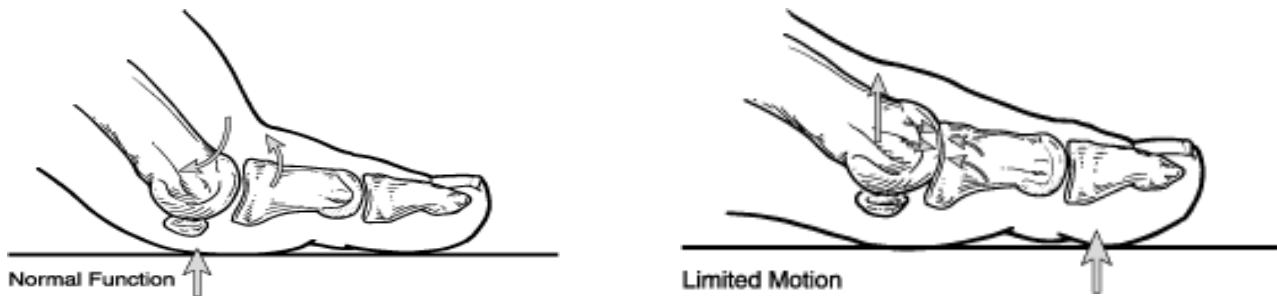


## HALLUX RIGIDUS

Each day, with every step you take, your big toe bears a tremendous amount of stress, a force equal to about twice your body weight. Most of us don't realize how much we use our big toe. One problem that afflicts the big toe is called hallux rigidus, a condition where movement of the toe is restricted to varying degrees. This disorder can be very troubling and even disabling, since we use the all-important big toe whenever we walk, stoop down, climb up, or even stand. If you have pain and/or stiffness in your big toe, you may have this condition.

### What Is Hallux Rigidus?

Hallux rigidus is a disorder of the joint located at the base of the big toe. It causes pain and stiffness in the big toe, and with time it gets increasingly harder to bend the toe. "Hallux" refers to the big toe, while "rigidus" indicates that the toe is rigid and cannot move. Hallux rigidus is actually a form of degenerative arthritis (awearing out of the cartilage within the joint).



Because hallux rigidus is a progressive condition, the toe's motion decreases as time goes on. In its earlier stage, motion of the big toe is only somewhat limited, a condition called hallux limitus. But as the problem advances, the toe's range of motion gradually decreases until it potentially reaches the end stage of "rigidus" where the big toe becomes stiff, or what is sometimes called a "frozen joint." Other problems are also likely to occur as the disorder progresses.

### Symptoms

Early signs and symptoms include:

- Pain and stiffness in the big toe during use.
- Pain and stiffness aggravated by cold, damp weather
- Difficulty with certain activities (running, squatting)
- Swelling and inflammation around the joint

As the disorder gets more serious, additional symptoms may develop, including:

- Pain, even during rest
- Difficulty wearing shoes because bone spurs (overgrowths) develop.
- Wearing high-heeled shoes can be particularly difficult.
- Dull pain in the hip, knee, or lower back due to changes in the way you walk
- Limping, in severe cases



### What Causes Hallux Rigidus?

Common causes of hallux rigidus are faulty function (biomechanics) and structural abnormalities of the foot that can lead to osteoarthritis in the big toe joint. This type of arthritis the kind that results from "wear and tear" often develops in people who have defects that change the way their foot and big toe functions. For example, those with fallen arches or excessive pronation (rolling in) of the ankles are susceptible to developing hallux rigidus.

In some people, hallux rigidus runs in the family and is a result of inheriting a foot type that is prone to developing this condition. Elevation of the first metatarsal relative to the second metatarsal or a first metatarsal that is longer than the adjacent second metatarsal.

In other cases, it is associated with overuse, especially among people engaged in activities or jobs that increase the stress on the big toe, such as workers who often have to stoop or squat. Hallux rigidus can also result from an injury, even from stubbing your toe. Or it may be caused by certain inflammatory diseases, such as rheumatoid arthritis or gout. Your podiatric foot and ankle surgeon can determine the cause of your hallux rigidus and recommend the best treatment.

### Diagnosis of Hallux Rigidus

The sooner this condition is diagnosed, the easier it is to treat. Therefore, the best time to see a podiatric surgeon is when you first notice that your big toe feels stiff or hurts when you walk, stand, bend over, or squat. If you wait until bone spurs develop, your condition is likely to be more difficult to manage.

In diagnosing hallux rigidus, the podiatric surgeon will examine your feet and manipulate the toe to determine its range of motion. X-rays are usually required to determine how much arthritis is present as well as to evaluate any bone spurs or other abnormalities that may have formed.

