

The human foot and ankle is composed of 31 bones, 34 joints, 117 ligaments, and numerous muscles and tendons. Many foot and ankle ailments get in the way of work, limit activity, and prohibit athletic competition. Recent advances in foot and ankle treatment and surgery, however, are helping people recover rapidly and get back to their activity, work, and sport.

Heel pain

Patients' heel pain is commonly encountered by the foot and ankle specialist. Most commonly, plantar fasciitis is the culprit. This is a condition affecting the plantar fascial band—a ligamentous structure connecting the heel to the front of the foot through the arch. Plantar fasciitis often comes from abnormal mechanical influences and induced inflammatory factors, which lead to pain. It is usually experienced upon a person's first step after

Advances in foot and ankle surgery

New treatments help patients recover quickly

By Benjamin Clair, DPM, FACFAS
and Aaron Benson, MS, ATC

sitting or resting. Plantar fascial pain is also common in those who stand for long hours while at work.

New developments include treating diseased fascial tissue, surgery to release the fascia and promote natural tissue healing,

A custom-made treatment plan will get a patient back to a full range of activity.

Treatment mainstays are stretching programs, orthotic (shoe insert) management, and anti-inflammatory treatment in oral and steroid injection forms.

and treatments utilizing growth factors and radio frequency to stimulate healing.

Great toe joint deformity, arthritis

The most common foot deformity is termed “hallux valgus”—commonly known as a bunion (See Figures 1 and 2). This deformity results from imbalance around the great toe joint, which causes a deformity. It is hereditary, but improperly fitting shoes can hasten its progression.

There are many methods of managing this condition, but surgical treatment is the only way to correct it. Recent developments in surgical correction for hallux valgus revolve around a procedure that corrects the deformity definitively, preventing recurrence, as well as implanting hardware technology that allows for earlier weight-bearing post-operatively. Other surgical techniques are available for correction that utilize joint fusion procedures, osteotomies (precise bone cuts), and capsular and tendon transfer procedures for rebalancing.

Great toe joint arthritis is termed “hallux rigidus” (See Figures 3a and 3b). It prematurely wears out the first metatarsal phalangeal joint because of mechanical imbal-

ance factors. Patients present all along the spectrum with this condition.

Procedures to surgically correct this problem range from decompressive osteotomies (precise bone cut procedures) that improve joint motion, to interpositional biologic joint repairs, to definitive joint fusion for relief of arthritic pain. Developments in this area include advanced plating and screw technology, which allow for improved mechanical support and improved recovery time after the procedure. Current research can be utilized to determine the most appropriate interventions, as treatment varies according to the specific degree of osteoarthritis of the great toe joint.

Toe contractures

Digital contractures of the toes, commonly referred to as hammertoes, are the result of imbalance of the flexor and extensor tendons to the toe. These contractures can exist alone or in combination with other fore-foot deformities.

Correction of these digital deformities is possible—recent improvement has been made to the intramedullary bone devices that hold the toe in position as it heals, without the need for wires sticking out the end of the toes during healing. This has resulted in earlier activity and return to regular shoes after surgery.

Foot, ankle arthritic conditions

These can result from old injuries and fractures, or from acquired structural conditions that lead to early wearing out of the joints (osteoarthritis). Treatments range from orthotic management and injections, to surgery.

Implant technology has rapidly evolved, providing surgeons new ways of applying plates and screws to correct deformities, fuse painful arthritic joints, and return people to work and the activities they enjoy. Ankle arthritis usually results from old fractures, and can also develop primarily. Surgical ankle arthroplasty/replacement aims

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Figure 1. Radiographic depiction of hallux valgus



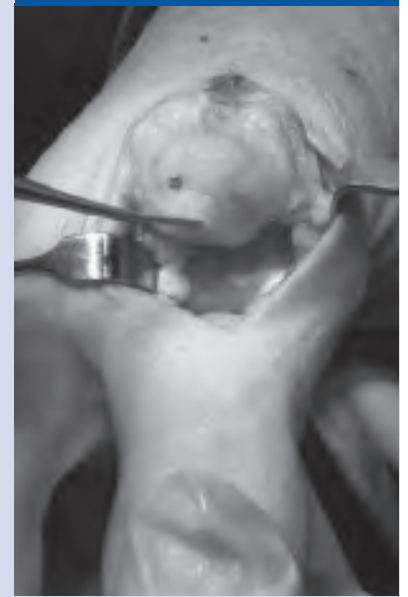
Figure 2. Status post surgical hallux valgus correction



Figure 3a. First metatarsophalangeal joint status post arthrodesis to treat hallux rigidus



Figure 3b. Intraoperative photo illustrating changes in articular cartilage associated with hallux rigidus



to restore natural ankle motion and replacement methods can be excellent alternatives to ankle joint fusion. Under certain conditions, however, an ankle fusion may be the most definitive operative intervention.

