

What Is Acquired Adult Flatfoot Deformity?

Acquired adult flatfoot deformity (AAFD) is a progressive flattening of the arch of the foot that occurs as the posterior tibial tendon becomes insufficient. It has many other names such as posterior tibial tendon dysfunction, posterior tibial tendon insufficiency and dorsolateral peritalar subluxation. This problem may progress from early stages with pain along the posterior tibial tendon to advanced deformity and arthritis throughout the hindfoot and ankle.

What Are The Symptoms Of AAFD?

Patients often experience pain and/or deformity at the ankle or hindfoot. When the posterior tibial tendon does not work properly, a number of changes can occur to the foot and ankle. In the earlier stages, symptoms often include pain and tenderness along the posterior tibial tendon behind the inside of the ankle. As the tendon progressively fails, deformity of the foot and ankle may occur. This deformity can include progressive flattening of the arch, shifting of the heel so that it no longer is aligned underneath the rest of the leg, rotation and deformity of the forefoot, tightening of the heel cord, development of arthritis, and deformity of the ankle joint. At certain stages of this disorder, pain may shift from the inside to the outside aspect of the ankle as the heel shifts outward and structures are pinched laterally.

What Causes AAFD?

Posterior tibial tendon dysfunction is the most common cause of acquired adult flatfoot deformity. There is often no specific event that starts the problem, such as a sudden tendon injury. More commonly, the tendon becomes injured from cumulative wear and tear. Posterior tibial tendon dysfunction occurs more commonly in patients who already have a flat foot for other reasons. As the arch flattens, more stress is placed on the posterior

tibial tendon and also on the ligaments on the inside of the foot and ankle. The result is a progressive disorder.

Anatomy

The posterior tibialis muscle originates on the bones of the leg (tibia and fibula). This muscle then passes behind the medial (inside) aspect of the ankle and attaches to the medial midfoot as the posterior tibial tendon. The posterior tibial tendon serves to invert (roll inward) the foot and maintain the arch of the foot. This tendon plays a central role in maintaining the normal alignment of the foot and also in enabling normal gait (walking).

In addition to tendons running across the ankle and foot joints, a number of ligaments span and stabilize these joints. The ligaments at the medial ankle can become stretched and contribute to the progressive flattening of the arch.

Several muscles and tendons around the ankle and foot act to counter-balance the action of the posterior tibial tendon. Under normal circumstances, the result is a balanced ankle and foot with normal motion. When the posterior tibial tendon fails, the other muscles and tendons become relatively overpowering. These muscles then contribute to the progressive deformity seen with this disorder.

How Is AAFD Diagnosed?

The diagnosis of posterior tibial tendon dysfunction and AAFD is usually made from a combination of symptoms, physical exam and x-ray imaging. The location of pain, shape of the foot, flexibility of the hindfoot joints and gait all may help your physician make the diagnosis and also assess how advanced the problem is.

What Are Treatment Options?

Treatment depends very much upon a patient's symptoms, functional goals, degree and specifics of deformity, and the presence of arthritis. Some patients get better without surgery. Rest and immobilization, orthotics, braces and

physical therapy all may be appropriate. With early-stage disease that involves pain along the tendon, immobilization with a boot for a period of time can relieve stress on the tendon and reduce the inflammation and pain. Once these symptoms have resolved, patients are often transitioned into an orthotic that supports the inside aspect of the hindfoot. For patients with more significant deformity, a larger ankle brace may be necessary.

If surgery is necessary, a number of different procedures may be considered. The specifics of the planned surgery depend upon the stage of the disorder and the patient's specific goals.

Procedures may include ligament and muscle lengthening, removal of the inflamed tendon lining, tendon transfers, cutting and realigning bones, placement of implants to realign the foot and joint fusions. In general, early stage disease may be treated with tendon and ligament (soft-tissue) procedures with the addition of osteotomies to realign the foot. Later stage disease with either a rigidly fixed deformity or with arthritis is often treated with fusion procedures.

If you are considering surgery, your doctor will speak with about the specifics of the planned procedure.

Potential Complications

In addition to standard surgical risks such as infection, bleeding and nerve injury, additional risks may accompany particular procedures. For example, procedures that require bone healing (osteotomy, fusion) can result in a failure to properly heal the bones. The overall complication rates for these procedures are low.

How Long Is Recovery?

Anticipated recovery after treatment for AAFD varies considerably depending on the treatment. Non-operative treatments usually involve use of a boot until symptoms subside and then an orthotic or brace. Almost all surgical treatments require a period of immobilization and restricted weightbearing that

can range from several weeks to several months. More involved procedures that include a tendon transfer, osteotomy or fusion may require a longer period of recovery.

Some studies have shown good outcomes with non-surgical treatment of early-stage AAFD. In the appropriate patient using a brace and structured physical therapy, studies have shown success without surgery in a high percentage of patients. Non-surgical treatments for more advanced stages of AAFD may slow the progression of the disorder and limit symptoms.

Modern surgical approaches typically involve a combination of procedures to realign the bone deformity, lengthen contracted muscles, substitute for the deficient posterior tibial tendon or perform joint fusions. Most modern surgical treatments exceed 80 percent success rate.

Frequently Asked Questions

If I am being treated without surgery, will I have to wear the orthotic or brace for the rest of my life?

Traditionally, it has been thought that orthotics and/or braces will need to be used by a patient for the rest of his or her life. This device serves to supplement for the dysfunctional posterior tibial tendon and help realign the foot. Some studies, though, have suggested that adequate bracing and strengthening may allow the posterior tibial tendon to heal and therefore avoid permanent brace use. This may be the case in select situations.