

Foot Pain: Causes and Treatment

Physical Therapy in Merrimack Valley for Foot

Foot Pain: Causes and Treatment

In this review article, orthopedic surgeons specializing in foot care bring us up-to-date on a type of foot pain called metatarsalgia. Metatarsals refer to the long bones of the toe. The term -algia always indicates pain. So in metatarsalgia, the pain occurs at the base of the toes where the metatarsals join the phalanges (end of the toes). You might recognize this area as the "ball" of the foot.

If you look up the treatment for metatarsalgia, you won't find a "one-size-fits-all" recipe. Every patient who presents to the surgeon with this problem has a different reason why it developed. And in order to get the best results, treatment must be individualized for each person.

What are some of the most common causes of metatarsalgia? The first is congenital foot problems (deformities). Congenital means they are present at birth. This can include pes cavus (excessively high arch), equinovarus (clubfoot), or abnormal differences in the length of the toes.

Acquired problems such as neuromas, malignant tumors, infection, arthritis, or fractures (especially fractures that don't heal properly) can contribute to metatarsalgia. Basically, anything that alters the way the foot hits the ground or changes the contact points for pressure and load through the foot can lead to metatarsalgia.

There are still other potential causes such as trauma, failed foot surgery, or nerve entrapment. This is called iatrogenic metatarsalgia. In order to get to the bottom of the problem, the surgeon will conduct a careful exam, look at the wear pattern of the shoes, and probably order some X-rays or other imaging studies (e.g., MRIs).

Often calluses on the bottom of the foot point right to the area of abnormal weight bearing and overload. The problem can be severe enough for the bones to form spurs or shift out of alignment. The end-result can be even more deformities such as hallux valgus (bunions).

The examiner will check out the motion of each individual joint (ankle, forefoot, toes) and assess muscle strength and function. Pulses will be palpated (felt) to assess circulation to the foot and any skin changes (e.g., ulcers) or swelling will be noted.

Most cases of metatarsalgia are treated conservatively (nonoperative care) first. Physical Therapy may be a good idea. The therapist will help find the right shoe modifications, work on correcting postures that might be contributing to the problem, and address any muscle imbalances.

Stretching and strengthening may be needed as well. The therapist's evaluation will guide the specifics of which muscles need additional training in either direction (flexibility or endurance training).

Other noninvasive approaches may include corticosteroid injections into the painful area. This treatment technique is used carefully as there are often more side effects than benefits. For patients who have painful calluses, the surgeon may decide to shave or trim off the excess tissue. Injections and callus shaving really only provide short-term relief of pain. Getting to the main cause of the problem is the best treatment

approach.

And that's where surgery comes in. If conservative care is unsuccessful in changing the pressure distribution along the bottom of the foot, then it may be time to try something else. Just what that "something else" is depends on the underlying pathology.

The surgeon may decide to perform a simple muscle release or tendon transfer. These techniques can help shift alignment more toward normal. But sometimes more involved bone surgery is required. The most common surgeries performed include fusion, osteotomy, and bone resection.

Fusion is fairly self-explanatory. Bone graft placed around the joint is used to stop motion at a particular joint. This procedure helps stabilize a joint that is overloaded and has too much motion.

An osteotomy refers to one of many ways to remove a pie- or wedge-shaped piece of bone. The effect of an osteotomy is to shift bone angles and change the distribution of weight through that bone. The type of osteotomy performed depends on where the wedge of bone is removed and if it is placed somewhere else to alter the bone alignment. Some of these procedures include a distal oblique metatarsal osteotomy, midshaft segmental metatarsal osteotomy, or basal metatarsal osteotomy.

Bone resection is the removal of a specific area of the bone -- for example, the end of the metatarsal bone called the metatarsal head. The metatarsal head is where the joint can get subluxated (partially dislocated) or fully dislocated.

For surgeons interested in what the authors have to say, each surgical procedure is described along with reasons why each one might be used. Expected results are reviewed and statistics of outcomes from previous studies presented.

They conclude by repeating the main point of this article: metatarsalgia may be a pain in the foot plain and simple, but the causes behind this condition are complex and varied. Understanding of normal foot anatomy and what went wrong is important when planning treatment for each and every affected patient.

If all deformities are not corrected, the patient won't have a good result. Conservative care should be tried first because it's not invasive and it won't ruin the patient's chances for surgery later.

Reference: Norman Espinosa, MD, et al. Metatarsalgia. In *Journal of the American Academy of Orthopaedic Surgeons*. August 2010. Vol. 18. No. 8. Pp. 474-485.