AUTOLOGOUS CULTURED CHONDROCYTES FOR IMPLANTATION
CARTICEL®

Revised August 2008
Full Carticel® Rehab Guideline available at www.carticel.com

Post-op Days 1 – 14
Dressing – POD 1: Debulk dressing, TED Hose in place
  – POD 2: Change dressing, keep wound covered, continue TED Hose
  – POD 7-10: Sutures out, D/C TED Hose when effusion resolved
Brace – Locked in extension
Crutches – non weight bearing (NWB)
CPM – 0-30 degrees (2-hour increments for 8-10 hours/day)
AAROM 0-30 degrees within pain limits
Patellar mobilization (teach patient)
Calf pumping
Passive extension with heel on bolster or prone hangs
Electrical stimulation in full extension with quad sets and SLR
Quad sets, Co-contractions quads / HS in extension
Straight leg raise (SLR) x 4 on mat (in brace) – parallel bars if poor quad control
Gentle Hamstring, ITB stretching
Ice pack with knee in full extension after exercise

Goals
Pain / effusion control
Good quad control

Weeks 2 – 4
Brace – Locked in extension
Crutches – Flat foot weight bearing (FFWB)
**Avoid twisting/pivoting on involved leg**
Continue appropriate previous exercises
Scar massage when incision healed
CPM – 0-40 degrees
AAROM, AROM 0-40 degrees
SLR x 4 on mat (no brace) – Add light weight above knee if good quad control
Pool therapy – Chest deep walking with aqua-jogger floatation device

Goals
ROM 0-40 degrees
No extensor lag

Weeks 4 – 6
Brace – 0-30 degrees, continue to open to available range
Crutches – Partial weight bearing (PWB)
Continue appropriate previous exercises
CPM – Add 5 degrees per day up to 90 degrees
AAROM, AROM 0-90 degrees
Pool therapy – Kickboard with gentle flutter kick from hip, knee in extension
**Goal** – ROM 0-90 degrees

**Weeks 6 – 8**
- Brace – 0-90 degrees, continue to open to available range
- Crutches – PWB
- Continue appropriate previous exercises
- CPM – D/C
- AAROM, AROM 0-120 degrees
- Isometric co-contractions at 0, 30, 60, 90 degrees
- Stationary bike for ROM
- Pool therapy – Chest deep running

**Goals**
- ROM 0-120 degrees
- No effusion

**Weeks 8 – 10**
- Brace – D/C when good quad control
- Crutches – Weight bearing as tolerated (WBAT) (D/C when gait is normal)
  - **Avoid twisting/pivoting on involved leg**
- Continue appropriate previous exercises
- PROM, AAROM, AROM to regain full motion
- SLR x 4 with weight below the knee if quad control adequate
- Weight shifts in full extension
- Stationary bike for progressive resistance and endurance
- Pool therapy – Unrestricted

**Goal** – Full ROM

**Weeks 10 – 12**
- Continue appropriate previous exercises
- **Avoid twisting/pivoting on involved leg**
- Isometric open chain co-contractions at varying angle
- Total Gym – Mini squats (level 3-5) – No flexion > 45 degrees
  - Passive flexion to 90 degrees (push up with opposite leg)
- Leg press with light resistance 0-30 degrees
- Hamstring curls – Carpet drags or rolling stool (closed chain)
- Heel raises – Double leg, progress to single leg
- Proprioceptive training – Double leg BAPS for weight shift
  - Progress to single leg BAPS, ball toss and body blade
- Elliptical trainer

**Goal** – Normal gait

**Months 3 – 6**
- Continue appropriate previous exercises
- Standing SLR x 4 with Theraband bilaterally
- Partial wall squats – No knee flexion past 45 degrees
- Forward, lateral, and retro step downs in parallel bars
  - No knee flexion past 45 degrees (small step)
- Leg press with progressive resistance – No knee flexion past 45 degrees
- HS curl weight machine
- Fitter
- Slide board
- Treadmill – Forwards and backwards walking
Swimming
Quad stretches

**Goal** – Thigh girth equal bilaterally

**Months 6 – 9**
Continue appropriate previous exercises with increased resistance
  – Progress to 90 degrees of knee flexion
  – Increase resistance as tolerated
Hip weight machine x 4 bilaterally
Step downs with medium to large steps
Sit-up progression
Treadmill – Walking progression program

**Goal** – Walk 2 miles at 15 min/mile pace

**Months 9 – 12**
Continue appropriate previous exercises with progressive resistance
Agility drills / Plyometrics
Progressive weight training
Treadmill – Running progression program
Low impact activities such as skating, roller blading, cross country skiing, cycling

**Goal** – Run 2 miles on treadmill at comfortable pace

**Months 12 – 18**
Continue appropriate previous exercises
Knee extension weight machine
Agility drills – Slow “S”, figure 8, zigzags, progress to sharper cutting motions
Plyometrics – Advanced
Running progression to track
Repetitive impact activities such as aerobic classes
Transition to home / gym program

**Goals**
Resume all activities
Pass APFT at 6 months post-op

*No contact sports until 18 months post-op*

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Knee Post Op Phase 1
Perform exercises below frequently: 30 reps 3-5x a day

Quad Isometrics

Heel Slides

Active Assisted Motion

Ice Position  15 minutes 2-3 x per day

Appointments?? Questions??
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