SOUTH BEND ORTHOPAEDICS

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ANKLE FRACTURE PROTOCOL: OPERATIVE TREATMENT

Ankle fractures are common injuries both in young and older patient populations caused by both low energy (trip or fall) and high energy (automobile accident) trauma. Although there are multiple ways of describing ankle fractures and no two fractures are exactly alike, the most important aspect of how we treat your ankle fracture depends on whether the ankle fracture is stable or unstable. The "stability" of the ankle is often determined by whether or not there is an injury to the ankle syndesmosis (the joint between the tibia and fibula). Your treatment plan will be dictated partly by whether or not this is injury which is evaluated intraoperatively at the time of surgery.

There are two basic types of ankle fractures:

1) **High Energy Axial Injuries**: Pilon
2) **Rotational Injuries**:
   - Malleolar – either medial or lateral
   - Bimalleolar – both medial and lateral
   - Trimalleolar – includes posterior malleolus

The goal of treatment is to maximize the long term function of the ankle by restoring and maintaining alignment. If surgery is not required then patients may be treated with closed reduction and immobilization in the form of a splint, cast, pneumatic walker, or air splint. If surgery required then patients may be treated with open reduction and internal fixation. The amount of weightbearing allowed is based on the quality of the fixation, quality of the bone and the healing status of the fracture. If the fixation is secure and stable, the expectation is for the patient to begin early AROM once the wounds are healed ~ two weeks status post. Edema control and scar massage are also implemented at this time. Weightbearing is usually allowed at 4-6 weeks status post and PROM at 6 weeks. Once the fracture is healed, progressive ROM and open and closed kinetic chain exercises are initiated.

General Rehabilitation Guideline: Operative Treatment

Plates and/or screws are inserted to hold the ankle fracture in place while the bone heals. At times, ligament repair may also be indicated. This may be performed with thick suture material or a "tightrope" construct between the tibia and fibula. REMEMBER: It may take up to a year to make a full recovery, and it is not unusual to have intermittent pains and aches during that time.

This protocol provides you with general guidelines for initial stages and progression of rehabilitation according to specified time frames. Specific changes may be indicated on a case by case basis at the discretion of your surgeon

Preoperative Physical Therapy

Pre surgical Gait Training, Balance Training, Crutch Training and Knee Scooter Training

Phase I – Initial Stability (0 to 6 weeks)

GENERAL TREATMENT:

- Increase dorsiflexion to restore gait
- Monitor PAIN and SWELLING: If either increase, modify rehab protocol. PRICE (protection, rest, ice, compression, elevation). Ankle pumps. E-stim PRN.
- General lower extremity strengthening (SLR, quad sets, etc)
- AROM may begin around 2 weeks post op if fixation secure/stable
- Edema control
- Scar massage (once sutures removed)
- Nonweightbearing (NWB) until allowed by physician.

WEEK 1: Strict elevation of the leg above the heart

- 23 hours/day!
- Ice behind knee (vascutherm or ice bag) to minimize swelling and control pain
- Wiggle toes, bend hip and knee to avoid muscle atrophy

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- Acetaminophen (e.g. Tylenol) 500mg every 6 hours alternating with ibuprofen 600mg every 6 hours or meloxicam 15mg once daily. Narcotic pain medication (hydrocodone or oxycodone) should be reserved for breakthrough pain as second line medication. Do not take over 4,000mg of acetaminophen per day.

1ST POST OP (5-7 DAYS): Depending on surgical incision at time of surgery, you may return to the clinic in the first 7-10 days following surgery. Dressing changed, cast, splint, or boot applied to control swelling.

- Continue ice, elevation

WEEK 2-3: Sutures out, transition to boot if stable fracture pattern

- Come out of the boot and begin to move your ankle up and down for 5-10 minutes, 5 times per day to maintain range of motion
- Compression stocking to be worn to control swelling along with ice/elevation
- Sleep in boot
- Physical therapists to communicate with physicians as to severity of the fracture, quality of fixation and bone quality.

Phase II – Early Range of Motion/Gait Training (4 to 8 weeks)

WEEKS 4-6:

- ***Weightbearing as determined by physician.*** Depends on fracture pattern and healing, may be longer; your surgeon will xray your ankle and tell you when it is safe to begin putting weight on your foot
    - ***Nonweightbearing***
        - ***2 Weeks***: stable ankle fracture patterns with good bone quality
        - ***6 Weeks:*** Grossly unstable fracture, syndesmotic injury, elderly/osteoporotic bone
        - ***8-12 Weeks***: Diabetes, peripheral neuropathy
- progressive weight bearing in boot, using crutches/walker, starting with 25% weight and increasing by 25% every 1-2 weeks until fully WB in boot
- use a scale if available to estimate weight bearing. Put most of your weight on the crutches and opposite leg, then load the scale with the operative leg until it reads 25% of your weight. This is a rough guide that should be used for the first week, then increase to 50%, etc
- when you hit 75%, begin to use one crutch in the OPPOSITE arm
- Continue with edema control strategies as necessary.
- AROM to tolerance for ankle, subtalar, midtarsal joint.
    - Ankle pumps, inversion/eversion, toe crutches, ankle alphabet/ankle circles
    - Towel stretch for dorsiflexion
- Initiate AAROM/stretching program
- Seated towel crunch for intrinsics
- Soft tissue mobilization
- Midfoot joint mobilizations
- Stationary bike
- E-stim with elevation for edema

