Campbell Clinic ORTHOPAEDICS

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ACHILLES TENDON REPAIR PROTOCOL

Date of Surgery: _____

The ankle is placed in a splint in full plantar flexion for the first 2 weeks. At 2 weeks (Post-Operative Phase 2), the splint is removed and they are placed into a Controlled Ankle Movement (CAM) boot with heel wedges. Patients are encouraged to have one physical therapy session at 2 weeks for patient education and proximal hip and core strengthening. Patients are kept non-weight bearing (NWB) for 4 weeks. During this period, they are encouraged to elevate the leg and control swelling. Patients will begin weight bearing as tolerated (WBAT)with crutches and physical therapy at 4 weeks.

- Partial weight bearing (PWB) progression increases approximately 25% per week
- For patients with comorbidities such as diabetes, osteoporosis or high Body Mass Index (BMI), healing times and weight bearing (WB) progressions may be delayed
- Monitor for plantar fasciitis and metatarsal head pain. Consider removable external shoe lift for nonoperative extremity.

Phase	Precautions	Treatment Recommendations	Emphasize
Postoperative Phase 1: Weeks 0-2 *Criteria for Advancement:* *-Understanding of elevation protocol and other precautions* *_ Good pain control* *_ Safe ambulation/stair negotiation with NWB and appropriate device on level surfaces independently or with assistance of family member/friend if consistently present at home* *-Independent with transfers*	▪ Maintain NWB status ▪ Avoid having lower extremity (LE) in prolonged dependent position ▪ LE must be elevated on at least two pillows for 80%-90% of the time ▪ Keep knee extended when resting- pillows should be placed from calf down ▪ Walking is for functional home mobility and short distances only- wheelchair or knee scooter should be used for longer distances ▪ Non-removable splint must be kept dry at all times	▪ Pain control education ▪ Transfer training: in and out of bed and sit to stand- chair, toilet ▪ Gait training with appropriate device on level surfaces while maintaining NWB status ▪ Stair training if required NWB with crutch and rail or seated bump up method ▪ ADL training and home modifications ▪ Cryotherapy for pain control over soft portion of splint and/or proximally ▪ Elevation of LE to prevent swelling (educate patient in "toes above nose") ▪ Promotion of knee extension while elevated ▪ Therapeutic exercise with focus on maintaining non-operative LE and bilateral UE motion, flexibility and strength	▪ Control swelling ▪ Elevation protocol ▪ Independent transfers ▪ Gait training: NWB ▪ Safe stair mobility if required
Postoperative Phase 2: 1-Time HEP Weeks 2-4 *Criteria for Advancement:* *-Patient understands repair protection (continued)*	▪ **Begin PWB** o In CAM walker boot with 2 cm heel lift o Increase by 25% per wk ▪ Avoid having LE in prolonged dependent position ▪ No active or passive dorsiflexion (DF) stretching	▪ **One-time physical therapy home exercise program (HEP) visit** ▪ Patient education ▪ Maintain weight bearing precautions ▪ Swelling management: Maintain 80% elevation schedule ▪ No stretching of the Achilles tendon ▪ Skin care education: wound care and infection prevention ▪ Adjust crutch height if necessary to accommodate CAM height ▪ Proximal hip and core strength o Abdominal exercises	▪ Proximal hip strengthening ▪ Control swelling ▪ Elevation protocol ▪ Independent transfers ▪ Gait training NWB ▪ Safe stair mobility if required

Phase 2 (continued) *recommendations (no weight-bearing, no stretching)* *-Edema well-controlled* *-Independent with core and hip stability program*		▪ Supine and quadruped o 3-way straight leg raise (no forward flexion) o Clamshells x 2 with abdominal control o Emphasize hip extension strengthening Upper body conditioning program	▪ No stress on the tendon during any exercises
Phase	**Precautions**	**Treatment Recommendations**	**Emphasize**
Postoperative Phase 3: Weeks 5-8 *Criteria for Advancement:* *-Stable/controlled swelling* *-Wound closure* *-Bilateral standing heel raises* *-Full weight bearing (FWB) in CAM boot, no wedges, with or without assistive device* *-DF to neutral*	▪ Avoid passive overpressure or stretching into ankle dorsiflexion (DF) ▪ No maximal plantarflexion strength testing	▪ Reduce wedges according to schedule o Reduce to 1 cm at 4 weeks postop o Remove wedge at 6 weeks postop o If active DF past opposite ankle, contact MD ▪ Edema control o Compression stocking 20-30 mmHg, closed toe, knee length when wound is closed ▪ Desensitization o Progressive touch/stroking of the foot, ball massage ▪ Scar mobilization when wound is healed ▪ Bend the repair to limit tendinous hardening/scarring ▪ Focus on seated and closed chain motion o Ankle and toe AROM/PROM o Seated inversion/eversion o Toe articulation ▪ Seated heel raise- emphasize rolling through hallux ▪ Marble pick ups ▪ Arching/doming progressing from seated to standing ▪ Joint mobilizations o Talocrural and tibiofibular joints o 1st MTP dorsiflexion o Subtalar joint inversion/eversion ▪ Stretch and release FHL ▪ Progressive gait and stair training ▪ Progress to standing flexibility exercises o Progress toe articulation through hallux o Bilateral mini-squats ▪ Progress hip flexibility with emphasis on extension ▪ Initiate balance/proprioception exercise training o Multidirectional wobble board ▪ Bilateral stance on a cushion shod/unshod o Weight shifting (use scale to assess load) o Tandem stance when 75% WB ▪ Strengthening o Proximal LE o Bilateral heel raise progression: seated, seated with load, leg press, standing with upper body support o Hip extension in standing ▪ Bike when 50% WB	▪ Gait training with gradual progression of WB ▪ LE ROM and flexibility exercises emphasizing ankle and hip while respecting WB and wound status ▪ Progression to closed chain exercises ▪ Continuous monitoring of swelling

