Morton's Neuroma

Morton's Neuroma, also sometimes referred to as plantar Neuroma or intermetatarsal Neuroma, may occur as a result of irritation, injury, pressure - such as from wearing tight fitting shoes, or repetitive stress. It also frequently arises from unknown causes.

What is Morton's Neuroma?
Neuromas are generally benign or non-cancerous growths of nerve tissue, developing in various parts of the body. Morton's Neuromas are confined to the nerves of the foot, most commonly, between the third and fourth toes. The condition involves a thickening of the tissue around one of the digital nerves leading to the toes and does not qualify as an actual tumour. The affliction causes a sharp, burning pain, usually in the region of the ball of the foot. A patient's toes may also sting, burn or exhibit numbness. Often, the symptoms have been likened to "walking on a marble."

Properly resting the foot in addition to the use of appropriate footwear including, as necessary, pads and arch supports, often brings relief from Morton's Neuroma, without resorting to surgery. A physician may also recommend anti-inflammatory drugs, cortisone injections and, should the condition fail to resolve itself, surgery.

While Morton's Neuroma has been an ongoing topic of clinical investigation, the condition is in some cases difficult to either treat or prevent. Experimental efforts involving the injection of muscle or bone with chemicals such as alcohol, as well as suturing, and covering affected areas with silicone caps have been attempted, with varying success.

Surgical treatment has provided relief in some cases while poor results and surgical complications have resulted in other cases. It is believed that ligament weakness, as
opposed to the pinching of nerves in the foot, may be to blame for recurrent pain in these situations. For reasons which are not fully understood, the incidence of Morton's Neuroma is 8 to 10 times greater in women than in men.

Anatomy Involved

When a nerve is pinched between bones, the result is swelling of the nerve. It is this swelling which is referred to as a Neuroma. When the condition occurs in the foot, it is known as a Morton's Neuroma. Morton's Neuroma is technically not a tumor. Rather, it is a thickening of the tissue that surrounds the digital nerves leading to the toes. These nerves allow for physical sensation on the skin of the toes.

The region of inflammation is found where the digital nerve passes under the ligament connecting the toe bones (metatarsals) in the forefoot. Morton's Neuroma commonly develops between the third and fourth toes, generally as a result of ongoing irritation, trauma or excessive pressure. In some cases, the second and third toes are involved. Morton's Neuroma is confined to one foot in most cases, though it can occur in both, particularly in athletes such as runners.

The resulting pain is caused by an enlargement of the nerve sheath of an intermetatarsal nerve in the foot. The reason this tends to occur in the third
intermetatarsal space, the space (between the third and fourth toes and metatarsals) is that the third intermetatarsal nerve is the thickest, resulting from the joining of two different nerves.

Occasionally, those given a diagnosis of a Neuroma, or nerve entrapment, undergo multiple surgeries to alleviate the entrapment, though numbness may be a result of weakness of tendons or ligaments rather than nerve pinching.

**What Causes Morton's Neuroma?**

There are a number of common causes for Morton's Neuroma, (though the condition can arise spontaneously for reasons still unknown). The Neuroma often occurs in response to irritation, pressure or traumatic injury to one of the digital nerves leading to the toes. A thickening of nerve tissue results as part of the body's response to the irritation or injury.

Abnormal foot movement used to compensate for bunions, hammertoes, flatfeet and other conditions can lead to irritation and development of Morton's Neuroma. Pronation of the foot may cause the heads of the metatarsal bones to rotate slightly, thereby pinching the nerve running between the metatarsal heads. Chronic pressure or pinching causes the nerve sheath to enlarge, becoming increasingly squeezed, producing worsening pain over time, if not addressed.

Morton's Neuroma can be exacerbated when tight shoes providing little room for the forefoot are worn. Activities which over-pronate the foot (such as walking barefoot in sand) may increase the pain associated with Morton's Neuroma, as will any high-impact activity, such as jogging.

**Signs and Symptoms**

Often, no outward signs (such as a lump or unusual swelling) appear from the condition. Neuroma pain is most often described as a burning discomfort in the forefoot. Aching or sudden shooting pain in the forefoot is also common. All running sports, especially distance running can leave an athlete vulnerable to Morton's Neuroma, which may appear or flare up in the middle of a run or at the end. The sufferer often has the desire to remove his shoe and rub the afflicted foot. Should the Neuroma be of sufficient size, or if footwear is particularly tight or uncomfortable, the painful condition may be present during normal walking. Numbness in the foot may precede or accompany Neuroma pain.

Metatarsal bones will be examined clinically, and often an x-ray will be taken to assess the particular case and ensure against other conditions, including fracture. When the foot is examined by a doctor, he may feel a characteristic "click," referred to as Mulder's
sign, and the interspaces between toe bones will often be tender. The doctor may put pressure on these areas to localize the site of pain and test for other conditions, including calluses or stress fractures. Range of motion tests will also be applied to rule out arthritis or joint inflammations. X-rays may be required to ensure there are no stress fractures or arthritis within the joints that join the toes to the foot.

Tenderness in one or more metatarsal bones may imply a pre-stress fracture or stress fracture. An ultrasound scan may be used to confirm diagnosis of Morton's Neuroma, as x-ray will not detect the condition, (but can confirm that the bones are uninjured).

While the condition may at first only appear during heavy repetitive stress or when wearing particular shoes which aggravate the foot, the Neuroma can become increasingly inflamed and produce more constant discomfort, lasting days or weeks. Runners may experience pain pushing off from starting blocks. Tight or narrow shoes as well as high heels likewise aggravate the Neuroma.

A checklist of symptoms includes:

- Burning pain - occasionally numbness - in the ball of the foot.
- Radiating pain from the ball of the foot to the toes.
- Intensifying pain during activity and when wearing shoes.
- Occasional numbness, discomfort, tingling or "electrical shock sensation" in the toes.
- Pain between the third and fourth toes, often occurring from the outer side of one toe to the inner side of the adjoining toe.
- Pain upon leaving the starting blocks in running sports.

**Prevention**

- Always warm-up thoroughly before vigorous athletics.
- Avoid activities that cause pain.
- Stretch and strengthen the feet through gradual exercise.

**Exercises to Help Recovery**

As you begin the recovery process, exercises can help to ease some of the foot pain and discomfort. These exercises will strengthen the supporting muscles in the foot and ankle and increase the space between the metatarsal bones. While supporting yourself, use a bottom step to exercise your foot. Place your forefeet on the step and let your
heels hang free. Raise your toes and then drop your heels below the step creating a deep stretch.

The second stretch can be done against a countertop or wall. Stand about two to three feet from the counter or wall. Then lean forward using your hands to brace yourself. Slowly bend your right knee and lift your heel from the ground. Repeat this movement on the left side and continue to repeat this motion, feeling an ease in the forefoot tightness.

The last exercise is done in the seated position. Using a sturdy chair with a straight back, seat tall. Extend one leg and lift it until the leg is not touching the seat. Flex your foot and move it in a circular motion. Repeat this exercise on the other foot. If any of these exercises cause you pain, stop immediately. The goal of these stretches is to relax some of the tightness that you feel in your foot.