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Patella and/or Trochlea Cartilage Restoration Rehabilitation Guidelines

Stage 1 - Proliferative Phase 0-6 weeks

PRIMARY GOALS

- DO NOT OVERLOAD GRAFT
- INCREASE TIBIOFEMORAL AND PATELLOFEMORAL MOBILITY RESTORE QUADRICEPS CONTROL

BRACE

- Hinge knee brace for ambulation (locked) and at night
- Out of brace for CPM.
- No brace, but towel/pillow behind heel when lying down

PRECAUTIONS

- If tubercle osteotomy: Touch-down weightbearing (locked brace)
- If no osteotomy: Full weightbearing in full extension (locked brace)

ROM

- Gentle AROM flexion as tolerated 3x/day. Only PROM extension allowed.
- Dangle knee over edge of bed 5x per day to achieve 90 degrees.
- CPM \geq 6-8 hours daily. 0-40 degrees only, do not advance.
Minimum 90 degrees flexion by 3 weeks, 110 degrees by 6 weeks, and full ROM by 12 weeks post-op.

EXERCISES

- Quad sets, leg curl/heel slides, hip abduction. SLR with brace locked if no osteotomy.
- Stationary bicycle with no resistance once 90 degrees knee flexion obtained (>4 wks).

THERAPY

- Gentle multi-directional patella mobilization immediately after surgery.
- Cryotherapy and compression stockings/TEDS for swelling and pain control.
- E-stim for VMO/quadriceps muscle re-education/biofeedback encouraged early after surgery if needed.
- Gentle massage/deep friction to hamstring insertions, suprapatellar quadriceps, medial/lateral gutters, and infrapatellar fat pad region at 2-3 weeks post-op.
- Pool therapy recommended 2-3 weeks post-op to enhance motion.

COMMENTS

- Avoid active open-chain extension and repetitive knee flexion 40-70 degrees due to increased patellofemoral contact forces.
- Contact MD if ROM not achieved within 20 degrees of goal.
- No progression of this protocol until cleared by M.D at 6 weeks post-op.
- No leg presses/squats
 - Swimming and/or stair master for endurance
 - Toe raises, hamstring curls, and proprioceptive exercises
 - Treadmill walking
 - Flexibility exercises

BRACE

- Hinged knee brace may be discontinued once independent SLR achieved

GAIT

- Full weightbearing as tolerated

ROM

- Gentle A/AAROM flexion and extension permitted
- Progress towards full ROM by 12 weeks

EXERCISES

- Stationary bicycling without resistance for short intervals (5 min 2-3x/day) as tolerated
- Strengthening of quadriceps, hamstrings, and hip abductors/extensors using elastic band isometrics and closed-chain terminal knee extension 0-40 degrees only
- Backward treadmill walking with safety bars recommended for reduced patellofemoral compressive forces.
- Pool exercise using kickboard allowed- flutter/straight leg scissor kick only (no whip kick)
- No open-chain strengthening permitted until 6 months after surgery.
- No closed-chain leg press or squatting

THERAPY

- Gentle multi-directional patella mobilization
- Cryotherapy and compression stockings/TEDS for swelling and pain control
- E-stim for VMO/quadriceps muscle re-education/biofeedback encouraged
- Gentle massage/deep friction to hamstring insertions, suprapatellar quadriceps, medial/lateral gutters, and infrapatellar fat pad region
- Pool therapy recommended to enhance motion

COMMENTS

- Activity level should be modified if increased pain, catching, or swelling occurs. Progression of activity may resume once comfort level returns
- No progression of this protocol until cleared by M.D at 12 weeks post-op.

Stage 3- Remodeling Phase (13+ weeks)

BRACE

- None

GAIT

- Full weightbearing as tolerated

ROM

- Progress towards full ROM equal to contralateral side

EXERCISES

- Stationary bicycling with very low resistance as tolerated
- Treadmill forward/retro-walking, Nordic track and elliptical machine
- Pool exercise- flutter/straight leg scissor kick and running in water permitted
- Continue gentle closed-chain LE strengthening through functional range - terminal knee extension 0-40 degrees and 120-70 degrees extension from flexed position
- Full active flexion with resistance permitted
- Open-chain terminal extension with resistance not permitted
- **THERAPY**
Cryotherapy and compression stockings/TEDS as needed
- Multi-directional patella mobilization as needed
- E-stim for VMO/quadriceps muscle re-education/biofeedback as needed

COMMENTS

- Avoid activity/exercises with excessive patellofemoral compressive forces
- Activity level should be modified if increased pain, catching, or swelling occurs
- Swelling is common in patella transplants up to 9 months after transplantation
- No running or jumping permitted until 9-12 months after surgery
- Continued improvement in comfort occurs for 2-3 years before maximal outcome is achieved

Return to Activity Phase

- Exercises: Slowly progress to treadmill walking, resisted biking, running (as strength, ROM and pain/swelling allow) progress proprioception activities as tolerated, begin hop/agility when good alignment and LE control is present*
- *May use single leg hop for distance testing (Cincinnati hop tests) for side-to-side comparison 80% is goal to begin light agility and cutting