ValleyOrtho Rehabilitation Playbook Series

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Surgical Procedure: Total Knee Replacement

The intent of this information is to inform the treating clinician on the evidence-based considerations to be used as a guideline regarding the surgery noted above. This is not a substitute for appropriate clinical decision making, but a supplement to that effect. If at any time a clinician feels uncertain about a given phase discrepancy or patient presentation they are strongly encouraged to discuss this with the referring physician and his/her team before alarming the patient. It is the responsibility of the therapist to read the operative report before providing care to the patient to improve treatment communication.

Therapeutic Activity and Phase Progression Disclaimer: Progression to the next phase should be strongly based on meeting clinical criteria and goals of the previous phase (not solely based on the post-operative timeframes) as appropriate and in collaboration with the referring surgeon. Exercise prescription should be clinically directed by pain and performance absent of detrimental compensation with respect to proper biomechanics of the spine, hip, knee and ankle.

Communication Recommendations from Therapist to Surgical Team: When a treating therapist feels the need to reach out to Dr. O'Connor, or a member of his team, at any point for any reason, they are strongly encouraged to do so. All concerns are not explicitly written and clinical judgement is paramount. Below is a handful of reasons and suggested methods of contact to promote communication:

Urgent Red Flag Communication

- Uncontrollable and unremitting pain
- Signs of infection at incision or treated limb
- Severe palpation tenderness, swelling, tachycardia (UE or LE DVT)
- Labored breathing (PE)
- Drastic improvement or decline in ROM (failed component)
- Severe pain with walking or ROM
- Active incision drainage at 5-7 days s/p
- After a fall/trauma, or near fall/trauma, resulting in a clinical change

Preferred Contact Method: Immediate phone call to speak with MA or ATC until answer.

Other Patient Concerns

- Abnormal pain, comorbidities or complications that may prevent attainment of established discharge criteria
- Patient is noncompliant with rehabilitation process
- Excessive muscle guarding/motion phobia after 1-2 outpatient visits
- Adverse work or home practices negatively impacting recovery
- Patient expresses discontent or concerns with the current POC established by PT and/or by MD/PA

Preferred Contact Method: Phone discussion with MD &/or PA

Preferred Updates Before Follow Up Visits with MD/PA

- Information regarding adherence/participation in rehabilitation process
- Comments on progress and trending nature of the patient's rehab course

Preferred Contact Method: Phone call to MD &/or PA. **Or** Fax update

Administrative Issues

- Updated prescription required, scheduled f/u needed, medication refill

Preferred Contact Method: phone call to MA/ATC

Phase 1: Post-Op Healing and Knee Extension (*Wks 1 & 2*)

Goals:

- No outpatient PT visit until day 14
- Reduce swelling and pain
- Patient adheres to pain management strategy from physician
- Patient adheres to swelling, ROM and walking HEP strategy from physician
- Independent transfers and gait (with or without AD)
- Knee AROM 5º-90º, Knee extension PROM to 0º
- Patient able to maintain a quad set for 6 seconds at end range ext
- Ensure appropriate compression for 2 weeks (if TED hose are creating a tourniquet adjust to alternative type: Tubigrip/Knee highs or Ace Wrap)

Precautions:

- No ambulation without AD if detrimental gait deviations are present
- Patient should avoid static knee flexion positions for >15 minutes at a time until full extension is well established.
- Avoid too little or too much use of pain medications
- Avoid activity that results in increased swelling lasting > 24 hours
- Incision should not be submerged

Phase 1 Therapeutic Activities:

- Aggressive edema control (compression, ice, elevation, Knee ext bias)
- Quad, glute, hamstring and calf activation and isometric exercises
- A/AA/PROM/joint mobilization into knee extension
- A/AAROM ONLY for knee flexion
- Educate ADL strategies for tub/shower/car/ etc.
- Gait training on level surface with least restrictive AD for normal pattern
- Nonreciprocal stair training

Criteria for Progression to Phase 2:

- Attain phase 1 goals

Phase 2: ROM and Early Strengthening (*Weeks 3 & 4*)

Goals:

- Initiate formal outpatient physical therapy visit schedule 1-2x/week
- Normalized gait to pre-injury AD status
- Independent with HEP and ADLs
- Knee AROM 0º EXT to 115º Flexion
- Knee extension PROM to 0º