### Treatment: Non-Surgical Approaches

If your condition is caught early enough, it is more likely to respond to less aggressive treatment. In fact, in many cases, early treatment may prevent or postpone the need for surgery in the future. That's why it is important to see your podiatric surgeon when you first begin to notice symptoms.

Treatment for mild or moderate cases of hallux rigidus may include one or more of these strategies:

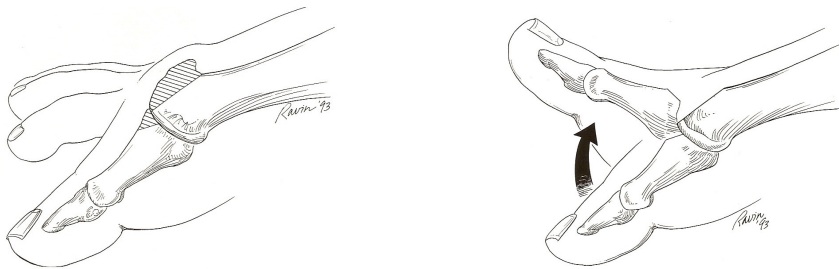
- **Shoe modifications.** Shoes that have a large toe box should be worn, because they put less pressure on your toe. Stiff or rocker-bottom soles may also be recommended. Most likely, you'll have to stop wearing high heels.
- **Orthotic devices.** Custom orthotic devices may improve the function of your foot.
- **Medications.** Nonsteroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen, may be prescribed to help reduce pain and inflammation. Supplements such as glucosamine-chondroitin sulfate and some vitamins and minerals may also be helpful.
- **Injection therapy.** Injections of corticosteroids in small amounts are sometimes given in the affected toe to help reduce the inflammation and pain.
- **Physical therapy.** Ultrasound therapy or other physical therapy modalities may be undertaken to provide temporary relief.

### When Is Surgery Needed?

In some cases, surgery is the only way to eliminate or reduce pain. There are several types of surgery that can be undertaken to treat hallux rigidus. These surgical procedures fall into two categories:

#### Joint Preservation

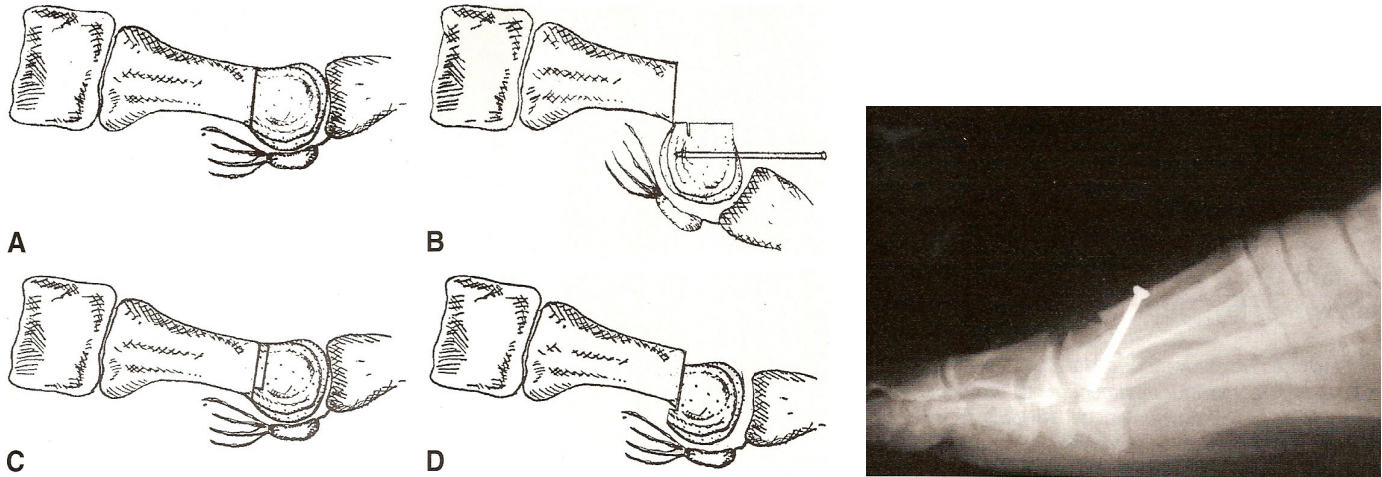
Some procedures reconstruct and "clean up" the joint. The surgeon removes the arthritic damage from the joint as well as any accompanying bone spurs, and then alters the position of one or more bones in the big toe. These procedures are designed to preserve and restore normal alignment and function of the joint as well as reduce or eliminate pain. This often only provides short-term relief.



