BONE TENDON BONE ACL RECONSTRUCTION PROTOCOL

DR. BRAD BRUNER

01/01/2021

GUIDELINES:

1. Use professional judgement as patient progresses. Even if an exercise or activity is listed at a particular time frame, some patients may not be ready to perform it.
2. It is recommended to avoid resisted knee extension exercises, including long and short arc quads, to avoid adversely stressing the graft.
3. Patients are not allowed to return to more aggressive physical activities such as running or jumping until sufficient healing and progress has occurred. Criteria for return to activities include both healing time from surgery and each patient's actual progress with their rehab.
4. General time frame on selected activities:
    - Running- 3 MONTHS
    - Jumping 3-4 MONTHS
    - Golf- 3-4 MONTHS
    - Aggressive Throwing/Hitting- 3-4 MONTHS
    - Return to full sports- 5-8 MONTHS pending Doctors Release and patient's progress.
5. Correct technique is extremely important in how the patient performs exercises.
6. For PROM, getting and keeping full extension (surgical knee=other knee) is critical to achieve ASAP. With flexion expect at least 10° improvement per week, with a minimum of 120° by 4 weeks post op.

IMMEDIATE POST OP CARE:

1. Patient will have dressings on until first post op physical therapy visit. Remove dressings down to steri-strip.
2. Polar Pack is used continuously until first post op physical therapy visit.
3. Patient should stretch into knee extension with heel prop position, keeping knee extended for 15 minutes, 4 times/daily.
4. Exercises: quad sets, hamstring sets, glute sets, ankle pumps, hamstring stretch in sitting position, gastroc stretch in heel prop position via towel pull.
5. Patients will have a hinged knee immobilizer immediately after surgery. Slowly discontinue use as leg control improves. Can use to help increase extension at night or to protect leg when patient is in public.
6. If surgery was an isolated ACL reconstruction without meniscus repair or joint changes, patient will be WBAT with crutches. If joint changes/chondral damage is present, patient

will possibly have different WB status. Call physician of specific grade, surgical intervention and WB status.

FIRST POST OP VISIT:

- PROM: 0°-90°. Make sure you get and keep full extension ASAP.
- AMB: WBAT with crutches if no meniscus repair or chondral damage.
- EXERCISE: PROM, SLR, isometric quad and hamstring, ankle pumps, weight shifts, weight shifts should be done multidirectional, and can include single leg balance for early proprioception if patient has good quad control. Stretches for quad-ham-calf with modifications as needed. Patient to do patella mobs and self-massage for early soft tissue work.
- SPECIAL ACTIVITIES: Dressings are removed to steri-strips at this visit. No ointments, betadine etc. should be used on the incisions or portals. If any drainage is present it is okay to use 4x4. Okay for patient to shower but they MUST keep knee covered with plastic wrap during shower to keep incisions dry. Keep wound clean/dry for 10-14 days post op. CPM machine per instructions.
- PATELLAR MOBILITY (esp. superior glide): Soft tissue mobility, e-stim if needed for gross swelling, if needed for neuromuscular stimulation to quads/VMO. Pulsed 3 MHz, ultrasound if hard/thick swelling especially suprapatellar. Use Polar Pack intermittently during the day and continuous at night. Use ace wrap or compression sleeve for decreasing swelling.

WEEK 1:

- PROM: full extension- 100° flexion. Still emphasize extension (even into slight hyperextension. Want L=R for extension ASAP.
- AMB: Progress to 1-2 crutches as needed. Must have normal gait before off crutches completely- NO LIMP.
- EXERCISE: Progress carefully with further closed chain exercises such as step ups, step downs (recommended starting with 2” height), balance reaches, squats (still with limited range) multi-plane lunges, emphasis of balance and proprioception work, can add stationary bike. Okay to work on introducing *gentle* lateral movements such as side steps with and without theraband, walk through carioca, high knee etc. Do not push activity aggressively or hard. Also begin focus on abdominals throughout entire rehab; prefer ab exercises on swiss ball, single leg balance with overhead reaches using weights or sport cord, etc. rather than sit ups.
- SPECIAL ACTIVITIES: gradually wean off polar pack. May also add heat/cold contrasts, if swelling is difficult to disperse. Continue with patella and soft tissue mobility, modalities

as needed. If using e-stim for quad/VMO activity, do in conjunction with functional quad exercises such as single leg stance lunge, squat etc.

WEEK 2:

- (Patient will recheck with Dr. Bruner at 2weeks, 2months, 4 months, and 6months)
- PROM: full extension- 110° flexion
- AMB: Should begin weaning off crutches by now unless problems with pain, swelling, quad control, or limping.
- EXERCISE: Progress same type of exercise: balance, proprioception, reaches, strength, control, all three planes (sagittal, frontal, transverse) but still limiting range and speed as patient can control. Continue to emphasize good technique with exercises. As exercise intensity increases, monitor any increase in patellofemoral or pes anserine pain, and slow down if indicated. Continue good stretching program for LE musculature.
- SPECIAL ACTIVITIES: Pay close attention to soft tissue, with adding massage to portals and possibly to patellar tendon incision if healing well.