Precautions:

- Phase 1 precautions included
- Avoid pain increase greater than 5/10 with exercise or functional activity to avoid muscle inhibition
- Only increase flexion ROM force as needed at 4 weeks if phase goals are not being achieved

Phase 2 Therapeutic Activities:

- Cryotherapy and edema control PRN
- Initiate stationary bike and core exercises
- NMES to Quads with SAQ/QS if having difficulty with contraction
- A/PROM stretching to hamstrings, quads and calf
- Manual work into knee extension unless AROM extension is at 0º
- CKC TKE exercises
- Balance/proprioception training progressing from double to single leg
- CKC partial body weight through available knee ROM keeping below 5/10 pain

Criteria for Progression to Phase 3:

- Attain phase 2 goals

Mandatory Physician Alert at 4 Weeks and Increase ROM Work Intensity as Potential for Manipulation if still lacking in the next 1-2 weeks:

- Patient is lacking $>5^0$ of Extension
- Patient cannot attain $\geq 95^0$ Flexion

Phase 3: Intermediate Strengthening (*Weeks 5 & 6*)

Goals:

- Knee AROM 0º-125º or more
- SLR without quad lag
- Hip strength equal to non-operative side
- Reciprocal with stairs

Precautions:

- F/U with MD if plateau in ROM, constant pain and/or maintained edema
- No twisting /pivoting until >12 weeks
- Caution with moderate impact activities until > 12 weeks

Phase 3 Therapeutic Activities:

- Quad tendon, patellar tendon and patella superior + inferior mobilizations
- Can begin Scar mobilizations
- 4 way resisted SLR (OKC and CKC) for hip strengthening
- Manual work into knee extension unless AROM extension is at 0º
- Manual work into knee Flexion as necessary for phase goal
- Single leg balance progressions
- CKC full body weight through available knee ROM

Criteria for Progression to Phase 4:

- Attain phase 3 goals

Mandatory Physician Alert at 5-6 Weeks Potential Manipulation:

- Patient is lacking ≥5^0 of Extension
- Patient cannot attain ≥ 100^0 Flexion

Phase 4: Advanced Strength and Final HEP (*Weeks 7 to D/C*)

Goals:

- Return to full pre injury function excluding high impact pivot/twisting activities
- Meet discharge criteria

Precautions:

- Same as phase 3
- Pain after activity lasting >24 hours is not encouraged

Phase 4 Therapeutic Activities:

- Increase resistance, reps and sets for all exercises
- Include specific return to job or sport specific training
- Transition to appropriate HEP
- Ensure patient is independent getting from floor to standing

Minimum Low Activity Patient D/C Criteria:

- Return to all normal ADLs and light recreational activities without pain
- Able to get on to and off of the floor with minimal use of hands
- Normalized gait pattern
- Reciprocal pattern with ascending and descending stairs
- Knee AROM 0º-120º or more
- Patient is consistent and independent with HEP
- Single leg stance of 5 seconds with eyes open and TUG of < 13.5 seconds

High Activity Patient D/C Criteria (includes above):

- Limb symmetry of 90% or greater in strength and ROM
- Single leg stance time with eyes closed based on age:

(50-59yo = 25 seconds) (60-69yo = 15 seconds) (70-79yo = 6 seconds)

Abbreviation List:

AAROM: Active assisted range of motion
AD: Assistive device
ADL: Activity of daily Living
AROM: Active range of motion
BW: Body Weight
CKC: Closed kinetic chain
DVT: Deep vein thrombosis
D/C: Discharge
ER: External rotation
EXT: Extension
FWB: Full weight bearing
F/U: Follow up
HEP: Home exercise program
IR: Internal rotation
LE: Lower extremity
MA: Medical assistant
MD: Medical doctor
NWB: Non weight bearing
OKC: Open kinetic chain
PA: Physician assistant
PE: Pulmonary embolism
PROM: Passive range of motion
ROM: Range of motion
RP: Resting position
RROM: Resisted range of motion
SLR: Straight leg raise
UE: Upper extremity
WB: Weight bearing
YO: Years old
≈: Approximate
#: Pounds

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