

# Alcohol injection TARGETS intermetatarsal pain

Morton's neuroma (also called intermetatarsal neuroma, interdigital neuroma, and Morton's metatarsalgia) is a frequent finding thought to be caused by an entrapment of the intermetatarsal nerve (the plantar proper digital nerve) under the deep transverse intermetatarsal ligament, or by a mechanical foot imbalance causing repetitive trauma that results in degenerative neuropathy.

**Symptoms and diagnosis** Most patients present with similar complaints, which range from numbness in the digital web space to intense pain in the ball of the foot or into the toes with activity. When asked to describe these complaints, patients use terms such as pins and needles, burning pain, tingling, or a sense of fullness or cramping in the toes, especially with activity. Additionally, they may describe the pain as moving from the plantar ball of the foot to the toes, or radiating into the arch or up the leg. Walking in dress shoes or running in athletic shoes tends to increase the severity of symptoms and removing the shoes or resting tends to decrease the severity of symptoms after activity. Many patients report that removing the shoes and massaging the ball of the foot and toes provides immediate relief of symptoms; however, walking barefoot on hard surfaces may also be uncomfortable for patients with more advanced conditions.

The diagnosis of Morton's neuroma is made using several different techniques; however, clinical history and physical examination of the foot are the most reliable. Direct examination usually locates the point of maximum tenderness by reproducing symptoms during a pinch test involving dorsal and plantar compression of the intermetatarsal space or with the lateral squeeze test using medial and lateral compression of the forefoot area. Also, direct pressure at the plantar distal intermetatarsal space may reproduce the patient's symptoms and identify increased thickness or an enlarged nerve.

**Treatment options** There are numerous treatment options available for Morton's neuroma, ranging from no treatment to conservative methods to surgical care. The conservative alternatives include tape strapping of the foot to provide additional support, application of intermetatarsal pads to help separate the metatarsal heads on weight-bearing, and the use of functional orthotic devices to help stabilize the feet. Other conservative treatments involve vitamin B12 injections,<sup>6</sup> corticosteroid injections, and dilute alcohol injections.

Among the several surgical options is the most obvious: surgical excision of the involved nerve. Variations include transection of the intermetatarsal ligament with or without neurectomy, external or internal neurolysis, translocation of the involved nerve, endoscopic decompression, and other destructive measures such as laser ablation or cryogenic denervation.

The surgical techniques all have the potential for failure and complications. The major problems following surgery include recurrence of the condition, worsening of the pain, creation of traumatic or stump neuromas, excessive deep or superficial scar formation, damage to adjacent soft tissue structures, wound dehiscence, and infection. Less serious complications include numbness in the toes or around the ball of the foot, a feeling of fullness or swelling, and persistent paresthesias.

**Results and complications** Of the 100 patients included in the study, the 73 females and 27 males ranged in age from 20 to 75 years (average 51 years). Sixty-two left feet and 38 right feet were involved. Fifty percent of the patients had six or seven injections. The third intermetatarsal space was involved in 81 cases. Follow-up evaluation was performed for each patient at six months to two years (average 13 months) following completion of treatment. Final results showed that 82 patients reported 100% improvement of their symptoms and seven patients reported from 60% to 85% improvement. This resulted in an overall patient satisfaction rate of excellent or good of 89%. Eleven patients had continued pain or other symptoms at the end of the study and elected to proceed with surgical neurectomy. The long-term results of this prospective study appear to be superior to most reported forms of treatment, including surgical care.

The complications with this injection technique appear to be minimal and include failure to relieve the original symptoms, recurrence of symptoms, increased symptoms after the first and possibly the second injection (postinjection neuritis), and a postinjection lymphatic reaction. The increase in symptoms following the first or second injection appeared to be relatively common and occurred in the first 48 hours after the injection, after which the intensity decreased rapidly. By the subsequent clinical visit all patients reported that the "new" pain had decreased significantly and in most patients had subsided completely. Very few patients had similar increased pain after the third or subsequent injections due to the increasing neurolytic effect of the previous injections.