off brace
  - d. **CPM:** discontinued. Progress knee flexion.
  - e. Progress bilateral closed chain strengthening using resistance less than patient's body weight. Progress to supine unilateral leg press with low weight. Begin open chain knee strengthening at 8 weeks
  - f. Condylar lesions
    - i. Mini Squats 0-60 by week 8
    - ii. Leg press 0-90 by week 10
  - g. Patellofemoral lesions
    - i. Mini Squats 0-45 by week 8
    - ii. Leg press 0-60 by week 10
  - h. Progress stationary bike when knee flexion is > 110 degrees
  - i. Begin proprioception program
  - j. Glute bridge, clamshells, standing knee flexion, calf raises
- III. **12-24 Weeks Post-Op**
- a. Continue all exercises from earlier protocol
  - b. Advance bilateral and unilateral closed chain exercises
  - c. Isokinetic quadriceps exercises
  - d. Treadmill walking progression, incline, intervals
  - e. Progress proprioception/balance activities
  - f. Incorporate elliptical trainer/stair climb
  - g. **May begin jogging at 4-5 months**
- IV. **24 Weeks Post-Op and Beyond**
- a. **Progress slowly through lateral movement exercises**
  - b. Continue advanced strengthening
    - i. Full arc progressive resistance exercises-emphasize quads
  - c. Progress treadmill/swimming program
  - d. Progress plyometrics program
  - e. Progress sport specific training program
  - f. Progress neuromuscular/functional program
  - g. Agility drills

- V. Return to competitive sports and full speed cutting activities**
- a. You need to be cleared by Dr. Hazelwood and your physical therapist/athletic trainer
  - b. In general return to sports and cutting activities is allowed after the patient achieves adequate flexibility, strength and endurance of the knee that is equal to at least approximately 90% of the other side **and there is full incorporation of the graft**. This generally is allowed around 8-12 months after surgery.