
TURF TOE OPERATIVE AND NONOPERATIVE PROTOCOL

Turf toe is a sprain of the first metatarsophalangeal joint (MTP). The mechanism of injury is typically a forceful hyperextension of this joint. There is a 50% risk of injury at 78 degrees of hallux dorsiflexion. While this injury can happen during any sport or activity, it is particularly common in NFL players. It has been estimated that up to 45% of professional NFL players will experience at least one MTP sprain during their careers. This is because the artificial turf surfaces that many teams use are harder and do not have as much give as a grass field does.

Anatomy

There are several structures that are important for stabilizing the first MTP joint.

Sesamoid/Plantar complex:

- Plantar plate
- Collateral ligaments
- Flexor hallucis brevis
- Abductor and adductor hallucis tendons

The plantar plate is a thick and fibrous tissue that primary prevents excessive dorsiflexion. The collateral ligaments restrict excessive medial or lateral motion. Sesamoids lie within the flexor hallucis brevis tendon and provide additional stability to the MTP by acting as weight bearing structures.

Exam and Grading

- Grade 1: Sprain of the plantar complex. Patient will have mild effusion and pin-point tenderness to the area.
- Grade 2: Partial tear of the plantar complex. On exam, there will be pain and difficulty moving the first toe. The patient will be tender, with moderate effusion, and possible ecchymosis.
- Grade 3: Complete tear of the plantar complex. On exam, there will be pain and difficulty moving the first toe. Patient will be severely tender and have significant effusion and ecchymosis.

Diagnostic Imaging:

Plain films will show a fracture to the sesamoids, and rule out concomitant injury. Fluoroscopy can be used to show the excursion of the sesamoid bones during passive dorsiflexion. This is helpful to determine the grade of injury, and how unstable the plantar plate may be. A MRI would be helpful in diagnosing grade 2 or 3 injury.

- “Lachman” exam: when positive: indicative of vertical instability and lack of plantar restraints.

Nonoperative Treatment

Grade 1:

- Recommended for patient to rest and protect the injured area
- Anti-inflammatories to relieve pain and effusion
- Consider footwear modification or orthotics in the patient’s athletic shoe. A rigid forefoot component in the orthotic will provide extra stability through the first MTP.

Grade 2: Similar as above, however the pt may be placed in a walking boot for 1-2 weeks to further protect the injury. Most patients can return to play at 2 weeks post-injury.

Grade 3: Pt will be immobilized for 3-4 weeks in slight MTP plantar flexion.

One of the most common complications for this type of injury is joint stiffness and decreased push off strength. PT at any stage of injury should focus on achieving normal, pain-free ROM, proprioceptive exercises, and increasing push off strength.

Operative Treatment

Surgery is indicated for the following: severe tear of the plantar complex, continued pain, proximal migration of the sesamoids, fracture of a sesamoid, instability of the first MTP, new or worsening bunion, and loose body evident within the joint.

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Primary goal of surgery should be to restore normal anatomy. Push off strength is decreased by 10% when the medial sesamoid is resected, 16% when the lateral sesamoid is resected, and by 30% when both are resected.

Phase I - Postoperative Acute Phase

WEEKS 0-2:

- Immobilize x 7-10 days, with passive plantar flexion of the 1st MTP

WEEKS 2-4:

- 4 weeks NWB, then transition to walking boot, (or as determined by physician)
- Manual therapy: Passive plantar flexion of the 1st MTP
- Therapeutic Exercise: Gait training, lower extremity stretching and strengthening
- Modalities: Ice

Phase II - Intermediate Phase (Weeks 8 to 12)

WEEK 8-12: Initiate active ROM (8 weeks)

- Accommodative shoe with insert at 8 weeks
- Manual therapy: passive stretching for the 1st MTP, grade 2-3 joint mobilizations, soft tissue mobilization to incision or to address any other soft tissue tautness present in the foot
- Therapeutic Exercise: cardiovascular training, (bike, treadmill, elliptical, pool walking), ankle PREs, proprioceptive training, continue and progress LE strengthening
- Modalities: Ice

Phase III - Advanced Phase (Week 12+)

- Return to sport at 4 months
- Manual therapy: to address any remaining deficits
- Therapeutic Exercise: sports specific training and drills, return to running program
- Modalities as necessary

PHYSICAL THERAPY: start between 4-6 weeks post op, focus on motion and swelling at first, then gait training and strengthening

- focus on hip/knee/core for first 6-10 weeks
- patient specific desires on gait training with/without therapist
- DO NOT attempt to gain motion in the planes that were fused: for subtalar/triple arthrodesis, focus only on dorsiflexion/plantarflexion (DO NOT ATTEMPT side to side motion)

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: This may take 6 to 18 months. 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 place 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) Frimenko, R., Lievers, W., Riley, P., et al. Development on an Injury Risk Function for First Metatarsophalangeal Joint Sprains. *Medicine & Science in Sports & Exercise*. 2013; (45)11: 2144-2150.

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- 2) Turf Toe. American Academy of Orthopedic Surgeons Web site. <http://orthoinfo.aaos.org/topic.cfm?topic=A00645>. Last reviewed August 2012. Accessed April 1, 2014.
- 3) Turf Toe. OrthoCarolina InfoLink Web site. <http://infolink/PT/Courses/Forms/AllItems.aspx?RootFolder=%2fPT%2fCourses%2fFoot%20and%20Ankle&View=%7bF9E90CFE%2dB42D%2d4160%2d9C28%2dE41116986A9%7d> . Reviewed: July 14, 2010. Accessed: April 1, 2014.

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