Phase	Precautions	Treatment Recommendations	Emphasize
Postoperative Phase 4: Weeks 9-12 *Criteria for Advancement:* *-Functional ankle/toe ROM to allow for symmetrical gait* *o Dorsiflexion to 75% of non-operative side* *o Full MTP joint mobility* *-Community ambulation FWB without CAM boot and assistive device as appropriate* *- Ascend 6-inch steps reciprocally* *-Single leg stance without Trendelenburg* *-Ability to perform symmetrical bilateral heel raises*	▪ Avoid weaning off assistive device and CAM boot too early ▪ No passive DF stretching	▪ Gait training weaning from CAM boot and assistive device o Encourage step through pattern o Emphasize push-off at terminal stance ▪ Patient education on appropriate footwear o Consider supportive sneakers, foam padding, heel lift, taping, rocker bottom shoe if difficulty with rollover/push off phase of gait ▪ Edema management o Compression garments o Patient education on edema management ▪ Scar mobilization, silicone strips, moisturizing when wound is healed ▪ Forward step up/down and lateral step up progressions ▪ AROM/PROM and mobilizations of ankle and toes o Flat footed squat with knees over toes and UE support o Mobilization of 1st MTP, distal tibiofibular, talocrural and subtalar joints o Lunging with elastic band or strap for talocrural self-mobilization o Foam roller to anterior tibialis, calves and distal tibiofibular joint ▪ Progress unilateral static and dynamic standing balance/proprioceptive exercises o Unstable surfaces e.g. foam, rocker board o Single leg activities with attention to equal weight bearing on 3 points of foot tripod -Windmills, lawnmowers ▪ Strengthening o Progress plantar flexor strengthening -Bilateral plantarflexion Leg press or standing leaning on elbows, fully upright -Heel raises with proper eccentric control Two up/one down -Unilateral exercises Leg press or standing leaning on elbows, fully upright o Core strengthening -Front and side planks o Progress to dynamic, closed chain proximal LE strengthening -Squats, gluteus medius band exercises, leg press, hip extension ▪ Progress cardiovascular conditioning o Encourage gym program o Retro treadmill o Swimming: Avoid pushing off the wall during turns If pain or gait deviations are persistent, consider aquatic exercises or antigravity treadmill (if available)	▪ Wean from crutches to cane/no assistive device and CAM boot to supportive shoe ▪ Functional single LE articulation in weight bearing ▪ Plantar flexion strength through full range of motion prior to progressing load ▪ Talocrural joint mobility ▪ Hip abductor/ extensor strengthening

Phase	Precautions	Treatment Recommendations	Emphasize
Postoperative Phase 5: Weeks 13-20 *Criteria for Discharge (or Advancement if Return to Sport):* *-Ankle DF within 10% of uninvolved side* *-SLS ≥ 90% of uninvolved side with minimal foot, hip or core strategies* *-5/5 strength of all muscle groups* *o At least 90% closed chain, heel raise strength compared to contralateral side* *-Ability to appropriately progress to loaded activities* *-Independent management of residual symptoms* *- Independent gym program* *- Progress to sport specific training as indicated*	▪ Avoid premature progression to impact activities, e.g., running, jumping	▪ Patient education on alternative footwear options ▪ Edema control with ankle compression garment as needed ▪ Maximize gait symmetry, efficiency and speed e.g. stride length, cadence, push off, trunk rotation ▪ Forward step-down progression ▪ AROM/PROM and mobilization focusing on persistent deficits o Sitting on dorsum of feet for PF ROM o Progress lower extremity flexibility with emphasis on hip extension ▪ Progress single leg closed chain activities, e.g. single leg squat, loaded forward lunge ▪ Progress dynamic balance/proprioceptive and loading exercises o E.g. cariocas, tandem walking, heel walking, toe walking, single leg balance with multidirectional challenges o Progress to unstable surfaces and perturbations ▪ Continue to progress functional strengthening o Maximize symmetrical movement patterns and encourage healthy compensatory patterns in adjacent joints as necessary ▪ Consider starting pre-impact training (i.e. aquatic/anti-gravity treadmill) o Eccentric strengthening and control ▪ End range control ▪ 3-point heel lowering exercise o Functional lower extremity chain strengthening o Hiking, yoga, Pilates, light aerobic classes	▪ Symmetry and efficiency in gait cycle without assistive device ▪ Dynamic stability ▪ Maximizing ankle and hallux dorsiflexion and plantarflexion ROM
Postoperative Week 6: Weeks 21+ **Return to Sport** *Criteria for Discharge:* *-Ensure that there is a plan in place for a graded return to full or modified activity based on patient's maximal therapeutic activity (e.g. ATC, skills coach, CSCS)*	▪ Too much, too soon: monitor volume/load ▪ Avoid compensatory movement strategies ▪ Monitor movement strategies during fatigue situations ▪ Avoid inadequate rest and recovery ▪ Avoid inadequate strength to meet demands	▪ Increase volume and PF load to mimic load necessary for return to activity ▪ Introduce movement patterns specific to patient's desired sport or activity ▪ Introduction of light agility work o Hopping patterns ▪ Increase cardiovascular load to match desired activity o Return to run progressions ▪ Consider collaboration with ATC, performance coach/strength and conditioning coach, skills coach and or personal trainer for complex sports specific movements if available ▪ Begin gentle passive dorsiflexion stretching at 6 months if less than 90% DF of non-op side	▪ Progression of pain free loading ▪ Eccentric gastroc/soleus control ▪ Quality with functional activities

Protocol adapted from Hospital for Special Surgery Rehabilitation postoperative Achilles repair guidelines