

# Midfoot Arthritis

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## Summary

Midfoot arthritis is characterized by pain and swelling in the midfoot, aggravated by standing and walking. There is often an associated bony prominence on the top of the foot. Usually the symptoms develop gradually over time, although it can occur following a major midfoot injury, such as a Lisfranc injury. Non-operative treatment consisting of use of a stiff-soled comfort shoe, activity modification, and weight-loss, can be quite effective. If non-operative treatment fails, patients may benefit from surgery to fuse the arthritic midfoot joints.

## Background

The foot consists of 26 separate bones working together to bear body weight. Where they link together, one finds cartilage that helps smooth their motion as they move past each other. As one might imagine, there is a significant amount of force that crosses these joints during normal daily function, as the foot acts to propel us forward during walking or running. If this cartilage wears out, a condition known as arthritis, force across these joints may generate pain as bone starts to rub against bone. The “midfoot” portion of the foot is analogous to the articulation, or joint formation, between our wrists and hand. Tarsal bones, specifically the cuneiforms and cuboid, articulate the long, tubular metatarsals that form the forefoot. Some of the midfoot joints, such as those on the inside of the foot are more supple and have the motion necessary to accommodate uneven surfaces. When arthritis affects the midfoot joints, it is known as midfoot arthritis.

## Clinical Presentation

Patients with midfoot arthritis will experience discomfort underlying the midfoot, often related to prolonged standing or walking. It can also be exacerbated by shoe wear, especially if a stiff leather shoe pushes downwards on the top of the foot. Some patients also report pain with the first few steps in the morning or after prolonged sitting, traditionally referred to as “start-up” pain. Occasionally, there is a history of significant injury to the midfoot, such as a Lisfranc injury. More commonly, midfoot arthritis occurs simply due to gradual wear and tear.

## Physical Examination

Physical examination may reveal swelling in the midfoot, but more commonly there is often generalized tenderness in the midfoot area, especially over the affected joints. A bony prominence in the midfoot known as an osteophyte is often palpable as a result of the underlying arthritis.

It is important to note, however, not all bony prominences in the midfoot represent arthritis. It is not uncommon for people to have local shoe wear irritation from a normal bony prominence, known as a tarsal boss. This does not necessarily signify significant midfoot arthritis.

## Imaging Studies

Weight-bearing x-rays generally demonstrate loss of joint space in the midfoot joints, which is characteristic of arthritis. The joint between the midfoot and forefoot (tarsometatarsal) is most commonly involved, although the other joints may also be involved.

## Treatment

### Non-Operative Treatment

Midfoot arthritis can often be managed successfully without surgery. The key components of non-operative treatment are:

- A stiff-soled comfort shoe: By having a stiff sole, the amount of force concentrated in the midfoot will be limited. In a similar manner, a slight rocker contour to the shoe will help disperse the force away from the midfoot and smoothly up the leg.
- Shoes with a softer upper: If the upper portion of the shoe is made out of a mesh-like material rather than a stiff leather, the direct pressure over the arthritis may be lessened and thereby the pain improved.
- Avoid tying shoe-laces too tightly: If shoelaces are kept somewhat loose, less pressure is placed on the arthritic midfoot.
- Activity Modification: Activity modification, such as avoiding rigorous impact activities like running or prolonged walking, may also be helpful in limiting symptoms. Non-weight-bearing exercise (ex. swimming, aquarobics, stationary bike) is encouraged to help keep active and lose weight.
- Weight-loss: Losing excess weight will help to decrease the amount of force going through the arthritic midfoot with each step.
- Calf Stretching (Flexibility improvement of adjacent joints): Unnecessary motion or stress through the midfoot can be decreased by stretching the calf muscle (gastrocnemius complex and heel cord)
- Anti-inflammatory Medications: Non-Steroidal Anti-Inflammatory medications (NSAIDs) may also be beneficial.
- Off Loading: Decreasing the load through the midfoot by using assistive devices such as a cane, a knee walker, or crutches may be helpful in the short-term if the symptoms have flared up.
- Injections: Periodic corticosteroid injections into the affected midfoot joints may help alleviate pain symptoms, albeit usually only temporarily.

### **Operative Treatment**

Patients may have two problems arising from midfoot arthritis; pain on the dorsum (top) of the foot due to spurs from the arthritic joint (bony prominence), worse in closed shoes or, pain arising from the arthritic joint itself.

Symptoms due to a local bony prominence may benefit from removal of bone spurs, though this is uncommonly performed because it does not change the underlying arthritis and the bone spurs generally return.

In most cases, pain arising from the arthritic joint is the main symptom. Therefore, if an operation is deemed necessary, it is often necessary to fuse the involved joints (midfoot fusion). This entails roughening up the opposing bone surfaces and fixing the bones together with plates, screws, or staples in order to get the two bones to fuse together into one larger bone. By eliminating the movement through the arthritic joints, the pain originating from these joints is eradicated. Essentially, it converts a painful stiff joint into a painless stiff joint. However, a midfoot fusion does not preclude pain from other joints and other areas of the foot from continuing to be symptomatic. This type of surgery requires strong fixation and a period of non-weight bearing (or limited weight bearing) for 6-12 weeks.

### **Potential Complications**

Complications of surgery may include:

- Nonunion (bones do not heal together)
- Delayed union (bones are slow to heal together)
- Infection
- Wound healing problems
- Nerve injury or irritation

- Deep Vein Thrombosis (DVT or Blood clot)
- Pulmonary embolism (PE)
- Removal of hardware
- Adjacent joint arthritis, the nearby joints may develop arthritis over time as a consequence of altered foot biomechanics from arthritis and joint fusion.

In addition, patients may have persistent pain, as the fusion of the midfoot joint will not help pain that originates from other areas of the foot, such as tendons, ligaments, or other joints.

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