FOOT & ANKLE CLINIC
AT LINDSAY PARK

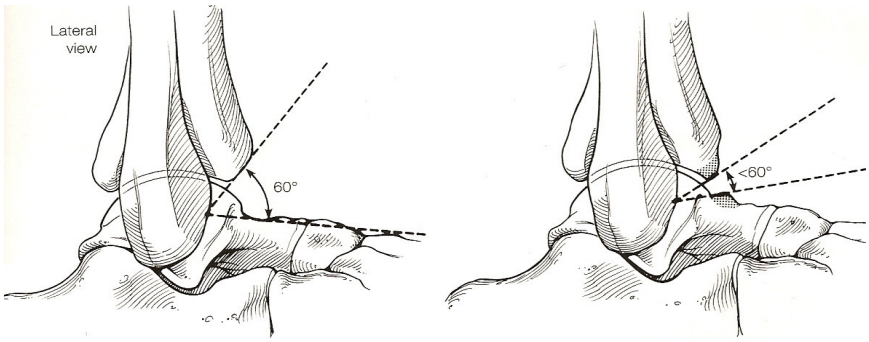
ANKLE IMPINGEMENT

Ankle impingement occurs when soft tissues around the ankle are pinched or nipped. Impingement mainly happens when the ankle is fully bent up or down, leading to pain either in the front or back of the ankle joint. Problems near the front of the joint are usually associated with past ankle sprains. Pinching in the back of the ankle occurs most often in ballet dancers and is usually due to irritation around a bony prominence on the back of the ankle.

Symptoms
Anterior impingement may feel like ankle pain that continues long after an ankle sprain. The ankle may feel weak, like it can't be trusted to hold steady during routine activities. When anterior impingement comes from ligament irritation, pain and tissue thickening are usually felt in front and slightly to the side of the ankle.
The pain worsens as the foot is forced upward into dorsiflexion. If the ligaments have irritated the synovium of the ankle joint capsule, throbbing pain and swelling from inflammation (synovitis) may also be felt in this area.
Symptoms of posterior impingement include pain behind the heel or deep in the back of the ankle. There is usually tenderness just behind the bottom tip of the fibula, by the outer ankle bone. Pain is usually worse when the foot is pointed down into plantarflexion. A painful clicking sensation may also be felt as the foot is twisted in and out.

Soft Tissue Impingement
May arise from ankle sprains, but physical exam may fail to show instability of the ankle joint.
May occur along the front and outside portion of the ankle joint.
X-rays may be unremarkable

Bony Impingement
Patients who have persistent pain in the front of ankle and have spur formation evident on an x-ray.



Posterior impingement
This occurs in the back of the ankle. It is most common in ballet dancers, soccer players who point their foot downward into extreme plantarflexion.
The usual cause of posterior impingement is an os trigonum. This normal fragment of bone is a separation of the lateral tuberosity from the talus. When an os trigonum is present, it can cause problems, especially among athelets who constantly put the foot in a position of extreme ankle plantarflexion. As the foot points downward sharply, the os trigonum can get sandwiched between the bottom edge of the tibia and the top surface of the calcaneus (the heelbone). This can trap the tissues above and below the os trigonum, leading to symptoms of posterior impingement.

Examination
The diagnosis of ankle impingement is usually made by examining the ankle. The doctor will move your ankle to see what movements or positions cause your pain. If anterior impingement is suspected, the doctor may bend your ankle upward or ask you to squat down. To check for posterior impingement, the doctor may push your foot downward or have you rise up on your toes. Tenderness can usually be pinpointed over the tissues that are being pinched.

Radiographs
X-ray demonstrates spur formation
A bone scan or MRI may be used to further evaluate the joint

Spur formation on the front of the ankle joint

Nonsurgical Treatment
You may be told to rest the ankle for a short time to reduce swelling and pain. A special walking boot or short-leg cast may be recommended to restrict ankle movement for up to four weeks. Mild pain medications and anti-inflammatory medicine, such as ibuprofen, may also be prescribed. An ice pack can also help alleviate swelling and may encourage a faster return of normal ankle movement.
Your doctor may recommend a steroid injection into the painful area. Steroids are strong anti-inflammatory medications. A steroid injection can help relieve irritation and swelling in the soft tissues that are being pinched, reducing their tendency to get pinched.
Your doctor may suggest that you work with a physical therapist to help you regain normal use of your ankle. Patients often progress in a series of exercises including stationary cycling, range of motion, and ankle strengthening.

