

ORTHOARIZONA

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Posterior Tibial Tendon Transfer Protocol

Surgical Overview:

A curvilinear incision is made in the usual fashion around the medial malleolus. Dissection is brought down to the posterior tibialis tendon. The posterior tibialis is the main dynamic stabilizer of the hindfoot. It functions to stabilize the foot during weight bearing. The most common site of rupture is 1 - 1.5 cm. proximal to navicular insertion. The posterior tibialis tendon is resected and taken off the navicular. The flexor digitorum longus tendon is then "fished" out of its sheath, dissected down to the knot of Henry, resected and then brought up into the posterior tibialis tendon sheath. The flexor digitorum longus tendon follows the path of the posterior tibialis tendon and has a strong inversion moment arm and good vascularity. The transection is prior to the flexor digitorum longus bifurcating to the individual metatarsals; thus it only minimally disrupts flexion of the phalanges. A vertical drill hole is then made through the navicular from the plantar to the dorsal region, the FDL is then placed into the hole and brought back around and sewn to itself. Prior to this the spring ligament between the sustentacular tali and the navicular is repaired. This will bring the foot into inversion, and then the posterior tibialis tendon is pulled down, and tenodesed to the FDL proximal to the medial malleolus. The flexor retinaculum and the lacunate ligament are repaired primarily. The wound is then closed in the usual fashion and the foot is placed in equinus and inversion to decrease tension on the repair.

The protocol guidelines below were designed specifically for PTT reconstructions. If concomitant osteotomy procedures are performed the protocol must be modified per physician discretion. Communication with the physician is essential. Calcaneal osteotomies are stable osteotomies and can be progressed at 6 weeks, other midfoot or forefoot osteotomies (Lapidus, Proximal/Distal Chevron, Akin or Moberg) may require up to 8-12 weeks prior to osteotomies being stable and progression through full foot/ankle rehabilitation. Having a working knowledge of various foot procedures, fixations and healing restraints will help to direct your rehabilitation efforts.

First Postoperative Visit

Nursing: (14-17 days)

1. The patient's wound is evaluated and sutures removed.
2. The patient is either placed in a cast or a boot depending on the Physician's postoperative plan in his operative note, maintaining proper position of the foot (equinus and inversion).
3. Follow-up physician visit 4 weeks s/p reconstruction.

Second Postoperative Visit

Nursing: (4 weeks)

1. Cast/Boot removed and wound re-evaluated.

2. X-ray only required if Calcaneal Osteotomy or other bony procedure performed.
3. Instruction of A/AROM.
4. Referral to Physical Therapy.
5. Follow-up physician visit is at 12 weeks s/p reconstruction if referred to **Miller Orthopaedic Clinic Physical Therapy**. If referred to an outside physical therapy center follow up visit is at 8 weeks and 12 weeks. The Physical Therapist is to monitor the patient for any complications and refer back to physician earlier if required.

Physical Therapy: (4 weeks)

1. Discuss tissue quality and strength of the repair with the physician. Discuss combination procedures and modifications to the protocol. Specifically Gastroc Slide and Calcaneal Osteotomy procedures.
2. "General" tissue healing times:
 - * Immobilization to protect the repair, 4 weeks s/p
 - * A/AROM: 4 weeks s/p, based on pain, swelling, and tissue quality of repair.
 - * AROM: 4-6 weeks s/p, based on pain, swelling, and tissue quality of repair.
 - * Resistive ROM: 6-8 weeks s/p, based on pain, swelling, and tissue quality of repair.
 - * Progress as tolerated: 8-10 weeks s/p, based on pain, swelling, and tissue quality of repair.

Four - Six Weeks Post-Op:

Goals:

- * Pain control
 - * Decrease effusion
 - * Prevent scar adhesions
1. Patient initially to be non-weight bearing, active sub-max firing of FDL to supinate the foot and stabilize the arch.
 2. Progress to WBAT in the boot by 6 weeks.
 3. Begin range of motion of the ankle and subtalar joint with gentle passive range of motion and active dorsiflexion to stretch posterior muscle groups.
 4. Instruct in icing and home program.

Six-Eight Weeks Post-Op:

Goals:

- * Continue above goals.
 - * Weight-bearing with air cast.
 - * Maintaining fair longitudinal arch with early weight-bearing.
1. Begin gentle resistive exercises and closed chain techniques for the ankle and subtalar joints.
 2. Wean from walking boot and progress to aircast in shoe by 8 weeks.
 3. Gait training, emphasizing flexing/stabilizing toes at mid-stance and maintaining arch.
 4. 2 - 4 in. step downs maintaining longitudinal arch and firing of tendon.
 5. Toe extension stretches, gastroc/soleus stretches.

6. Sitting BAPS with partial weight bearing.
7. Exercises to increase toe flexor strength both open and closed chain.
8. Static balance progression and proprioceptive training while maintaining appropriate foot position.

Eight - Ten Weeks Post-Op:

Goals:

- * Continue above goals as required.
 - * Normalize A/PROM, caution not to over stretch graft.
 - * Capable of maintaining longitudinal arch and neutral subtalar position during weight-bearing.
1. Begin ankle/foot PREs as tolerated.
 2. Standing BAPS.
 3. Rocker board.
 4. Toe Raises: bilateral and progress to unilateral by 12 weeks (per patient expectations).
 5. Gait training on treadmill: with and without shoes.
 6. Evaluate for orthotics and proper shoe wear.
 7. Dynamic balance progression and proprioceptive training while maintaining appropriate foot position.
 8. Reassess entire LE Biomechanics identifying areas that would increase long-term stress to the reconstruction.

Ten-Twelve weeks Post-Op:

Goals: Discharge Criteria

- * Painfree ADL's
 - * A/PROM within functional limits.
 - * Ability to ambulate barefoot with no significant disability.
 - * Toe raises with hindfoot inverting to stabilize midfoot. Ultimate goal single leg toe raises maintaining an inverted calcaneus. (Negative "single leg toe raise" and Negative "too many toe sign").
1. Continue above exercises as appropriate.
 2. 4 - 6 inch step ups/step downs maintaining longitudinal arch and firing of tendon.
 3. Isokinetics per patient expectations.
 4. Occupation and/or sport specific drills.