
Osteochondral Autograft Transplantation Femoral Condyle Physical Therapy Protocol

Phase I: Protection (Weeks 0 to 6)

Goals

- Protection of healing tissue from load and shear forces
- Decrease pain and effusion
- Restoration of full passive knee extension
- Gradual improvement of knee flexion
- Regaining quadriceps control

Weight Bearing

- 25 percent weight bearing with two crutches immediately after surgery
- 50 percent weight bearing with two crutches at week two
- 75 percent weight bearing with two crutches at week three
- Progress to full weight bearing at week four (wean from crutches as gait normalizes)

Brace

- Brace at 0 to 90 degrees for functional and weight bearing activities
- Sleep in locked brace for two to four weeks
- Discontinue brace at four to six weeks

Range of Motion

- No immediate limitation on passive range of motion
- 0 to 90 degrees at week two
- 0 to 105 degrees at week four
- 0 to 120 degrees at week six

Exercises

- Initiate continuous passive motion on day one
 - Increase 5 to 10 degrees each day up to 90 degrees by the end of week two
- Full passive knee extension
- Patellar mobilizations
- Range of motion exercises
- Ankle pumps
- Quad sets (neuromuscular electrical stimulation as needed)
- Four-way straight leg raises
- Stationary bike
- Hamstring, quad, calf and hip flexor stretching
- Core exercises
- Toe/calf raises at week four
- Weight shifts at week four
- Isometric leg press (multi-angle) at week four
- Pool therapy for gait training and exercise at week four
- Cryotherapy with elevation for pain and inflammation every hour for 20 minutes

Phase II: Transition (Weeks 6 to 12)

Criteria to Progress to Phase II

- Full passive knee extension
- Knee flexion to 115 to 120 degrees
- Minimal pain and swelling
- Voluntary quadriceps activity

Goals

- Gradually increase range of motion as tolerated
- Gradually improve quadriceps strength and endurance
- Gradual increase in functional activities

Range of Motion

- Progress to full range of motion at weeks eight to ten

Exercises

- Continue exercises as listed above
- Open kinetic chain exercises without resistance
- Leg press at weeks six to eight
- Mini squats (0 to 45 degrees) at weeks six to eight
- Terminal knee extensions
- Balance and proprioception drills
- Step ups
- Lateral step downs
- Elliptical/StairMaster at week 12
- Core progression
- Continue cryotherapy for pain management

Phase III: Remodeling (Weeks 13 to 32)

Criteria to Progress to Phase III

- Full range of motion
- Hamstring strength to within 10 to 20 percent of contralateral limb
- Quadriceps strength to within 20 to 30 percent of contralateral limb
- Balance testing to within 30 percent of contralateral limb
- Able to bike for 30 minutes
- Minimal pain and edema
- Improved functional strength and endurance

Goals

- Improve functional activity
- Improve muscular strength, flexibility and endurance

Exercises

- Continue exercises as listed above
- Wall squats (0 to 60 degrees)
- Open kinetic chain exercises (progress one pound every week as tolerated)
- Lunges
- Begin walking program
- Swimming

Phase IV: Functional Activities (Weeks 32 to 52)

Criteria to Progress to Phase IV

- Full, non-painful range of motion
- Strength within 90 percent of contralateral side
- Good proprioception
- No pain, inflammation or swelling

Goals

- Gradual return to unrestricted functional activities

Functional Activities

- Patient may return to various sport activities as progressing in rehabilitation and osteotomy healing allows.
 - **4 to 6 Months:** Low impact sports such as golf, swimming, skating, roller-blading and cycling
 - **6 to 8 Months:** Higher impact sports such as running, jogging and aerobics
 - **8 to 12 Months:** High impact sports such as tennis, basketball, football and baseball

Exercises

- Continue maintenance program three to four times a week
- Progress resistance as tolerated
- Progress agility and balance drills
- Impact loading program should be specialized to the patient's demands
- Progress sport programs depending on patient variables