Surgery
If nonsurgical treatments do not work, surgery may be recommended. The type of surgery will vary depending on the location and cause of ankle impingement.

Debridement
Debridement is the most common surgery for anterior ankle impingement. Many podiatric surgeons prefer to perform this procedure with an arthroscope. An arthroscope is a tiny TV camera that can be inserted into a very small incision. It allows the surgeon to see the area where he or she is working on a TV screen. To begin, two small incisions are made through the skin on each side of the impingement area. The surgeon inserts the arthroscope to see which area of the tendons or joint capsule are irritated and thickened. The arthroscope lets the doctor see if a meniscoid lesion is present. A small shaver is used to clear away (debride) irritated tissue from the affected ligaments. The surgeon also debrides the tissue forming a meniscoid lesion and any areas of the joint capsule that are inflamed. Small forceps may also be used to clear away irritated or inflamed tissue.
Small bone spurs on the tibia or talus are removed. If the spurs are large, the surgeon may decide to create a new incision over or next to the spur. This allows a special instrument, called an osteotome, to be inserted. The surgeon uses the osteotome to carefully remove these larger bone spurs.

Brent D. Haverstock, DPM, FACFAS
Podiatric Surgeon

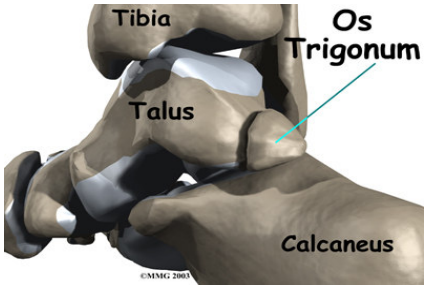
Before concluding the procedure, a fluoroscope is used to check the debridement and to make sure no bony fragments remain. A fluoroscope is a special X-ray machine that allows the surgeon to see a live X-ray picture on a TV screen during surgery. When the surgeon is satisfied that debridement and removal of bone fragments is complete, the skin is stitched together.

Os Trigonum Excision

The goal of an os trigonum excision is to carefully remove (excise) the os trigonum to alleviate pinching of the tissues above or below it. It is standard to use an *open* surgical method which requires a one- to two-inch incision over the outer part of the back of the ankle. An arthroscope is not routinely used for os trigonum excision because there are many nerves and blood vessels in the back of the ankle that could be injured by an arthroscope.

This surgery begins by placing the patient face down on the operating table. The podiatric surgeon makes a small incision over the lateral side of the back of the ankle, just behind the outer anklebone. A retractor is used to carefully hold the nearby tendons, nerves, and blood vessels out of the way. The surgeon locates the os trigonum. A scalpel is usually sufficient to dissect the os trigonum. However, if a bony bridge binds the os trigonum to the talus, the surgeon may need to use a chisel or osteotome.

A fluoroscope is used to check for any remaining bony fragments. When the surgeon is satisfied that all bone fragments have been removed, the skin is stitched together. Patients are placed in a special splint designed to protect the ankle and to keep the foot from pointing downward



Nonsurgical Rehabilitation

Even if you don't need surgery, you may need to follow a program of rehabilitation exercises. Your doctor may recommend that you work with a physical therapist. Your therapist can create a program to help you regain ankle function. It is very important to improve strength and coordination in the ankle.

Surgical Rehabilitation

After debridement surgery, patients are usually placed in an ankle splint. Patients begin by using crutches. The amount of weight put on the foot is gradually increased over a period of one to two weeks. Patients generally advance quickly in rehabilitation and are able to resume normal activity within four to six weeks.

Rehabilitation after excision of the os trigonum is a slower process. You will probably need to attend therapy sessions for two to three months, and you should expect full recovery to take up to six months. Patients are kept in the ankle splint for up to two weeks. Crutches are used during this time as the amount of weight borne on the foot is gradually increased.

After removing the stitches and the ankle brace, patients are usually able to begin formal physical therapy. Initial treatments begin with gentle range-of-motion exercises for the ankle and toes. The first few physical therapy treatments are also designed to help control pain and swelling from the surgery. Ice and electrical stimulation treatments may be used. Your therapist may also use massage and other hands-on treatments to ease muscle spasm and pain.

As the symptoms from surgery begin to ease, you may be shown how to do easy ankle motions on a stationary bicycle. After three or four weeks you may start doing more active ankle exercises. Exercises are used to improve the strength in the ankle muscles. Your therapist will also help you regain position sense in the ankle joint to improve its stability.