

Achilles Tendonitis

The Achilles tendon is the single strongest tendon in the human body. The primary function from the Achilles muscle is to transmit the power of the calf to the foot resulting in the ability to move us all ahead, allow us to jump, dance; you name it. In the event that it has to do with motion, the Achilles tendon is a part of that activity. Sometimes the particular Achilles tendon loses the ability to keep up with all of us and the tendon will become inflamed resulting in Achilles tendonitis. This article discusses the onset, symptoms and treatment of Achilles tendonitis. Achilles tendon ruptures are also discussed.



Acute Achilles Tendonitis

Acute Achilles tendonitis typically has a abrupt onset with moderate pain 2-3 cm proximal to the tendons' insertion on the back of the heel. Most individuals with severe Achilles tendonitis can describe an injury or single event that initiated the pain. Symptoms of acute Achilles tendonitis occur at the beginning of your activity and can be described as a sharp pain. As the action progresses, this decreases for a period of time. With extreme use, the tendons again becomes painful at the end of activity. For example, the runners with Achilles tendonitis experience pain as they begin their run. This goes away during their run only to recur close to the end of their normal running length.

“ Chronic Achilles tendonitis exhibits the same type of pain as acute Achilles tendonitis but the location of this is usually at the installation of the Achilles tendon into the heel. Chronic Achilles tendonitis can also cause hypertrophy enlargement) of the posterior heel and in limited cases, enlargement of the tendon. This bony enhancement of the back of the heel goes by many names including retrocalcaneal bursitis, pump bump or Haglund's Deformity.

Cases of chronic Achilles tendonitis it is critical to distinguish between pain strictly due to the Achilles tendon or from the enlargement of the heel rubbing against the shoe. The difference between Achilles tendonitis and a pump bump can easily be understood by evaluating the pain while barefoot suggestive of Achilles tendonitis) compared to pain while wearing shoes with an enclosed heel (pump bump). It's not unusual to find both conditions at the same time.

Knowing that the single greatest cause of severe and chronic Achilles tendonitis is equinus (see the biomechanics section below for more information on equinus), we know that we need to weaken the calf muscle in order to allow the Achilles tendon an opportunity to recover. This can be done by elevating the heel with heel lifts or by high heel shoes. Inflammation of the tendon can be calmed by ice, both before and after activities. Anti-inflammatory medications, casting or ultrasound treatment can also be used. Steroid injections are typically not used to deal with Achilles tendonitis since injecting the tendon has a tendency to weaken the tendon resulting in a possible rupture.

Manipulation techniques are helpful to increase the range of motion of the ankle. One new technique involves manipulation of the fibula (smaller outside bone of the ankle and leg) to allow greater excursion of the talus (foot bone with the ankle). This technique must be performed by someone other than the patient and is performed as follows;

The patient is placed in a sitting position with the hip and knee flexed. Standing on the side of the chair opposite to the leg that will be inflated, position the index and middle fingers of both hands over the head of the fibula (That's just below the knee on the outside of the leg). Using a firm and rapid motion, adjust the head from the fibula anteriorly (towards the front of the leg). A slight shift or pop may or may not be observed.

Next, with the patient sitting and the hip and knee extended straight) place traction on the foot with the ankle slightly plantar flexed (toes pointing down and away from the leg).Continue traction for 30-45 seconds. Then dorsiflex the ankle move the foot/toes for the shin). Complete a series of range of motion of the ankle with the patient.

Repeat as Needed.

Cases of persistent Achilles tendonitis, patients who do not respond to heel lifts, manipulation and anti-inflammatory medications require a lengthening procedure of the Achilles tendon with or without a partial resection of the posterior heel. In cases with minimal hypertrophy of the heel, lengthening of the tendon will suffice. Lengthening of the Achilles tendon may be performed via three 0.5cm incisions however does require a period of casting. Full recovery may take 6-18 months.

Achilles Tendon Ruptures

Chronic Achilles tendonitis is not a symptom to be overlooked based upon the knowledge that Achilles tendonitis is often a precursor to an Achilles muscle rupture. A rupture of the Achilles tendon can be a debilitating injury. The actual rupture of the tendon is described by many patients as feeling as if they were hit in the back of the leg. An audible pop is often described. The majority of ruptures occur 2-4cm proximal towards the attachment of the tendon into the calcaneus (heel bone).

