Nonoperative Treatment of Adult Tibial Shaft Fracture-- Dr. Trueblood

Indications: Many fractures of the tibial shaft may be treated without surgery. This requires a stable fracture pattern with <5 degrees of varus/valgus or <10 degrees of pro/recurvatum. No more than 1cm of shortening is acceptable, but the degree of initial shortening after injury corresponds closely to maximum shortening deformity. A relative contraindication to nonoperative treatment of tibial shaft fractures is found when the fibula is not broken. With an intact fibula, the patient is more likely to develop a varus deformity or even simply not heal their fracture. A highly (>50% cortical circumference) comminuted shaft fracture should also be considered for surgical management as should a long, oblique fracture pattern. Absolute contraindications to nonoperative management include open fractures, a dysvascular limb, compartment syndrome, or failure to maintain appropriate reduction with appropriate immobilization/bracing.

Initial Visit:
- X-ray of injured extremity. If patient has already had x-rays, please obtain new films if it has been more than 24 hours since last x-ray or if patient has had additional falls, worsening pain, or other issues since the patient was last evaluated.
- Skin check and clinical exam. Confirm absence of significant soft-tissue compromise. A missed open fracture requires an immediate phone call to Dr. Trueblood or his covering orthopaedic partner.
- Pain Assessment: Refill pain meds as needed.
  - If pain is out of proportion to examination, particularly in the context of a recent (<24 hour) injury the assess for the possibility of compartment syndrome.
  - Pain with passive motion of the toes? Call Dr. Trueblood or his covering orthopaedic partner immediately.
  - Check pulses. If no palpable pulse, use doppler to identify at least one arterial signal (dp or pt).
- Immobilization:
  - Long leg posterior mold splint with ankle in neutral position.
- Weight bearing: non weight bearing.
- Work note: No driving. No standing. No weight bearing to the injured leg.
- Expected return to work:
  - Cognitive/ Sedentary: 2 weeks.
  - Light Manual: 8 weeks
  - Heavy Manual: 12-16 weeks
- Schedule follow-up visit in 10-14 days
1st follow-up visit--
- X-ray: tib/fib x-ray in splint.
- Palpate fracture site. If still tender, continue with splint. If nontender, transition into a Sarmiento-type fracture brace.
  - In Sarmiento brace, may bear weight as tolerated with crutch or walker assistance.
- Pain Assessment, refill prescriptions as needed.
- Work note: No driving. No standing. No weight bearing to the injured leg.
- Expected return to work:
  - Cognitive/ Sedentary: 2 weeks.
  - Light Manual: 8 weeks
  - Heavy Manual: 12-16 weeks
- Schedule follow up in 10-14 days.

2nd follow up visit--
- X-ray: tib/fib x-ray in splint.
- Palpate fracture site. If still tender, transition into a non-weight bearing patellar bearing cast.
- If nontender, transition into a Sarmiento-type fracture brace.
  - In Sarmiento brace, may bear weight as tolerated with crutch or walker assistance.
- Pain Assessment, refill prescriptions as needed.
- Work note: No driving. No standing. No weight bearing to the injured leg.
- Expected return to work:
  - Cognitive/ Sedentary: 2 weeks.
  - Light Manual: 8 weeks
  - Heavy Manual: 12-16 weeks
- Schedule follow up at 8 weeks after injury.

3rd follow-up visit--
- X-ray: tib/fib x-ray in cast or brace.
- Advancement, assess for tenderness at fracture site and 3+ bridged cortices on XR.
  - Nontender and 3+ bridged cortices:
    - D/C cast. May begin weaning from Sarmiento brace.
    - Start PT to wean from assistive devices, wean from brace
      - AROM/ PROM of ankle and hindfoot
      - Achilles stretch with 1 cm bump under 1st MTP to lock midfoot and focus stretch on gastrocnemius complex.
      - Ankle dorsiflexion, plantarflexion, inversion, eversion
strengthening
☐ Balance and proprioception exercises
☐ modalities prn
☐ HEP-- wean to HEP and sport-specific conditioning as tolerated.
☐ Wean to shoes as tolerated.

☐ If tender in cast and/or <3 bridging cortices on XR:
  ☐ Transition to Sarmiento and allow WBAT.
  ☐ Continue Sarmiento brace in patients already using this orthosis.

☐ Work note: No driving. No standing. No weight bearing to the injured leg.

☐ Expected return to work:
  ☐ Cognitive/ Sedentary: 2 weeks.
  ☐ Light Manual: 8 weeks
  ☐ Heavy Manual: 12-16 weeks

☐ Schedule follow up at 12 weeks after injury.

3 month followup visit--
☐ X-ray: tib/fib x-ray out of brace.
☐ Advancement, assess for tenderness at fracture site and 3+ bridged cortices on XR.
  ☐ Out of brace. Weight bearing as tolerated. Fracture united on XR?
    ☐ Continue PT until independent with HEP.
    ☐ If independent already, then return to work without limits and follow-up prn.
    ☐ If not independent: follow-up in 6 weeks.

☐ Still in brace. Nontender and 3+ bridged cortices:
  ☐ D/C cast. May begin weaning from Sarmiento brace.
  ☐ Start PT to wean from assistive devices, wean from brace
    ☐ AROM/ PROM of ankle and hindfoot
    ☐ Achilles stretch with 1 cm bump under 1st MTP to lock midfoot and focus stretch on gastrocnemius complex.
    ☐ Ankle dorsiflexion, plantarflexion, inversion, eversion strengthening
    ☐ Balance and proprioception exercises
    ☐ modalities prn
    ☐ HEP-- wean to HEP and sport-specific conditioning as tolerated.
    ☐ Wean to shoes as tolerated.

☐ If tender in brace and/or <3 bridging cortices on XR:
  ☐ Continue Sarmiento brace and WBAT
  ☐ Order external bone stimulator (EBS)
  ☐ Follow-up with Dr. Trueblood 4 weeks after starting EBS.
Patients with unusually high demand jobs may benefit from a course of work conditioning to obtain optimal results. Please arrange for this as soon as appropriate once patients are independent with their home exercise programs.

- Work note: No driving. No standing. No weight bearing to the injured leg.
- Expected return to work:
  - Cognitive/ Sedentary: 2 weeks.
  - Light Manual: 8 weeks
  - Heavy Manual: 12-16 weeks
- Schedule follow up at 12 weeks after injury.