

After tearing my Achilles tendon and put in an air-cast, can I talk

Q: I need some answers quickly. I tore my Achilles tendon playing tennis yesterday. Went to the emergency department and saw a surgeon. That's tomorrow. I absolutely can't function with a cast that won't allow weight-bearing. Will I be able to talk

A: Research continues in the area of treatment for Achilles tendon ruptures. The last 10 years has brought a change from a cast to an ankle-foot orthosis (AFO) instead. An AFO is a brace usually made from plastic or light metal (carbon fiber). It allows you to walk

The Achilles tendon is a strong, fibrous band that connects the calf muscle to the heel. The calf is actually formed by two muscles: the gastrocnemius and the soleus. Together, they form the gastroc-soleus muscle group. When they contract, they pull on the Achilles tendon, which causes you to rise up on your toes. This powerful muscle group helps when you sprint, jump, or climb. Several different problems can affect the Achilles tendon, some quite severe.

In severe cases, the force of a violent strain can rupture the tendon. The classic example is a middle-aged tennis player who overexerts himself and experiences a tearing of the tendon. In some instances, the rupture may be preceded by a period of tendonitis, which is inflammation of the tendon.

Traditionally, this type of injury required a long period of time for healing, recovery, and rehab. Management with early weight-bearing and what's the best AFO design for this problem? We don't know yet but studies are ongoing looking for some answers. Here's what we know:

Using 15 normal, healthy adults, the researchers compared three different AFOs with four different heel-wedge combinations. The heel wedge is used to place the ankle in a position of plantar flexion (toe pointed) in order to take stretch and pressure off the tendon.

The goal is to find the position that protects the healing Achilles while still allowing function in order to avoid atrophy and allow the patient to restore motion and strength faster and therefore allow the patient to return to daily (and sports) activities sooner with less pain.

They found that with smaller wedges, more dorsiflexion (toe pulled up toward face) was allowed and more pressure was placed on the heel. The AFO used in the study (a rigid rocker-bottom design) resulted in less pressure on the heel and more pressure on the forefoot.

In fact, the greatest heel pressures were measured when subjects wore the rigid rocker-bottom AFO. When this AFO was used, there was less restriction than any other AFO/wedge combination.

This makes sense because the amount of load placed on the Achilles tendon, heel, and forefoot depends on motion at the ankle. When the foot moves from the heel to the forefoot, less dorsiflexion means less transfer of force from the heel to the forefoot so there is less pressure on the heel.

How does this all translate to someone who has a ruptured Achilles tendon? Reducing ground-reaction forces and the amount of force transferred from the heel to the forefoot is an important rehab strategy. Weight-bearing is allowed but in a protected mode. The foot and ankle are held in a plantar flexed position. When the ankle is dorsiflexed, the Achilles tendon is lengthened. Healing of the tendon in a lengthened position results in severe weakness and pain.

All the details of type of brace and amount of ankle plantarflexion/dorsiflexion are not fully answered yet. But you should work with your Physical Therapist to find the optimal rehab management program that will protect the healing tendon while accommodating your needs. You don't want to compromise healing of this important tendon as it can have lifelong consequences.

Reference: Rebecca S. Kearney, MSc, et al. In-Shoe Plantar Pressures Within Ankle-Foot Orthoses. In *The American Journal of Sports Medicine*, 2008; 36:2679-2685.