

# Todd Gothelf

MD (USA), FRACS, FAAOS, Dip. ABOS

Foot, Ankle, Shoulder Surgeon

ORTHOSPORTS



## MORTON'S NEUROMA

You have been diagnosed with a Morton's Neuroma. While the name sounds scary, this is not cancer. A neuroma is an irritation of the nerve that causes pain and burning sensations in the toes of the foot. The cause of this condition is UNKNOWN, but is thought to occur from a mechanical irritation of the nerve in its enclosed space.

In each web space of the foot lies a nerve that runs between the bones of each toe. Because there are five toes, there are four web spaces and four nerves that provide sensation to the toes. At the ball of the foot the nerve travels in a tight space. It lies close to the skin on the bottom of the foot. Above the nerve is a strong ligament that is attached to the two bones on each side. The most vulnerable nerves are in the 2<sup>nd</sup> and 3<sup>rd</sup> web spaces. Ninety percent of neuromas occur in the 3<sup>rd</sup> web space and 10% in the 2<sup>nd</sup> web space. Neuromas NEVER occur in the first and fourth web spaces.

The body has a natural ability to maintain the nerves after minor injuries. For example, going out for a long run in the park may irritate the nerves—the body then does its thing to repair itself and you usually never know that your body has done all of this work!! However, when the injury is more substantial and the body is unable to repair the damage fully, permanent changes may occur within the nerve.

The changes that occur within the nerve are on a cellular level. The cellular changes that occur are called Perineural Fibrosis, and can be seen under a microscope. Frequently, the nerve also enlarges in size. This enlargement further exacerbates symptoms as it fills the enclosed space.

Symptoms from a neuroma include pain in the ball of the foot. This commonly occurs with walking and is worse when wearing shoes. Often a burning sensation can be felt in the toes, and numbness can occur.

The EXAMINATION is crucial to the diagnosis of a neuroma. Pressing on the web space over the affected nerve will cause pain on the bottom of the foot. Pain is usually worsened when the toes are squeezed together. A click that is felt when squeezing the toes (known as a MULDER SIGN) is highly indicative of a neuroma.

INVESTIGATIONS are often used to help diagnose a neuroma. An ultrasound can demonstrate a neuroma. An MRI is helpful when other diagnoses are considered, as an MRI can show clearly the bones and ligaments as well.

### Orthopaedic Surgeons

J. Goldberg  
A. Turnbull  
R. Pattinson  
A. Loeffler  
J. Negrine  
I. Popoff  
D. Sher  
T. Gothelf

### Sports Physicians

J. Best  
M. Cusi  
P. Annett

Initial TREATMENT for a Neuroma is non-operative, as 50-70% of neuromas can be relieved with these treatments. A soft pad placed under the foot is used to relieve pressure over the damaged nerve can relieve the pain from walking. It will also give the nerve some time to rest from constant injury to allow it to heal. A cortisone injection can cure the problem about 50% of the time. An injection can be done in the office or by the radiologist under ultrasound guidance.

The injection should ALWAYS take away the pain for at least ONE HOUR when the nerve is numbed. If this does not occur, other diagnoses should be considered.

If nonoperative treatment fails to relieve the pain, then surgery is considered. The surgery involves resecting the nerve at the injured area. I do this surgery through a DORSAL incision (top of the foot) as incisions on the bottom of the foot can cause irritating scar tissue. The nerve is resected along with the neuroma, and is sent to pathology to confirm the diagnosis. This procedure is a SAME DAY procedure and takes about one hour. Crutches are given for balance, but one is allowed to put FULL WEIGHT on the foot afterward. A wooden shoe is worn for two weeks to let the wound heal, and then normal shoes and walking is allowed. The success rate of the surgery is 70%.

COMPLICATIONS related to this surgery include a recurrence of a neuroma, incision pain, failure to relieve symptoms, numbness to the toes. Any of these complications may require further surgery.

In Summary:

- A Neuroma causes pain in the ball of the foot, most commonly in the 3<sup>rd</sup> webspace.
- Treatment initially includes a pad in the shoe and cortisone injections, which can cure the problem 50% of the time.
- Surgery is performed when non-operative treatment fails to help, but still has a limited success rate of 70%.

Todd Gothelf  
August 2011