## Joint Reconstruction

### Plantarflexory-Shortening Osteotomy for Hallux Rigidus

A joint preservation reconstructive procedure may be attempted in cases in which the joint is not completely destroyed and the individual wishes to have a joint that still bends. The spur formation around the joint is removed and then a cut is made in either the phalanx or metatarsal to realign the joint. Because Hallux Rigidus is a progressive disorder, the arthritis in the joint may still progress, requiring further surgery in the future.

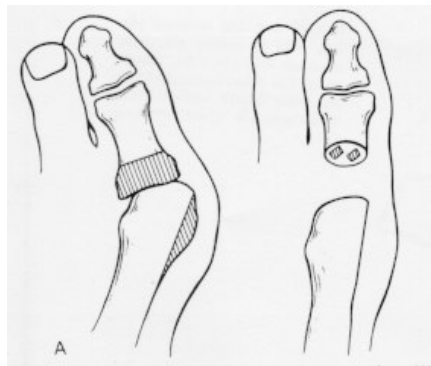


## Joint Destruction

As the arthritis increases, the ability of an osteotomy or cheilectomy to correct the problem, maintain motion, and prevent the arthritis from worsening is very limited. For these patients, either a fusion of the big toe (an arthrodesis) or removal of bone from the joint (an arthroplasty) is performed. The big difference between a fusion and arthroplasty is the movement of the big toe. More aggressive procedures are used when the joint cannot be preserved. These may involve fusing the joint, or removing part or all of the joint and, in some cases, replacing it with an implant, such as is done for the hip or knee. These procedures eliminate painful motion in the joint.

### Arthroplasty (Joint Destructive)

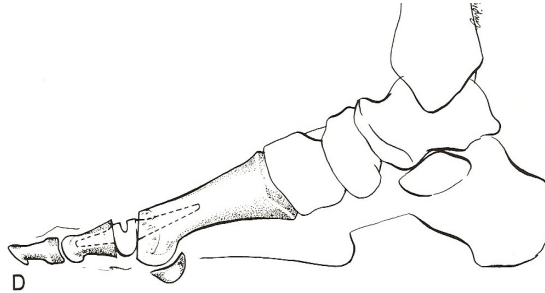
A Keller bunionectomy is a joint destructive procedure which consists of removing a portion of the base of the proximal phalanx (the toe bone which connects to the metatarsal) in order to remove the diseased joint. This procedure should be restricted to older patients who do not have high activity demands on the feet.



Keller Procedure

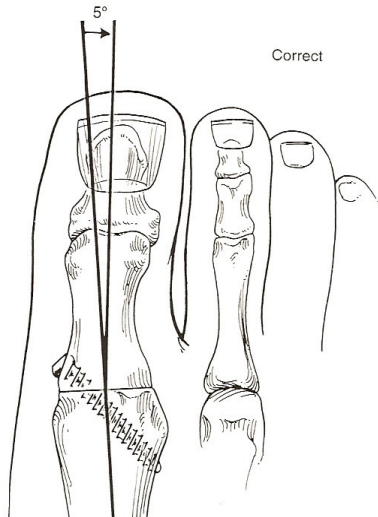
### **Arthroplasty (Joint Replacement)**

Some surgeons favor replacing the joint with an artificial joint, similar to what is done in the knee or hip, only much smaller. In this procedure, one of the joint surfaces is removed and replaced with a plastic surface. This procedure may relieve the pain and preserve the joint motion. The major drawback to this procedure is that the artificial joint probably will not last a lifetime and will require more operations later if it begins to fail. This procedure should also be restricted to older patients who do not have high activity demands on the feet.



### **Fusion (Arthrodesis of the Joint)**

The main advantage of a fusion is that it is a permanent correction with elimination of the arthritis and pain. The disadvantage is the restriction of movement of the big toe. Patients are typically able to exercise, run and wear most shoes quite comfortably. Wearing a heel higher than an inch and a half is difficult after fusion of the big toe.



### **Post-operative Care**

- Rest, elevation and ice for the first 3-5 days
- 14 days non-weight bearing in a splint
- 4 to 6 weeks non-weight bearing in below-knee fiberglass cast
- Resume physical activities at 24-30 weeks (as tolerated)
- Some swelling may be present for six months or more.

### **COMPLICATIONS OF HALLUX RIGIDUS SURGERY**

There are risks associated with any surgical procedure. Complications associated with Hallux Rigidus surgery include:

- infection
- continued arthritic changes of the joint
- failure of the bone to heal (nonunion)