Repairing cartilage injury and damage

Cartilage damage and focal cartilage defects (osteochondral defects) are commonly encountered by the foot and ankle specialist, typically around the big toe joint and ankle joint. These result from acute injury or from advancing arthritis problems.

Many new developments have been made in cartilage repair methods. Some involve transplanting healthy, active cartilage cells to a cartilage defect; they grow in, repairing the defect. Biocartilage products have been developed that can be combined with a patient's own growth factors to improve outcomes and promote healing. The arena of cartilage repair and regrowth continues to grow in exciting ways.

Diabetes and amputation prevention

Diabetes causes foot problems through a pathological process of the nerves, called neuropathy. This condition is a consequence of poorly managed glucose control. It can result in lower

extremity numbness, tingling and pain, usually affecting the digits of the foot first. Without feeling, diabetic patients can sustain ulcerations.

Education about and prevention of these problems is the best treatment. Diagnosis through peripheral nerve fiber testing is the most significant advancement in this area. Additionally, tremendous advancement has been made in making certain that blood flow is adequate to the lower leg and foot, to cure wounds and prevent amputation. New intravascular procedures are being performed by vascular surgeons and interventional physicians that improve perfusion. The key to preventing amputation is early identification of nerve and vascular flow abnormalities.

Fractures of the foot and ankle

These fractures—from twists, falls, car accidents, and crush injuries—often are displaced or involve a joint structure, which requires surgical treatment. Recent improvements include anatomic, locked-plating technology, allowing anatomic correction and early return to weight bearing and motion.

Sports injuries

Usually the consequence of overuse or repetitive use activi-

ties, sports injuries include tendonitis, sprains, and muscle and mechanical mediated pain. New topical products and treatments show favorable results. Tendon

treatments have been developed, including ultrasound, radio frequency, and bone marrow aspirate and growth factor injections. Additional tendon

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treatments include advanced tendon repair methods, tendon transfer options, and methods of tendon augmentation.

Ankle instability

This is a relatively common condition that results either after a severe ankle sprain or after multiple, repeated ankle injuries. Ankle ligaments are no longer supportive of the ankle. Symptoms include repeated episodes of the ankle "giving way," a person's apprehension on uneven ground, and looseness around the ankle joint. This condition can sometimes be associated with ankle cartilage disorders, which may also need to be addressed.

Many new ankle instability procedures have been pioneered. They utilize new anchor and ligament repair methods, some of which are performed with minimum invasion, utilizing an arthroscope. These

surgical procedures allow early active range-of-motion and earlier return to weight bearing and activity.

Achilles tendon disorders

Achilles tendon ruptures occur when too much torque is placed upon the Achilles tendon and

it fails. This usually happens during active athletic participation. Under some circumstances, an MRI can finalize the diagnosis. Surgical repair of the ruptured tendon, aimed at early return to motion and activity, has advanced in both the type of suture technique utilized and the type of suture material utilized.

Some of the strongest synthetic surgical material created are utilized to surgically repair

these tendon ruptures. This material, in the proper suture technique, allows for earlier return to activity and weight-bearing than previously possible. New techniques utilize minimally invasive methods that allow a quicker recovery.

The other form of Achil-

les tendon disorder is termed Achilles tendinopathy. It usually occurs after multiple episodes of Achilles tendinitis, often affecting active individuals. Treatments range from focused stretching programs to tendon surgical procedures, including microtenotomy procedures, tendon debridements, growth factor injections, and tendon transfer techniques.

Achilles tendon disorders can be disabling. It is important

to have them evaluated by a foot and ankle specialist.

New treatments for common disorders

Foot and ankle disorders are common. Significant advancements have been made in the diagnosis and management of these conditions. Treatment is aimed at rapid restoration and recovery. Foot and ankle specialty care will include a physical exam and imaging (X-ray, MRI, or CT scans) to determine a diagnosis and to create a custom-tailored treatment plan that gets a patient back to full range of activity and a desired lifestyle. ❏

Benjamin Clair, DPM, FACFAS, is a foot and ankle specialist at St. Croix Orthopaedics, with a focus on trauma, arthroscopy, cartilage repair, tendon repair, and orthopedic surgical conditions of the foot and ankle. **Aaron Benson, MS, ATC**, is an athletic trainer who works with Dr. Clair.

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