The repair of Achilles tendon ruptures could be conservative or surgical. Orthopedic and podiatric literature abounds with content articles that compare the merits of conservative vs surgical proper care of Achilles tendon ruptures. Re-rupture of the muscle is not uncommon regardless of the method of correction although, statistically, re-rupture does seem to occur less in those patients that undertake surgical repair. These findings may also reflect the nature of patient that would be a medical candidate. Typically we'd assume that those patients that were in poor health (eg elderly, diabetic, immune compromised)would not become surgical applicants and so may contribute to the increased rate of re-rupture seen in those treated with conservative care.

Recent articles have advocated a surgical approach for repair of ruptured Achilles tendons that utilizes both an open and percutaneous technique of repair. The most popular method had been described by M. Kakiuchi of The Osaka Police Clinic in 1995.This approach involves the use of an empty procedure at the site of rupture to enable debridement of the ruptured tendon. Kakiuchi furthermore utilizes a closed technique to suture the tendon to be able to allow for proper healing.

Nomenclature:

Achilles - Greek warrior from Homer's Iliad. Hence the term Achilles is always capitalized.

Haglund's Deformity - See pump bump

- Pump bump - term that originated in the 1950's when many women were wearing pump high heels.
- Pumps were regarded as a contributing factor to an enlargement of the back of the heel.
- Pump bumps are typically found postero-lateral where as true Achilles tendonitis is posterior and specific to the insertion of the Achilles tendon.

Sever's Disease

An inflammatory disease of the growth plate of the rear heel found in young boys. Usually seen in boys grow older to 13 years old and during increased activities such as starting football or even soccer practice. Pain with side to side compression of the heel.

- Tendonitis - refers to a group of problems that have to do with inflammation surrounding or within the structure of a tendon.
- May or may not exhibit swelling.

Anatomy:

The Achilles tendon may be the distal extension of the two muscles of the calf, the gastrocnemius as well as the soleus. The gastrocnemius is the lengthier of the two muscles as well as stems on the proximal side from the knee (above the knee). The soleus, or shorter muscle of the calf, originates distal to the knee joint. Combined, these muscles make up the calf. As both of these muscle tissue continue to the distal 1/3 of the leg, they combine to form the Achilles tendon. Fibers of the Achilles tendon continue beyond the insertion to form the plantar fascia on the bottom of the heel.

- Fibers of the Achilles tendon attach to the back of the heel below the mid-level of the body with the heel.
- As a result, a space is formed between the Achilles tendon and the calcaneus.
- This room, called the retrocalcaneal area, is a common site for a bursa to form.
- With chronic use, the bursa may become inflamed resulting in a retrocalcaneal bursitis.

Biomechanics:

Equinus is actually the most common contributing factor to Achilles tendonitis. Equinus, based on the word equine or equine, refers to one that walks on their toes. Equinus can determined by measuring the range of motion of the ankle with the knee flexed and extended. Once the knee is flexed, the amount of equinus of the soleus muscle is calculated. With the knee extended, both the soleus and gastrocnemius muscles are measured. Imaginary lines tend to be set up on the long axis of the leg and the foot.

- By dorsiflexing the foot (toward the body) an angular way of measuring is actually established between those two lines.
- Normal range of motion of the ankle, to accomplish a normal gait cycle, is 10 in order to 15degrees over and above 90 degrees.
- This means that the normal range demands the ankle in order to dorsiflex to 90 degrees plus an additional to 15 degrees.
- An inability to complete this range of motion is named equinus.

Other factors may help with an inability to reach 90degrees, such as a bony block on the front of the ankle.

Symptoms:

Acute Achilles tendonitis.

- Acute Achilles tendonitis typically has a abrupt onset with achiness 2-3 cm proximal to be able to its' installation on the back of the heel.
- Most individuals with Achilles tendonitis can identify an injury or single event that initiated the pain.
- Symptoms of acute Achilles tendonitis occur at the beginning of an activity and can be referred to as a sharp pain.
- As the activity progresses, the pain decreases for a period of time.
- With extreme utilize, the tendon again becomes painful by the end of activity.
- For example, runners with Achilles tendonitis experience pain as they begin their run.
- The pain subsides during their run only to recur near the end of their normal running length.

