TOTAL ANKLE ARTHROPLASTY POST-OPERATIVE GUIDELINES

The following Total Ankle Arthroplasty Guidelines were developed by HSS Rehabilitation. Total ankle arthroplasty is primarily intended to maximize gait efficiency while maintaining functional ankle mobility. It is not realistic to expect symmetry between the two sides if it did not exist pre-operatively. Post-operative ankle strength will allow for functional gait and stair climbing although will likely remain somewhat limited. Return to impact activities/sports is not recommended as these activities may shorten the survivability of the implant. Although residual pain from soft tissue degeneration or adjacent joint disease may persist, pain at the talocrural joint will be reduced.

Progression is both criteria-based and patient specific. Phases and time frames are designed to give the clinician a general sense of progression. The rehabilitation program following total ankle arthroplasty emphasizes restoration of motion and gait. The program should balance the aspects of tissue healing and appropriate interventions to maximize function.

Follow surgeon’s modifications as prescribed.
TOTAL ANKLE ARTHROPLASTY POST-OPERATIVE GUIDELINES
Pre-Operative Phase

PRECAUTION
- Education:
  - Non-weight bearing (NWB) post-operatively in a splint/boot
  - Elevation of the operated lower extremity (LE) 80%-90% of the time (follow surgeon guidelines)

ASSESSMENT
- Foot and Ankle Disability Index (FADI)
- Lower Extremity Functional Scale (LEFS)
- Numeric Pain Rating Scale (NPRS)
- Ankle active and passive range of motion (AROM, PROM) measurements including ankle dorsiflexion (DF) weight-bearing (WB) ROM
- Upper extremity (UE) AROM and strength screenings
- LE edema measurements and flexibility
- Pre-operative function
- Safety with assistive devices (crutches, rolling walker, knee scooter)

TREATMENT RECOMMENDATIONS
- Familiarize with post-operative plan of care and set expectations
- Immediate post-operative support plan for return to work or school
- Safety and falls prevention education
- Home environment modification (e.g. access including bathroom, removal of throw rugs, taping of electrical cords on floors, lighting, grab bars)
- Education regarding modifications of activities of daily living (ADLs) (e.g. food preparation, groceries, shower chair or bench, cast cover for bathing, elevated toilet seat or commode)
- Gait and stair training with weighted boot and assistive devices (crutches, rolling walker, knee scooter)
- Removable external shoe lift for non-operative foot
- Optional rental of wheelchair with elevating leg rests
- Education regarding pain management, edema control, wound care, WB restrictions, and signs and symptoms of infection and deep vein thrombosis
- Proximal LE and core strengthening, UE strengthening as needed (e.g. chair push-ups)
CRITERIA FOR ADVANCEMENT
- Patient able to communicate understanding of post-operative plan of care

EMPHASIZE
- Familiarity with post-operative plan of care and expectations
- Preparation for NWB post-operatively
- Patient safety and falls prevention
TOTAL ANKLE ARTHROPLASTY POST-OPERATIVE GUIDELINES
Acute Care Phase (Days 0-2)

PRECAUTIONS
- Maintain NWB status
- Avoid having operated LE in a prolonged dependent position

CONSIDERATIONS
- Operated LE must be elevated on at least two pillows for 80%-90% of the time (follow surgeon instructions)
- Keep the 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

ASSESSMENT
- Mental status (alert and oriented x 3)
- NPRS
- Activity Measure for Post-Acute Care (AM-PAC)
- Dressing check
- Swelling
- Post-anesthesia UE and LE sensory motor screening
- Functional status- bed mobility, transfers, ambulation, stair mobility if required

TREATMENT RECOMMENDATIONS
- Pain control education
- Transfer training: bed mobility and sit to stand- chair, toilet
- Gait training with appropriate assistive device (AD) 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
CRITERIA FOR ADVANCEMENT

- Understanding of elevation protocol and other precautions
- Good pain control
- Safe ambulation NWB with appropriate AD on level surfaces independently or with assistance of family member/caregiver if consistently present at home
- Safe stair negotiation if required while maintaining NWB status independently or with assistance of family member/caregiver if consistently present at home
- Independent with transfers
- Discharge home within 1-2 days when goals have been achieved and with surgeon clearance
- Note that the acute care phase guidelines are maintained until the patient is cleared by their surgeon to begin outpatient physical therapy

