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## MORTON'S NEUROMA

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## DEFINITION/DEVELOPMENT



Fig.1 Nerve path and location of the constriction

Morton's neuroma is a nerve compression syndrome between the heads of the metatarsals. The nerves in the forefoot run between the metatarsals. At the level of the heads of these metatarsals, the nerve passes under a ligament (Ligamentum intermetatarsale) that connects the heads with each other. As it continues, the nerve divides into at least 2 branches, one in each toe (Fig. 1). The nerve has very little space at this point. If the forefoot is overstressed (e.g. splayfoot, shortened calf muscles) or in a tight shoe, the pain occurs because the

nerve receives too much pressure with every step. This chronic mechanical irritation leads to swelling and scarring and to an increase in the size of the nerve. The space problem thus increases constantly. Since the nerve is a sensitive and not a motor nerve, there are no signs of paralysis but only pain and sensory disturbances.

Most often, Morton's neuroma is seen between the third and fourth and between the second and third toe.

## SYMPTOMS

The symptoms are very varied. Most patients describe pain in the ball of the foot under the heads of the metatarsals. The pain is often of a stabbing and burning character and is perceived as extremely "poisonous". Occasionally, the feeling of a foreign body, stone or wrinkle under the ball of the toe is also reported. As a rule, the pain occurs when the load is increased and in closed shoes. Relief is often experienced when the shoes are taken off and the foot is massaged or cooled a little. Occasionally patients also experience tingling or numbness in the toes. Typically, a sudden, stabbing pain occurs at rest (e.g. at night), which can be brief but very severe. In about 80% of cases, the symptoms occur between the third and fourth toe. Other localizations are rather rare.

## EXAMINATION

The examination reveals pain when pressure is applied between the heads of the metatarsals and when the metatarsals are "squeezed" sideways. Occasionally a reduced sensitivity in the toes can be detected.

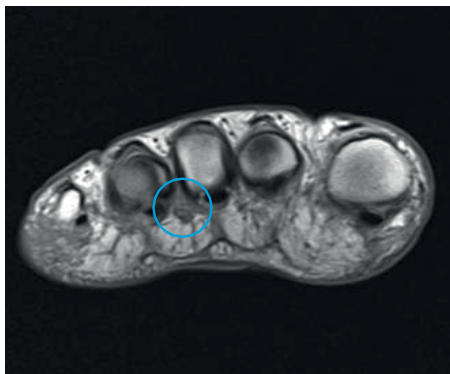


Fig. 2 MRI with Morton's neuroma

As a rule, we take an x-ray in order to assess the bony situation. This allows us to determine how the metatarsal bones are positioned and whether they are exposed to increased stress. Occasionally we perform an MRI. There, thickening of the nerves can be detected (Fig. 2).

A test infiltration with a local anaesthetic is the most helpful and effective. This can be carried out during consultation hours.

## TREATMENT

### A) Non Surgical

Conservative treatments can be tried depending on the extent of the complaints. The main focus is on reducing forefoot overload with adapted footwear, insoles if necessary and, if necessary, physiotherapy for shortened muscles.

In addition, the infiltration can be carried out with the addition of cortisone. We assume that this leads to an inhibition of inflammation and swelling of the nerve thickening and in the best case the complaints disappear even for some months or longer. An infiltration with cortisone cannot be repeated at will; experience shows that the effect diminishes each time. We recommend a maximum of two infiltrations per Morton's neuroma.

### B) Surgical

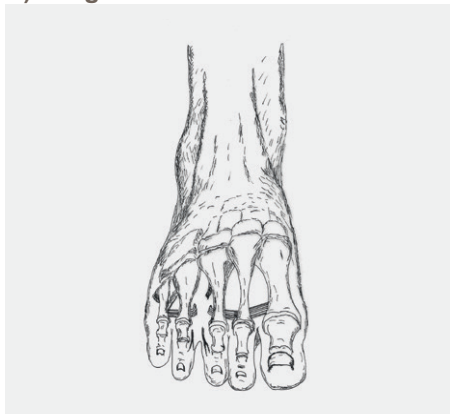


Fig. 3 Excision of the Morton's neuroma

If the conservative measures have been exhausted and the symptoms persist nevertheless, surgery is a sensible treatment. The nerve can be relieved, i.e. the constriction can be widened, and the neuroma can be removed. As a rule, we perform both procedures, as it is often not sufficient to simply widen the constriction. The nerve in the area of the bifurcation is shown and the branches to the toes and the branch between the metatarsal bones are exposed so that a sufficiently long piece can be removed.