WEEKS 6-8 (FRACTURE HEALED):

- Wean out of boot – fit with air cast or ASO in normal shoe. When transitioning to regular shoe, ambulate first around the house and then progress to outside.
- Increase weightbearing to full
- Advance daily stretching
- Ankle isometrics progressing to open chain isotonics
- Closed chain exercise (weight machines, weight shifts, seated BAPS)
- Proprioception exercise (SLB, diagonal doming and foot intrinsic strengthening)
- Joint mobilizations to increase talocrural and subtalar ROM

Phase III – Return to Function (8 to 12 weeks)

WEEKS 8-10:

- Gait training level surfaces with proper tibia advancement, quads activation, and symmetricl weight-bearing
- One leg treadmill with focus on heel toe gait.
- PROM into restricted ranges
- Thera-band DF/PF/inv/ev in open chain
- Seated heel raise and BAPS
- Strengthening (leg extension, leg curl, leg press)
- Wall stretch with knee flexed and extended
- Progress closed chain exercises (Sportcord, lunges, heel raises etc, standing BAPS, exercise bike, swimming)

- Dynamic balance progression (mini tramp, SLB on uneven surfaces, Star excursion, steamboats, lunges)
- Advanced proprioception exercises
- Continue to advance weight machine exercises, stretching, ROM and joint mobilizations
- Treadmill walking program
- CKC Thera-Band exercises (stand on involved leg and perform hip flex/ext/abd/add with uninvolved LE)
- BAPS knees bent (eyes closed, one leg)
- Storking (eyes open, eyes closed, floor, mat)
- Standing balance progress floor and mat (eyes open, closed, level, incline, decline, with knees flex/ext)
- Continue phase 2 extensions
- StairMaster
- Agility Exercises (Karaoke, lateral shuffles, tandem walking)
- Continue gait training
- Continue modalities PRN
- Sports and job-specific training

WEEKS 12-16:

- May return to jogging program, running, and higher impact activities
- Fit for orthotics if needed
- Progress previous strengthening, stretching and proprioception exercises
- Sport and agility drills/tests

PHYSICAL THERAPY: start between 2-6 weeks post op, focus on motion and swelling at first, then gait training and strengthening. At 12 weeks begin gentle running / higher impact activities.

DRIVING: Prior to driving, you must be able weightbear on your right foot without crutches. In addition, you may begin driving at 9 weeks if surgery on right ankle; if left ankle, may drive automatic transmission car when off narcotic pain medication

FULL ACTIVITY: once you can come up and down on your toes (single heel rise) on the surgical side, or you can hop on the surgical foot (single leg hop), you may return to sports and all activities. This may take 6 months to a year. There is no guarantee on outcome. All conservative management options have risk of worsening pain, progressive irreversible deformity, and failing to provide substantial pain relief. All surgical management options have risk of infection, skin or bone healing issues, and/or worsening pain. Our promise is that we will not stop working with you until we maximize your return to function, gainful work, and minimize pain.

SHOWERING: You may shower with soap and water 1 day after surgery. Avoid lotions, creams, or antibiotic ointments on surgical site until directed by your orthopaedic surgeon. No baths or submerging operative site under water until incision has completely healed.

SKIN CARE: Steristrips are typically placed on your incision at your follow up appointment. Steristrips will typically fall off on their own. Remove steristrips in shower after 3 weeks if they remain on incision. Incisions may become sensitive. Some surgical incisions based on their location and patient factors are more likely to require postoperative scar desensitization with physical therapy. You may use Mederma or other skin protectant lotion once incisions have completely healed and approved by your orthopaedic surgeon. Do not placed cortisone or other steroid on your incision unless directed by your orthopaedic surgeon. Incisions and surgical site scars are more prone to burn by ultraviolet radiation when out in the sun. Always apply sun screen onto the healed incision once fully healed.

STOOL SOFTENERS: While on narcotic pain medication (e.g. Norco/hydrocodone or Percocet/oxycodone) especially within first 72 hours of surgery, you should take stool softener (e.g. Miralax, docusate, senna). Discontinue if you develop loose stool or diarrhea.

References:

1. Lin CW, D. N. (2012, Nov 14). Rehabilitations for ankle fractures in adults. Cochrane Database of Systematic Reviews, CD005595
2. Simons SM, Z. J. (2007). Ankle Injuries. In S. Elsevier, Clinical Sports Medicine: Medical Management and Rehabilitation (pp. 457-472). China: Elsevier Inc.