EMPHASIZE

- Control swelling
- Elevation protocol
- Independent transfers
- Gait training NWB
- Safe stair mobility if required
TOTAL ANKLE ARTHROPLASTY POST-OPERATIVE GUIDELINES
Post-Operative Phase 1: Weeks 2-8

PRECAUTIONS
- Progress WB status per surgeon guidelines
- Limit scar mobilization based on healing response

CONSIDERATIONS
- Partial weight bearing (PWB) progression increases approximately 25% of body weight per week
- If calcaneal osteotomy is performed, phase 1 is typically delayed to weeks 6-10
- If diabetic, healing times and WB progression may be delayed
- Be mindful that concomitant surgeries such as ligament repairs, tendon lengthenings/reconstructions or other procedures may affect treatment choices and rates of progression
  - Determine if there is a medial malleolar screw present or any other additional hardware from previous injuries/surgeries
- Walking initially is for functional home mobility and short distances only. Progress distance as WB approaches 75% of body weight.

ASSESSMENT
- FADI
- LEFS
- NPRS
- Wound status
- Swelling
- Screen for deep vein thrombosis
- Sensory screen
- Palpation: focus on hypertonicity of surrounding muscles
- LE AROM/PROM
- Ankle joint mobility
  - Talocrural joint
  - Distal tibiofibular joint
    - Monitor for lateral gutter impingement
  - Subtalar joint
- Foot joint mobility
  - Metatarsophalangeal joints (MTPJ’s)
  - Midfoot joints
- Flexibility: focus on ankles and hips
• Soft tissue extensibility
  o Flexor hallucis longus (FHL) and flexor digitorum longus (FDL) tendons
  o Long toe extensors
  o Soleus
• Strength – manual muscle testing (MMT) focusing on ankles and hips
• Gait and stair training PWB with crutches

TREATMENT RECOMMENDATIONS
• Scar mobilization, silicone strips, moisturizing when wound is healed
• Joint mobilizations with focus on talocrural and tibiofibular joints when wound is closed
• Progressive gait and stair training
• Ankle and toe A/PROM
  o Focus on seated and closed chain motion
• Progress to standing flexibility exercises respecting WB status
  o Runner’s gastrocnemius stretch with rear LE within WB restrictions when 25% WB
  o Progress to toe articulation (push off motion with rear foot)
  o Progress to soleus stretch when 50% WB
  o Long toe flexor stretch against wall when 50% WB
  o Bilateral mini-squats when 50% WB
  o Weightbearing DF stretch on step when 75% WB
• Progress hip flexibility with emphasis on extension
• Initiate balance/proprrioception exercise training respecting WB status
  o Multidirectional wobble board
  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, standing unsupported
  o Intrinsics
    ▪ Arch doming progressing from seated to standing
    ▪ Marble pick ups
• Bike when 25% WB without CAM
• Aquatic exercise if accessible when incision healed and cleared by MD
• Desensitization
  o Progressive touch/stroking of the foot
  o Ball massage on sole of foot
• When incisions are fully healed, consider:
  o Contrast baths
  o Compression garments
CRITERIA FOR ADVANCEMENT
- Stable/controlled swelling
- Wound closure
- Bilateral standing heel raises
- Full weight bearing (FWB) in a sneaker with or without an assistive device for short distances

EMPHASIZE
- 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

MODIFICATIONS TO PHASE 1
*Calcaneal Osteotomy*
- Restore sagittal plane motion
- Avoid mobilizing subtalar joint
- Treatment recommendations to consider: 1st ray plantarflexion control before heel raise
TOTAL ANKLE ARTHROPLASTY POST-OPERATIVE GUIDELINES
Post-Operative Phase 2: Weeks 9-12

PRECAUTIONS
- Avoid weaning off assistive device and CAM boot when excessive pain or compensatory movements persist

CONSIDERATIONS
- Monitor for plantar fasciitis and metatarsal head pain
- Monitor bone reactions
  - OA in other regions of the foot
  - Heel pain or stress reactions with too much activity

ASSESSMENT
- FADI
- LEFS
- NPRS
- Wound/scar status
- Swelling
- Open and closed chain ankle AROM/PROM
- Ankle, mid-foot and MTPJ mobility
- Functional strength of LE
- Movement strategies for squats and stairs
- Single leg stance (SLS) with assessment of foot tripod (calcaneus, 1st and 5th metatarsal heads)
- Gait quality FWB without assistive device