WEEK 3-6:

- PROM: full extension- 120° at 4 weeks and full flexion at 6 weeks.
- ABM: should be off crutches if ambulatory with no limp.
- EXERCISE: Okay to progress to fitness center workouts including cardiovascular equipment. (NO RUNNING) and weight equipment if patient is ready with appropriate strength, pain control, decreased swelling. Typically, patients are ready for the squat rack (¼ to ½ squats) unilateral leg press, hamstring curl, free weights, lunges with handheld weights, but no power cleans, clean and jerk, leg extensions with weight. Continue to focus on balance/proprioception, and stimulation of functional activities, but taking care to avoid hard impact/landing. Emphasize total body control with dumbbell activities for combination work of strength/balance/proprioception.
- SPECIAL ACTIVITIES: Still no running, jumping, or sport activity of any kind.

WEEK 6-10:

- PROM: Should have full range by approx. 6-8 weeks out.
- EXERCISE: Continue advancing cardiovascular work outs, and strength training for all muscle groups, in combination with proprioception, increased range, increased load/ demand, simulation of functional activities including return to sport positions/reaches. Continue dumbbell workout, such as matrix lunge pattern. At the 9-10 week mark, advance to low level “step and sticks” to work toward bent-knee landing in preparation for running.

- SPECIAL ACTIVITIES: Still no running, jumping kicking. Okay to add light, short-distance throwing (NO PITCHING) free throws, chipping/putting.

3 MONTHS SPECIAL ACTIVITIES:

- May start outdoor bike
- May be released for straight-ahead running if okay with Doctor and physical therapist (no sprinting)
- A specific running progression is available if needed. Call the doctor for info.
- After two weeks of running program, may gradually progress with gentle lateral movements, agility work IF good control, no pain, good stability, and okay with doctor (agility exercises to include defensive slide, flood ladder drills, figure 8 and carioca).
- Increase demand into transverse plane movements. (pivots, step ex's with rotation)
- Progress to low level plyometrics including stationary jumps, hops, skipping rope.
- During these activities the emphasis is on bent knee landing overall LE control.
- Continue advancing functional abdominal work.
- Sport specific drills may be implemented with caution.
- Work on deceleration activities with emphasis on bent-knee position and injury prevention including 3 steps stop, bent knee landing, and rounded turns.
- Golf may be released for full participation at 3-4 months if patient is ready.
  *** With this increase in activity, watch for patellofemoral or pes pain and adjust accordingly***

4 MONTHS: SPECIAL ACTIVITIES:

- Continue through stretching program.
- Advance sport specific drills and running program to increase intensity.
- Running program should include increased speed, rounded turns, back pedal, low level direction changes.
- Continue to closely monitor technique and injury prevention principles.
- Advance with more aggressive agility drills including jump, hip, plyometric activities.
- Sport activities: <u>Soccer</u>- continue ball drills. Allowed to progress to hard kicks on goal depending on weather the plant or kick leg is the involved side. Hard kicks are OK if surgery side is the "kick" leg, not the "plant" leg. <u>Basketball</u>- lay up drills, jump shots OK, but no scrimmaging or even "one on one". <u>Softball/Baseball</u>- OK to advance to throwing, hitting, running bases. <u>Racquet Sports</u>- OK to do low level hitting against backboard.

5 MONTHS: SPECIAL ACTIVITES:

- Intensify demand/load duration etc. for the 3-4 months activities.
- Progress with appropriate sport-specific drills.
- Some patients may have full release to play sports at this time frame, but only with Dr. Bruner's approval.

6 MONTHS:

- Should have full release at this time unless complications, such as repeat scope, poor control with deceleration/plyometric/sport activities, unresolved pain problems.

ADDENDUM FOR EXERCISES:

- Balance reaches- generally done by balancing on one leg, and then reaching the opposite leg at various angles or either arm at various angles or heights. Can increase difficulty by changing surface, adding dumbbells, changing head position, etc.
- Abdominal Exercise- on swiss ball with contra lateral knee-elbow, overhead reaches with ball incorporating diagonal and sagittal movement, sit backs. Also, can do single leg balance with diagonal reaches overhead with medicine ball.
- Matrix lunge- This lunge pattern incorporates all three planes of movement, and this is done by alternating left/right steps. The pattern is: anterior lunge, lateral lunge and posterior rotation lunge (similar to a pivot movement). This exercise can be done with or without dumbbells, and varying depth of reach toward floor.
- Step and Stick- The purpose of this exercise is to prepare the limb to absorb body weight in preparation for running. The most basic form is done on a level surface, by starting with the non-surgery leg back, and the person doing a gentle hop forward to land on the surgery leg with a bent knee. Focus is for patient control this deceleration with good form and control. The exercise is advanced by starting the movement from step, and progressing for 2" to 4" etc. The patient must be able to land with control in the bent-knee position before they would be allowed to run.