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Knee Arthroscopy Rehab Protocol

Generally, following knee arthroscopy, an aggressive rehab approach can be taken. No major precautions or contra-indications are present and ROM and strength can be progressed as tolerated. This includes the following procedures: partial medial or lateral menisectomy, debridement of cartilage and joint surfaces, removal of a loose body, plica excision, and lateral release.

One primary goal following surgery is to gain full passive knee extension. This, along with neuro-muscular quad control, is the key to facilitate a normal gait pattern. Initially, focus should be on increasing VMO tone. Exercises should be geared toward quad strengthening in a pain-free range. Until swelling is minimal and the patient has a normal gait, prolonged standing and walking should be limited.

Patellar mobilizations and scar massage are both necessary to regain full ROM. One may be back to regular activities at 3-4 weeks while others may take significantly longer. It is important to find out the pre-op status of the patient as this will help determine how fast the patient will progress post-operatively.

Following a lateral release, a slightly longer rehabilitation program is sometimes necessary. Advancement of exercises and activities is based on quad tone. It is common for patients to have a persistent, large hemarthrosis at the lateral-superior knee due to the fact that the lateral geniculate artery is often cut during surgery. It is imperative to keep the IT band stretched out post-operatively. The gluteus muscles should also be stretched due to their insertion site at the lateral hip. In addition to stretching and soft tissue mobilization, medial patellar glides are beneficial to prevent excessive scarring at the ITB. Initially, hip abduction may need to be avoided following a lateral release – if it is painful to perform. If the medial patello-femoral ligament was torn and repaired during surgery, restrictions on ROM are necessary. Consult with Dr. Crawford to make sure the proper precautions are taken with these patients.

PHASE ONE (Weeks 1-2)

Keys during phase one:

*Gain full knee extension so patient can ambulate with normal gait
*Neuro-muscular quad control – use biofeedback on VMO
*Control swelling: Swelling inhibits quad firing and limits ROM; as long as there is a flexed knee gait, the more the patient ambulates, and the more swelling will increase; therefore, limit activities and ambulation early in rehab.
*Normal gait: patients will ambulate with flexed knee gait secondary to no quad control; have patient focus on quad contraction and full knee extension during stance phase of gait

EXERCISES

STRENGTH AND NM CONTROL
Quad sets (10 x 10sec) – the more the better – at least 100/day
SLR – 4 way (initially avoid extension with HSG)
Multi-hip
Calf Raises
Shuttle/Total Gym – pain-free range

STRETCHING
Hamstring stretch – hold 30 seconds
Gastroc stretch with towel – hold 30 seconds
ITB stretch
Piriformis stretch

ROM (Goal during this phase is 0-90^0)
Manual patella mobs – especially superior/inferior
Seated heel slides using towel
Supine heel slides at wall if needed
Prone hangs if needed to gain full extension

BALANCE
Weight shifting
Single limb stance

GAIT
Cone walking – move to single crutch when ready and then d/c crutches when patient ambulates with N gait.

MODALITIES
EMS may be needed to facilitate quad if contraction cannot be voluntarily evoked
EGS may be needed to help control swelling and increase circulation
Ice should be used following exercise and initially every hour for 20 minutes
*Perform HEP 3x/day

PHASE TWO (Weeks 2-6)

*By end of this phase, the patient should ambulate with normal gait, have good quad control, controlled swelling, and be able to ascend/descend stairs.

