

# Intermetatarsal Neuroma



An intermetatarsal neuroma (also called Morton's neuroma) is a very common condition that most frequently affects the bottom of the ball of the foot and the toes.

An intermetatarsal neuroma is an irritated, enlarged nerve that runs near the bottom of the foot between two metatarsal bones and out into two adjacent toes. Easily, the most common location for a neuroma is between the bases of the third and fourth toes. Far less commonly, a neuroma may occur between the bases of the second and third toes. Neuromas rarely, if ever, occur between the fourth and fifth toes or the first and second toes.

The primary cause for a neuroma is wear and tear. The intermetatarsal nerve is subject to compression and pinching because it runs through a tight space between the widened area of two metatarsal bones, a ligament above the nerve, and the ground below. With years of increased activities on the feet, or with high heels, or with tight shoes, the nerve can become irritated. A bursa next to the nerve can also become inflamed. Repetitive compression of the nerve by these various forces can cause the nerve to become thickened. The thickened nerve, in turn, is more easily compressed, creating a vicious cycle of compression, irritation, and further thickening.

The symptoms felt by patients suffering from a neuroma can vary. The character of the pain can be sharp and shooting, or burning, or toothache-like. Alternatively, the patient might feel numbness or a sense of walking on a rolled-up sock. The symptoms can be located under the ball of the foot, or in the two adjacent toes, or both. The symptoms are always on the bottom of the ball and toes, however. Patients will notice that the pain is worse with increased activities that involve bearing weight and bending at the ball of the foot (like walking – especially downhill, or running, or squatting). The pain is usually worse with shoes on and improves with removing the shoes and resting.

The diagnosis of intermetatarsal neuroma is usually easily made with a careful history and physical exam. X-rays are usually not helpful in making the diagnosis, as the intermetatarsal neuroma will not show up on x-rays. Special tests, such as an MRI are simply not necessary. Mimickers of intermetatarsal neuromas include metatarsalgia (especially second metatarsal stress syndrome) and tarsal tunnel syndrome.

Non-surgical treatment of intermetatarsal neuromas can be quite effective. This form of treatment should be comprehensive and continuous until the pain has been resolved at least 2 months. The success of non-surgical treatment of intermetatarsal neuromas may be predicted by the duration of symptoms and the size of the neuroma on examination. Generally, larger neuromas and those that have been causing symptoms for a longer period of time are more resistant to non-surgical treatment.

## What can I do for myself?

You should use as many of these treatments as possible concurrently:

- q Wear appropriate shoes. The shoes should have ample forefoot width and toebox room. The shoes should provide cushioning. High heels must not be worn.
- q Add a good cushioned insole in your shoe. (We recommend ProLab PreFab Insoles – these insoles can be purchased at The Depot Store next to the Department of Foot and Ankle Surgery.)
- q Perform calf stretching exercises for 30-60 seconds on each leg at least two times per day. (Stand an arm's length away from the wall, facing the wall. Lean into the wall, stepping forward with one leg, leaving the other leg planted back. The leg remaining back is the one being stretched. The leg being stretched should have the knee straight (locked) and the toes pointed straight at the wall. Stretch forward until tightness is felt in the calf. Hold this position without bouncing for a count of 30-60 seconds. Repeat the stretch for the opposite leg.)
- q Modify your activities. (Avoid squatting, going up on your tiptoes, downhill walking, and high heels. Decrease the time that you stand, walk, or engage in exercise that puts a load on the balls of your feet. Convert impact exercise to non-impact exercise – cycling, swimming, and pool running are acceptable alternatives.)
- q Use ice on the painful area for 15-20 minutes, at least 2-3 times per day -especially in the evening. (Option A - Fill a styrofoam or paper cup with water and freeze it. Peel back the leading edge of the cup before application. Massage the affected area for 15-20 minutes. Option B – Rest the affected area on an ice pack for 15-20 minutes. CAUTION: AVOID USING ICE WITH CIRCULATION OR SENSATION PROBLEMS.)
- q Use an oral anti-inflammatory medication. (We recommend over-the-counter ibuprofen. Take three 200mg tablets, three times per day with food – breakfast, lunch, and dinner. To obtain the proper anti-inflammatory effect, you must maintain this dosing pattern for at least 10 days. Discontinue the medication if any side effects are noted, including, but not limited to: stomach upset, rash, swelling, or change in stool color. IF YOU TAKE ANY OF THE FOLLOWING MEDICATIONS, DO NOT TAKE IBUPROFEN: COUMADIN, PLAVIX, OR OTHER PRESCRIPTION OR OVER-THE-COUNTER ORAL ANTI-INFLAMMATORY MEDIATIONS. IF YOU HAVE ANY OF THE FOLLOWING HEALTH CONDITIONS, DO NOT TAKE IBUPROFEN: KIDNEY DISEASE OR IMPAIRMENT, STOMACH OR DUODENAL ULCER, DIABETES MELLITUS, BLEEDING DISORDER.)
- q See your doctor when you have failed to respond to the above regimen after three months of application.

## What can my doctor add?

- q Administer cortisone injections. (Injection of cortisone is a potent way to reduce inflammation and expedite the recovery process. Cortisone does not replace the need for supportive shoes, foot orthoses, calf stretching, and other physical measures. Cortisone is typically injected at 2 month intervals, until the condition resolves or 3 injections have been administered, whichever comes first. The risks of cortisone injections for intermetatarsal neuromas include, but are not limited to: increased pain for 24-72 hours following the injection, fat pad atrophy, depigmentation of the top of the forefoot, weakening of adjacent joint ligaments with potential dislocation, and infection. Systemic side effects of this type of injection are extremely rare.)
- q Administer injections of a sclerosing agent. (Injection of a solution of 4% alcohol is occasionally used in resistant cases or as an alternative to cortisone injections. The goal is to permanently “deaden” the nerve with the 4% alcohol solution. Injections are usually administered at 2-4 week intervals. Relief can be obtained with 1-5 injections. Risks include, but are not limited to: increased pain—either temporary or permanent, infection, joint stiffness, bone, joint, or tendon inflammation, and skin ulceration.
- q Prescribe physical therapy. (Ultrasound and interferential electric current therapy can be useful methods of reducing inflammation.)
- q Add metatarsal pads to your insoles or orthotics (these can also be purchased at The Depot Store next to the Department of Foot and Ankle Surgery).
- q Refer you for custom-made foot orthotics. (Custom foot orthoses are not a covered benefit of the Kaiser Health Plan. However, custom foot orthoses are available through the Department of foot and ankle Surgery on a fee for service basis.)
- q Perform surgery. (Surgery involves operating from the top of the forefoot to get to the nerve near the bottom of your forefoot. The nerve is then removed completely, leaving permanent numbness between the two adjacent toes. The anesthesia is usually local. The surgery is done on an outpatient basis. You are allowed to walk on your foot after surgery in a special post-operative shoe. Although you can walk on your foot after surgery, complete rest and elevation is encouraged for the first two weeks following surgery at a minimum. Recovery is complete in 2 months in 50% of individuals, but may take up to a year in the other 50%. The literature places the success rate at about 70%. About 25% are better, but still have some problems. About 5% are no better or worse. Risks include, but are not limited to: infection, recurrent neuroma or amputation neuroma, delayed incision healing, cyst formation, prolonged recovery, incomplete relief of pain, no relief of pain, worsened pain, recurrent pain, and circulation impairment or loss of the adjacent toes.)