This is important in order to prevent the nerve endings from "rejoining". It is accepted that a sensory disturbance/deafness in the toes will develop afterwards, but there is no more pain. This sensory disorder takes some getting used to at first, but experience shows that it does not bother patients.

The operation is successful in more than 80% of cases, but sometimes a new neuroma is formed again.

## **RISKS AND COMPLICATIONS**

Complications and risks may occur during or after the operation and delay the healing process or make further surgery necessary. They can never be completely ruled out during an operation, even if they are rare during foot surgery. These are summarized below:

- Wound healing disorders
- Infections
- Vascular injuries, secondary bleeding, bruising, blood loss
- Nerve injury
- Recurrence
- Thrombosis, embolism
- Residual complaints

## **FOLLOW-UP TREATMENT**

The operation is only a part of the whole treatment. The post-operative treatment plays a significant role in the success of the operation. It is important that you know what you should observe and possibly avoid.

### **Dressing and Wound Care**

During the time in the hospital you will be shown how to care for the wound. As long as the wound is **not** completely dry (wound secretion/blood), the dressing should be changed daily. Do not use ointments or powders directly on the wound surface as long as the stitches have not been removed! Disinfection is not necessary. Always remove the entire dressing when changing. The new dressing must be dry and must not slip.

If the wound is dry, a normal plaster (quick bandage) is sufficient. An elastic bandage can protect and cushion the operated area a little. The remaining swelling is also reduced. If you are not sure whether everything is normal, you can consult your family doctor or contact us directly.

The stitches can be removed about 2 weeks after the operation, usually by the family doctor.

### Swelling and Pain

After an operation the affected foot is always more or less swollen. This swelling can occur repeatedly over weeks (up to 6 months). The most effective measure is to elevate the leg. It makes sense to move several times a day (walking, less standing) but only for a short time. If the foot becomes strained and starts to hurt, this is a sign to elevate the leg again.

It is important to know that there is a general tendency for the foot to swell after foot surgery. This reaction is normal and disappears again after 6 to 12 months.

Despite these measures, pain in the operated foot can occur in the first days and weeks after the operation. In contrast, you can take the prescribed pain medication.

### Weight-Bearing

Generally, weight-bearing of the foot is allowed after a Morton Neuroma excision. To protect and facilitate mobility, you have been given a special shoe (Fig. 4). This prevents the foot from rolling and protects the wound even when fully weight-bearing. It should be worn for the first 2 weeks until the wound has healed safely. After that it can be left out more and more depending on the symptoms.



Fig.4 Special shoe

#### Full Weight-Bearing

As soon as the pain allows it, you may put full weight-bearing on the foot. At least at the beginning it is advisable to use the crutches for walking safety.

### Personal Hygiene

As long as the stitches are still in the wound, i.e. usually in the first 2 weeks, the operated foot should be protected with a plastic bag. The easiest way is to pull the plastic bag over the special shoe. As soon as the stitches are removed, you can shower and bathe without further precautionary measures.

### Thrombosis Prophylaxis

Thrombosis prophylaxis begins during the hospital stay. Depending on the operation, this prophylaxis must be continued. In most cases, we use Fragmin 5000IU pre-filled syringes, which are injected by the patient themselves once a day. You will be instructed by our nursing staff during your stay.

The injections must be administered for 10-14 days with this procedure. After this time, full weight bearing and walking without crutches should be possible.

### **Work Ability**

A rest period is crucial after an operation. In the first 2 weeks you should take care of yourself and not work. How long you will be unfit for work depends on the type of surgery as well as your stress profile. In most cases you and your employer should be able to temporarily find less stressful work. This enables early resumption of work.

The signed work absence that you will receive from us is a preliminary assessment. The certificate can be extended if you are not able to resume work after this time. If this is the case, report to your family doctor or to us.

However, you may take up your work again any time before the given date, if you feel capable to do so.

### **Driving a Car**

At what point you can resume driving again depends on the kind of operation you had. You must refrain from driving as long as you cannot fully weight bear your foot or are still requiring crutches. How far thereafter your ability to drive is restored is up to you. In case of doubt or if you are unsure, we recommend to avoid driving.

### **Check-Ups**

As a rule, you can wear your own shoes again before the follow-up check. We recommend shoes with rather firm soles and soft upper leather at the beginning. Six weeks after the operation, a clinical check-up will be carried out by your surgeon. Sporting activities can then be increasingly taken up and in most cases we will already complete the treatment.

As with all operations on the feet, swelling in the area of operation can last for several weeks. There is often a feeling of tension in the foot.

Occasional shooting pain in the toes after the operation can also occur, comparable to a phantom pain. However, this phenomenon disappears very quickly.