

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. If it has to do with motion, the Achilles tendon is a part of that activity. From time to time the particular Achilles tendon loses the ability to keep up with us and the tendon will become inflamed resulting in Achilles tendonitis. This article discusses the onset, symptoms and also treatment of Achilles tendonitis. Achilles tendon ruptures are also discussed.



Acute Achilles Tendonitis

Acute Achilles tendonitis typically has an unexpected onset with moderate pain 2-3 cm proximal to the tendons' insertion on the back of the heel. The majority of 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 an activity and are typically described as a sharp pain. As the activity progresses, the pain decreases for a period of time. With too much use, the muscle again becomes painful at the end of activity. For example, runners with Achilles tendonitis experience pain as they begin their run. The pain subsides throughout their run only to recur near the end of their normal running range.

Chronic Achilles tendonitis exhibits the same type of pain as acute Achilles tendonitis but the location of the pain is usually at the insertion of the Achilles tendon in to 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 you need to differentiate between pain just due to the Achilles muscle 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 (effective 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 reason for 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 to be able to allow the Achilles tendon an opportunity to recover. You can do this by increasing 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 will also be 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 from 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 manipulated, 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 with 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 base 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 on 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 through 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 disregarded based on the knowledge that Achilles tendonitis is often a precursor to an Achilles tendon rupture. A rupture of the Achilles tendon can be a debilitating injury. The actual rupture of the tendon is described by the majority of patients as feeling as if they were hit in the back of the leg. An audible pop is often described. Many ruptures occur 2-4cm proximal for 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 tendons is not uncommon regardless of the method of correction although, statistically, re-rupture does seem to occur less in those patients that undergo operative repair. These findings may also reflect the nature of patient that would be a surgical candidate. Typically we would assume those patients that were in poor health (eg elderly, diabetic, immune compromised) would not become surgical individuals and so may contribute to the increased rate of re-rupture seen in those treated with conservative treatment.

“ Recent articles have advocated a surgical approach for repair of ruptured Achilles tendons that uses both an open and percutaneous technique of repair. The most popular method was described by M. Kakiuchi of The Osaka Police Hospital in 1995. This approach involves the use of a wide open procedure at the site of rupture to enable debridement of the ruptured tendon. Kakiuchi also utilizes a closed technique to suture the tendon in order 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 posterior heel found in young boys. Usually seen in boys age to 13 years old and in the course of increased activities such as beginning football or even soccer practice. Pain with side to side compression of the heel.

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

Anatomy:

The Achilles tendon could be the distal extension of the two muscles of the leg, the gastrocnemius and the soleus. The gastrocnemius may be the more time of the two muscles as well as starts on the proximal side from the leg (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 those two muscle groups continue to the distal 1/3 of the leg, they combine to form the Achilles tendon. Fibers of the Achilles tendon continue beyond the installation 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 from the heel.
- As a result, a space is formed between the Achilles tendon and also the calcaneus.
- This room, called the retrocalcaneal area, is a common site for a bursa to form.
- With chronic wear, the bursa may become inflamed resulting in retrocalcaneal bursitis.

Biomechanics:

Equinus is actually the most common contributing factor to Achilles tendonitis. Equinus, derived from the definition of equine or horse, refers to one that walks on their feet. Equinus can be determined by measuring the range of motion of the ankle with the knee flexed and extended. If the knee is flexed, the amount of equinus of the soleus muscle is assessed. With the knee extended, the soleus and gastrocnemius muscle groups are usually measured. Imaginary lines are proven on the long axis of the leg and the foot.

- By dorsiflexing the foot (toward the body) an angular dimension is established between these two lines.
- Normal range of motion of the ankle, to complete a normal gait cycle, is 10 in order to 15 degrees over and above 90 degrees.
- This means that the normal range requires the ankle to dorsiflex to 90 degrees plus an additional 15 degrees.
- A lack of ability to complete this range of motion is named equinus.

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

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Symptoms:

Acute Achilles tendonitis.

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

Chronic Achilles tendonitis exhibits exactly the same type 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 trigger 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 Deformity. The gap between Achilles tendonitis and a pump bump can easily be understood by analyzing the pain while barefoot (Achilles tendonitis) compared in order to pain while wearing shoes with an enclosed heel (pump bump).

Differential Diagnosis:

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

Gout - deposition of monosodium urate uric acid (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.



Gout

Septic Arthritis

Sero-negative arthropathies such as Reiter's Syndrome.

Sever's Condition - and inflammatory condition typically found in youthful over weight boys age 10 to 15 years old

Stress break from the calcaneus - Achilles tendonitis pain is characteristically more advanced than that of fractures of the calcaneus. Break pain begins with the onset of exercise and remains painful through the activity. Tendonitis, on the other hand, hurts at the onset of activity, decreases through the exercise simply to recur by the end of activity. These symptoms may vary in every case and are only referenced in an effort to differentiate symptoms.

- Tarsal Tunnel Syndrome - also known as posterior tibial nerve neuralgia.
- Tarsal Tunnel Syn. characteristically provides pain that does not lower with rest.
- Also has numbness or 'tingling' of the toes
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