Chronic Achilles tendonitis exhibits exactly the same form of pain as acute Achilles tendonitis but the location of the pain is usually at the insertion of the Achilles tendon into the heel. Chronic Achilles tendonitis can also cause hypertrophy enlargement) of the posterior heel. Pain may be from the tendon pulling away from the heel, or from the enlargement of the heel rubbing against the shoe. This bony enlargement of the back of the heel goes by many names including retrocalcaneal bursitis, pump bump or Haglund's Disability. The difference between Achilles tendonitis and a pump bump can easily be understood by analyzing the pain whilst barefoot (Achilles tendonitis)compared to pain while wearing shoes with an enclosed heel (pump bump).

Differential Diagnosis:

When considering the diagnosing Achilles tendonitis as a differential diagnosis consider;

Gout - deposition of monosodium urate crystals (hyperuricemia)

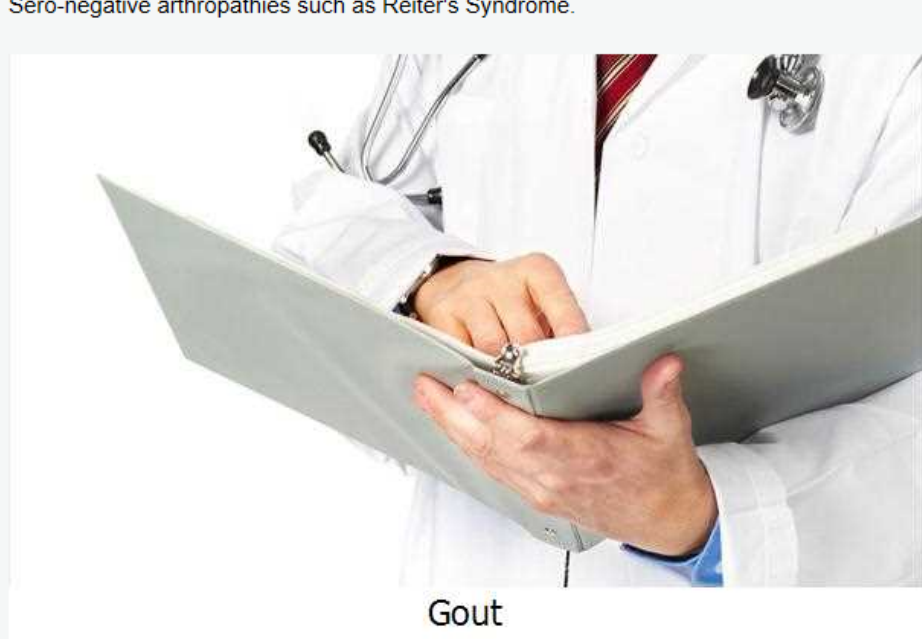
Retrocalcaneal bursitis (Albert's Disease) - this is the development and inflammation of a bursa behind the heel between the heel bone and Achilles tendon

Rheumatoid Arthritis

Rheumatic Fever.

Septic Arthritis

Sero-negative arthropathies such as Reiter's Syndrome.



Gout

Sever's Disease - as well as inflammatory condition typically found in younger over weight boys age 10 to 15 years old

Stress fracture from the calcaneus - Achilles tendonitis pain is characteristically not the same as that of fractures of the calcaneus. Fracture pain begins with the onset of exercise and remains painful through the activity. Tendonitis, on the other hand, hurts at the onset of activity, goes away through the action only to recur at the conclusion of activity. These symptoms may vary in every case and are only referenced in and effort to differentiate symptoms.

- Tarsal Tunnel Syndrome - also referred to as posterior tibial nerve neuralgia.
- Tarsal Tunnel Syn. characteristically provides pain that does not decrease with rest.
- Also has numbness or 'tingling' of the toes
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About the author: Jeffrey A. Oster, DPM, C.Ped is a aboard certified foot and ankle surgeon. Dr. Oster is also board certified in pedorthics. Dr. Oster is medical director of Myfootshop.com and is in active practice in Granville, Ohio.

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