Managing Turf Toe Injuries
AOFAS presentation explores surgical indications, techniques
Maureen Leahy

Professional athletes often sustain foot and ankle injuries. Turf toe—hyperextension of the hallux metatarsophalangeal (MP) joint created by an axial load in a fixed forefoot—is especially common in athletes who play field sports, particularly on artificial turf, according to Robert B. Anderson, MD, of OrthoCarolina, Charlotte, N.C., and orthopaedist for the Carolina Panthers football team.

Speaking at the American Orthopaedic Foot & Ankle Society (AOFAS) annual meeting, Dr. Anderson discussed the diagnosis, surgical indications, and surgical methods for treating turf toe.

Diagnosis
Highly variable, turf toe injuries are diagnosed based on clinical and radiographic parameters that assess asymmetries between the injured foot and the uninjured foot, Dr. Anderson explained. “For example, a dorsiflexion lateral radiograph enables you to gauge the distance from the sesamoid to the base of the proximal phalanx,” he said.

Dr. Anderson noted that one turf toe injury pattern that’s becoming increasingly common involves “valgus movement on the great toe that can disrupt the medial collateral ligament and lead to a traumatic bunion or progressive hallux deformity.” He added that hallux MP dislocation is the most severe type of turf toe injury, affecting the joint as well as the soft tissue and plantar aspect of the proximal phalanx. “Magnetic resonance imaging can be very helpful in evaluating these types of injuries,” he said.

Dr. Anderson also finds fluoroscopy very useful in evaluating turf toe injuries. He recommends using fluoroscopy when analyzing a turf toe injury for potential disruption of the plantar plate; he also finds it helpful for assessing vertical instability.

Surgical indications, techniques
Most turf toe injuries can be successfully treated without surgical intervention. Nonsurgical management includes RICE (rest, ice, compression, elevation), nonsteroidal anti-inflammatory medications, taping, bracing, or immobilization in a walking boot. According to Dr. Anderson, however, surgery should be considered for the following indications:

- loss of push-off strength
- gross vertical instability
- progressive clawing
- progressive proximal migration of sesamoids
- progressive diastasis of a bipartite sesamoid

“The goal of surgery is to repair the anatomy so as to restore function of the hallux MP joint,” Dr. Anderson explained. Although it’s a very simple concept, it’s not necessarily a simple
procedure, he said. “These are tedious operations. You are working through a small exposure and you must be careful to avoid certain structures.”

The classic surgical approach for turf toe repair is a medial or J-incision. “In our practice, however, we’ve gone to a two-incision approach—medial and plantar,” said Dr. Anderson. “We find that these two incisions place less traction on the nerve, improve lateral visualization of the flexor hallucis brevis complex, and result in better wound healing, compared to the J-incision.”

Regardless of the approach, it’s critical to avoid injuring the nerves, Dr. Anderson cautioned. “You need to be aware of where the nerves are and protect them, especially the plantar medial digital nerve directly over the tibial sesamoid.”

Once the nerve has been identified, Dr. Anderson proceeds through the transect abductor tendon. “This helps to define the massive defect in the plantar plate. It also enables you to analyze and examine directly the flexor hallucis longus tendon and the sesamoids for secondary injuries,” he said.

Working lateral to medial and avoiding the nerve, Dr. Anderson repairs the injured tissues with a nonabsorbable suture, places the soft tissue back in proper position, and secures the toe in 10 degrees to 15 degrees of plantar flexion. If there are no soft-tissue attachments at the base of the proximal phalanx, he uses suture anchors to secure the repair to the phalanx.

“Be sure, however, that the suture anchors are centered in the base of the proximal phalanx,” Dr. Anderson warned. “If you tend to place them more medially, it will create a supination deformity of the hallux.” He added, “If the sesamoid has soft-tissue avulsion, a drill hole in the sesamoid can be used to reattach the soft-tissue structures.”

Dr. Anderson then advances to the medial capsule to repair the abductor hallucis tendon, makes a final check of the plantar medial digital nerve, and closes the wound. “We always use mini C-arm fluoroscopy to make sure structures are back in their proper position.”

**Postoperative management**

Postoperative management of turf toe injuries is a delicate balance between soft-tissue protection and early range of motion, according to Dr. Anderson. “You don’t want arthrofibrosis to develop in the sesamoid complex,” he said.

Typically, passive plantarflexion begins at 7 to 10 days after surgery. The patient remains nonweightbearing for 4 weeks and then transitions to a walker boot. Active plantar flexion begins at 4 weeks after surgery; dorsiflexion begins at 2–4 weeks later. Transition to an accommodative shoe with a turf toe plate or orthotic is allowed at 8 weeks, running at about 3 months, and return to play at about 4 months.

“Patients will be sore for about a year following surgery. It’s important to inform them of this as well their potential for developing hallux rigidus over time,” Dr. Anderson said.

*Disclosure information: Dr. Anderson—Arthrex, Inc; DJ Orthopaedics; Wright Medical Technology, Inc; Amniox; Foot and Ankle International.*

Maureen Leahy is assistant managing editor of AAOS Now. *She can be reached at leahy@aaos.org*

**Bottom Line**

- Most turf toe injuries, common among athletes who play field sports, can be successfully treated without surgery.
• Surgery is indicated for loss of push-off strength, gross vertical instability, or progressive deformity.
• Surgical approaches include the classic J-incision or two separate plantar and medial incisions.
• Athletes can typically return to play at about 4 months after surgery, although full recovery may take up to 1 year.