TREATMENT RECOMMENDATIONS
- Patient education on appropriate footwear
  - Consider supportive sneakers, foam padding, taping, rocker bottom shoe if difficulty with rollover/push off phase of gait
- Optimize gait in sneaker
  - Encourage step through pattern
  - Assess push off phase for deviations
- Swelling management
  - Compression garments
  - Patient education on edema management
- Forward step up progression and stair ascension
• **AROM/PROM and mobilization**
  - Progress closed chain ROM: half-kneel, step stretching, flat footed squat with knees over toes and UE support
  - Progress great toe ROM
  - Mobilization of 1st MTP, talocrural and subtalar joints
  - Lunging with elastic band or strap for talocrural self-mobilization
• **Progress unilateral static and dynamic standing balance/proprioceptive exercises**
  - Unstable surfaces e.g. foam, rocker board
  - Single leg activities with attention to equal weight bearing on 3 points of foot tripod
• **Strengthening**
  - Progress from bilateral to unilateral standing exercises, e.g. heel raises
  - Progress to dynamic, closed chain proximal LE strengthening and discontinue table exercises
• **Progress cardiovascular conditioning**
  - Elliptical (forward and backward)
  - Encourage gym program
• **Continue aquatic exercises or antigravity treadmill (if available) if pain or gait deviations are persistent**
• **Scar mobilization, silicone strips, moisturizing when wound is healed**

**CRITERIA FOR ADVANCEMENT**
• Ankle AROM dorsiflexion ≥ 0°; plantarflexion, inversion and eversion 50% of contralateral side
• Household ambulation FWB in supportive shoe
• Community ambulation FWB in supportive shoe with or without cane
• Ascend 6-inch steps reciprocally

**EMPHASIZE**
• Wean from assistive devices and use of a supportive shoe
• Functional mobility of the ankle and 1st MTPJ dorsiflexion in weight-bearing
• Retraining habitual faulty gait and movement patterns
TOTAL ANKLE ARTHROPLASTY POST-OPERATIVE GUIDELINES
Post-Operative Phase 3: Weeks 13-18

PRECAUTIONS
- Avoid impact activities, e.g., running, jumping

ASSESSMENT
- FADI
- LEFS
- NPRS
- Scar status
- Swelling
- Open and closed chain ankle AROM/PROM
- Ankle, mid-foot and MTP joint mobility
- Functional strength of LE
- Movement strategies for squats and stairs
- Single leg stance SLS with assessment of foot tripod (calcaneus, 1st and 5th metatarsal heads)
- Single leg squat as indicated
- Star Excursion Test
- Gait quality FWB without assistive device

TREATMENT RECOMMENDATIONS
- Patient education on alternative footwear options
- Gait training
  - Maximize symmetry and efficiency e.g. stride length, cadence, push off, trunk rotation
- Forward step down progression and stair descension
- A/PROM and mobilization focusing on persistent deficits
  - Weight-bearing ankle ROM stretching:
    - Sitting on dorsum of feet for PF ROM- start in child’s pose, progress to tall sitting
    - Sitting on heels with ankle and toe DF
  - Progress lower extremity flexibility with emphasis on hip extension
- Progress to single leg closed chain activities, e.g. single leg squat, loaded forward lunge
- Progress dynamic balance/proprioceptive exercises and activities
  - Exercises such as cariocas, tandem walking, heel walking, toe walking, single leg balance with multidirectional challenges
  - Dynamic activities on unstable surfaces
● Continue to progress functional strengthening
  ○ Encourage healthy compensatory patterns in adjacent joints

● Progress cardiovascular conditioning
  ○ Add retro treadmill
  ○ Establish walking program

● Consider starting pre-impact training (e.g. aquatic/anti-gravity treadmill)
  ○ Eccentric strengthening and control
  ○ Functional lower extremity chain strengthening
  ○ Hiking, yoga, Pilates, light aerobic classes

CRITERIA FOR DISCHARGE
● Weight bearing ankle DF 75% of uninvolved side
● Ability to perform ≥ 5 consecutive unilateral heel raises
● SLS ≥ 75% of uninvolved side with minimal foot, hip or core strategies
● Community ambulation FWB without assistive device with minimal to no compensations
● Descend 6-inch steps reciprocally
● Independent management of residual symptoms
● Independent home exercise program

EMPHASIZE
● Symmetry and efficiency in gait cycle without assistive device
● Dynamic stability
● Maximizing ankle dorsiflexion and plantarflexion ROM
TOTAL ANKLE ARTHROPLASTY POST-OPERATIVE GUIDELINES

References


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