OVERVIEW

Problems that affect the Achilles tendon are common among active, middle-aged people. These problems cause pain at the back of the calf. Severe cases may result in a rupture of the Achilles tendon.

BACKGROUND

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 underlying soleus and the thick outer gastrocnemius. Together, they form the gastroc-soleus muscle group. When they contract, they pull on the Achilles tendon causing your foot to point down and helping you rise on your toes. This powerful muscle group helps when you sprint, jump, or climb. Several different problems can occur that affect the Achilles tendon, some rather minor and some quite severe.

In severe cases, the force of a violent strain may even rupture the tendon. The classic example is a middle-aged tennis player or weekend warrior who places too much stress on the tendon and experiences a tearing of the tendon. In some instances, the rupture may be preceded by a period of tendonitis, which renders the tendon weaker than normal.

As we age, our tendons can degenerate. Degeneration means that wear and tear occurs in the tendon over time and leads to a situation where the tendon is weaker than normal. Degeneration in a tendon usually shows up as a loss of the normal arrangement of the fibers of the tendon. Tendons are made up of strands of a material called collagen. (Think of a tendon as similar to a nylon rope and the strands of collagen as the nylon strands.) Some of the individual strands of the tendon become jumbled due to the degeneration, other fibers break, and the tendon loses strength.

The healing process in the tendon causes the tendon to become thickened as scar tissue tries to repair the tendon. This process can continue to the extent that a nodule forms within the tendon. This condition is called tendonosis. The area of tendonosis in the tendon is weaker than normal tendon. The weakened, degenerative tendon sets the stage for the possibility of actual rupture of the Achilles tendon.
CLINICAL PRESENTATION AND DIAGNOSIS

An Achilles tendon rupture is usually an unmistakable event. Some bystanders may report actually hearing the snap, and the victim of a rupture usually describes a sensation similar to being violently kicked in the calf. Following rupture the calf may swell, and the injured person usually can’t rise on his toes.

Diagnosis is almost always by clinical history and physical examination. The physical examination is used to determine where your leg hurts. The doctor will probably move your ankle in different positions and ask you to hold your foot against the doctor’s pressure. By stretching the calf muscles and feeling where these muscles attach on the Achilles tendon, the doctor can begin to locate the problem area. The doctor may run some simple tests if a rupture is suspected. One test involves simply feeling for a gap in the tendon where the rupture has occurred. However, swelling in the area can make it hard to feel a gap. Another test is done with your leg positioned off the edge of the treatment table. The doctor squeezes your calf muscle to see if your foot bends downward. If your foot doesn’t bend downward, it’s highly likely that you have a ruptured Achilles tendon.

When the doctor is unsure whether the Achilles tendon has been ruptured, an magnetic resonance imaging scan may be necessary to confirm the diagnosis. The MRI machine uses magnetic waves rather than X-rays to show the soft tissues of the body. The MRI creates images that look like slices and shows the tendons and ligaments very clearly. This test does not require any needles or special dye and is painless. Your doctor may order an ultrasound test. An ultrasound uses high-frequency sound waves to create an image of the body’s organs and structures. The image can show if an Achilles tendon has partially or completely torn. This test can also be repeated over time to see if a tear has gotten worse. By using the MRI and ultrasound tests, doctors can determine if surgery is needed. For example, a small tear may mean that a patient might only need physical therapy and not surgery.

TREATMENT CHOICES

Treatment for an Achilles tendon rupture is somewhat controversial - probably the majority of young athletes with complete ruptures are treated surgically, but there are strong advocates for non-surgical treatment. It seems that non-surgical treatment has a slightly higher re-rupture rate (roughly 8% versus 4%), but it does not have the risks of the anesthetic and potential wound complications associated with surgery (roughly 4%).

NON-OPERATIVE TREATMENT

Non-surgical treatment in this case allows the patient to heal while avoiding the potential complications of surgery. The patient is casted for eight weeks. Casting the leg with the foot pointing downward brings the torn ends of the Achilles tendon together and holds them until scar tissue joins the damaged ends. A large heel
lift is worn in the shoe for another six to eight weeks after the cast is taken off.

**SURGICAL TREATMENT**

Surgery may also be suggested if you have a ruptured Achilles tendon. Reattaching the two ends of the tendon repairs the torn Achilles tendon. This procedure is usually done through an incision on the back of the ankle near the Achilles tendon. Numerous procedures have been developed to repair the tendon, but most involve sewing the two ends of the tendon together in some fashion. Some repair techniques have been developed to minimize the size of the incision.

In the past, the complications of surgical repair of the Achilles tendon made surgeons think twice before suggesting surgery. The complications arose because the skin where the incision must be made is thin and has a poor blood supply. This can lead to an increase in the chance of the wound not healing and infection setting in. Now that this is better recognized, the complication rate is lower and surgery is recommended more often.

**REHABILITATION**

Traditionally, patients would be placed in a cast or brace for six to eight weeks after surgery to protect the repair and the skin incision. Crutches would be needed at first to keep from putting weight onto the foot. Conditioning exercises during this period helped patients maintain good general muscle strength and aerobic fitness. Upon removing the cast, a shoe with a fairly high heel is recommended for up to eight more weeks, at which time physical therapy begins.

Immobilizing the leg in a cast can cause joint stiffness, muscle wasting (atrophy), and blood clots. To avoid these problems, doctors may have their patients start doing motion exercises very soon after surgery. Patients wear a splint that can easily be removed to do the exercises throughout the day. A crutch or cane may be used at first to help you avoid limping.

In this early-motion approach, physical therapy starts within the first few days after surgery. Therapy may be needed for four to five months. Ice, massage, and whirlpool treatments may be used at first to control swelling and pain. Massage and ultrasound help heal and strengthen the tendon.

Treatments progress to include more advanced mobility and strengthening exercises, some of which may be done in a pool. The buoyancy of the water helps people walk and exercise safely without putting too much tension on the healing tendon. The splint is worn while walking for six to eight weeks after surgery.
As your symptoms ease and your strength improves, you will be guided through advancing stages of exercise. Athletes begin running, cutting, and jumping drills by the fourth month after surgery. They are usually able to get back to their sport by six full months after surgery.

The physical therapist’s goal is to help you keep your pain and swelling under control, improve your range of motion and strength, and ensure you regain a normal walking pattern. When you are well underway, regular visits to the therapist’s office will end. Your therapist will continue to be a resource, but you will be in charge of doing your exercises as part of an ongoing home program.

MORE INFORMATION
Further information can be obtained on the internet. Your local public library can help you explore these sources if you are interested. Two good sites for expert and peer reviewed information are the American Academy of Orthopedic Surgeons at www.aaos.org and www.emedicine.com.

FEEDBACK
If you have questions or comments, please contact the office or submit them to the web site at www.pedortho.com.