Advanced Orthopedics and Sports Medicine
Total Knee Arthroplasty
Treatment Guideline

Phase I: Immediate post Surgical Phase (IPSP) 0-2 weeks

Goals:

1. Decrease pain and inflammation.
2. Improve active quadriceps muscle contraction.
3. Gradually increase range of motion of the knee.
4. ROM goals: knee flexion to 90 degrees or later, passive knee extension to 0 degrees.
5. Safe (isometric control) independent ambulation on level surfaces and stairs.

Precautions:

1. Look for signs of infection (fever, aches, chills, nausea, weakness, increasing pain with spreading redness, pus, foul odor drainage)
2. Look for signs of DVT (pain and swelling, increased temperature, tenderness and cord like medial calf, redness in leg, bluish skin coloration, discomfort with ankle dorsiflexion (Homans sign).

Treatment Summary:

- **In-Hospital Physical and Occupational Therapy Guidelines: POD#1 – POD#3**

- Weight bearing: Walker/two crutches WBAT
- CPM:20-70 degrees as tolerated if requested
- ROM:0-70 degrees (active, active assisted and passive range of motion)
- Exercises includes (but not limited to) Ankle pumps with leg elevation, passive knee extension, SLR, TKE, Quad sets, Knee extension exercise 90-30, hamstrings sets (gentle hamstring curls) , hamstrings stretch
- Electrical stimulation to quadriceps if requested.
- Work on transfers if necessary
- ADLs.
- Review precautions with patient.
- Instruct in HEP.

- **Out-patient Physical Therapy: day 3 to 2 weeks**

1. Modalities: Cryotherapy, Electrical stimulation (pain relief, NMES).
2. Manual Therapy: MFR as tolerated. Passive range of motion within protocol limits.
3. Weight bearing: as tolerated
4. CPM: 0-90 as tolerated if requested
5. ROM:0-90 degrees: (active, active assisted and passive range of motion)
6. Exercises: Progress to exercise program with addition of AAROM knee flexion, SLR all planes, knee extension exercises 90-0.
7. Transfers and Gait: Continue with safe ambulation. Instruct in transfers.

Criteria for progression:

1. Achieving active range of motion goals 0-90
2. Pain and swelling within tolerance.
3. Adequate neuromuscular recruitment of the quadriceps. Leg control, able to perform SLR
4. Independent ambulation/transfers.

Phase II: Protection Phase (PP) 2-6 weeks (Motion Phase)

Goals:

1. Allow healing of soft tissue.
2. Decrease pain and inflammation.
3. Improve range of motion. Goal of 0-110
4. Enhance muscular strength/endurance
5. Dynamic joint stability.
6. Establish return to functional activity
7. Improve general health

Precautions:

1. Look for signs of infection (fever, aches, chills, nausea, weakness, increasing pain with spreading redness, pus, foul odor drainage)

2. Look for signs of DVT (pain and swelling, increased temperature, tenderness and cord like medial calf, redness in leg, bluish skin coloration, discomfort with ankle dorsiflexion (Homans sign).

Treatment Summary:

- **Weeks 2-4**

1. Modalities: Cryotherapy, Electrical stimulation (pain relief, NMES).
2. Manual Therapy: MFR as tolerated. Passive range of motion within protocol limits. Gentle mobs as tolerated for pain relief after 2-4 weeks
3. Weight bearing: WBAT with assistive device
4. Progress with previous exercise with addition of hamstring curls, ¼ squats, stretching (hams/quads/calf), bicycle (ROM stimulus). Focus on terminal knee concentric and eccentric control in standing.
5. Discontinue TED hose at 2-3 weeks post physicians approval

- **Weeks 4-6**

1. Continue with modalities PRN, manual therapy as previously described.
2. Continue all exercises listed previously and initiate front lateral steps ups, ¼ lunge, pool program

Criteria for progression:

1. Achieving passive range of motion goals 0-110
2. Voluntary quad muscle control
3. Independent ambulation
4. Min pain and inflammation.

Phase III. Intermediate Phase (IP) 7-12 weeks

Goals:

1. Progression of ROM (0-120 and greater)
2. Enhancement of strength and endurance
3. Eccentric/concentric control of the limb
4. Improve cardiovascular fitness
5. Functional activity performance

Precautions:

1. No lifting anything heavier than a coffee mug.
2. No excessive behind the back/hip motion (within pain tolerance)
3. Patient must be able to elevate arm without shoulder hiking before progressing to overhead active range of motion and light isotonics.
4. Gradual strengthening of rotator cuff only 3 times a week to prevent rotator cuff tendonitis.

Treatment Summary:

1. Progress on protection phase with Manual stretching, MFR, decrease modalities (PRN), progress with dynamic stabilization exercises.
2. Continue and progress exercise in Phase II. Add lunges, ½ squats, step ups (forward/sideways/backwards). Emphasize eccentric/concentric knee control.
3. Initiate progressive walking.
4. Initiate endurance pool program.
5. Return to functional activities.

Criteria for Progression:

1. Full non-painful ROM 0-115
2. Strength of 4+/5 or 85% of contralateral limb.
3. Min to no pain and swelling.
4. Satisfactory clinical examination.

Phase IV: Advanced Strenghtening Phase (ASP) 14-26 weeks (Advanced activity phase)

Goals:

1. Allow selected patients to return to advanced level of function (0-120 and greater).
2. Maintain/improve strength and endurance of lower extremity.
3. Gradual return to functional activities and normal lifestyle.
4. Home maintenance program: ROM exercises two times a day, strengthening exercises 3 times a week

Treatment Summary:

1. Progress on Intermediate phase with Manual stretching/strengthening, MFR (PRN), decrease modalities (PRN), progress with dynamic stabilization exercises.
2. PRE progression based on Holten curve (and patient response) or 1 lb if patient can do 3 sets of 15 with proper form and min-no pain:
3. Integrate gradual golf, tennis and swim, walking program.