STRENGTH

Quad sets are continued until swelling is gone and quad tone is good
SLR (4way) add ankle weights when ready
Shuttle/Total gym – bilateral and unilateral – focus on weight distribution more on heel than toes to avoid overload on Patella tendon
Multi-hip – increase intensity as able
Closed chain terminal knee extension (TKE)
Leg Press
Step-ups – forward
Step-overs
Wall slides
Mini-squats – focus on even distribution of weight
Calf raises
Hamstring curls

CARDIO

Bicycle – do not perform until 1100 of flexion is achieved – do NOT use bike to gain ROM. Perform daily and increase resistance as able to work quad.
EFX – increase resistance as able

STRETCHING

Continue with HS, calf, ITB, and piriformis stretching

ROM (Goal is 0-125^0)

Perform scar massage aggressively at portals
Prone hangs (do not add weight to ankle) w/BF
Heel slides – seated and/or supine
Continue with cycling, increasing duration and intensity

BALANCE

Single leg stance – even and uneven surface – focus on knee flexion
Plyoball – toss
Lateral cone walking with single leg balance between each cone
Foam roller or BAPS board balance work

GAIT

Cone walking – forward and lateral
D/C crutches when N gait

MODALITIES

Continue to use ice following exercise
*Continue with HEP

PHASE THREE (Weeks 6-12)

Goals for this phase are full quad control and good quad tone; patient should be able to perform normal ADLs without difficulty.
Exercises will be advanced in intensity based on quad tone – a patient who continues to have poor quad tone must not be advanced to activities that require high quad strength such as squats and lunges

STRENGTH

Continue with above exercises, increasing intensity as able
Step-ups – forward and lateral; add dumbbells to increase I; focus on slow and controlled movement during the ascent and descent
Squats – Smith press or standing
Lunges – forward and reverse; add dumbbells or med ball
Hamstring curls
Swiss ball and foam roll hamstring exercises – supine bridge with knee flexion, bridge with HS curl
T-band hip flexion
Single leg squats
Russian dead lifts – bilateral and unilateral
Single leg wall squats
Initiate lateral movements and sports cord: lunges, forward, backward, or side-step with sports cord, lat step-ups with sports cord, step over hurdles

ROM (Goal is 0-140^{0})

Work to full ROM – continue with heel slides

BALANCE

Plyoball – toss – even and uneven surface
Squats on balance board/foam roll/airex
Steamboats – 4 way; even and uneven surface
Strength activities such as step-ups and lunges on airex

CARDIO

Cycle – increase intensity; single leg cycle maintaining 80 RPM
Jogging/Plyos:
Based on quad tone, no swelling, and permission from Dr. Crawford, the patient can begin to jog at a slow to normal pace focusing on achieving normal stride length and frequency. Initiate jogging for 2 minutes, walking for 1 until this is comfortable for the patient and then progress the time as able. Jogging should first be performed on a treadmill or track (only straight-aways) and then progressed to harder surfaces such as grass and then asphalt or concrete. It is normal for the patient to have increased swelling as well as some soreness but this should not persist beyond one day or the patient did too much.
Jump rope and line jumps can be initiated when the patient is cleared to jog.
This can be done for time or repetitions and should be done bilaterally and eventually progressed to unilateral.

MODALITIES

Continue to use ice after exercises
*Continue with HEP at least 3x/week

PHASE FOUR (Weeks 12-24)

Exercises for strengthening should continue with focus on high intensity and low repetitions (6-10) for increased strength
Progress with stretching and strengthening program (2-3x/week)
Progress jogging speed and distance
Progress plyos: Sportsmetric program can be implemented
Bilateral and unilateral plyos on shuttle
Plyos can include squat jumps, tuck jumps, box jumps, depth jumps, 180 jumps, cone jumps, broad jumps, scissor hops
Leg circuit: squats, lunges, scissor jumps on step, squat jumps
Power skipping
Bounding in place and for distance
Quick feet on step – forward and side-to-side – use sports cord
Progress lateral movements – shuffles with sports cord; slide board
Ladder drills
Swimming – all styles
Focus should be on quality, NOT quantity

Landing from jumps is critical – knees should flex to 30^0 and should be aligned over second toe. Controlling valgus will initially be a challenge and unilateral hops should not be performed until this is achieved.

Initiate sprints and cutting drills.
Progression: Straight line, figure 8, circles, 45^0 turns, 90^0 cuts