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Metatarsalgia (Metatarsal injury)

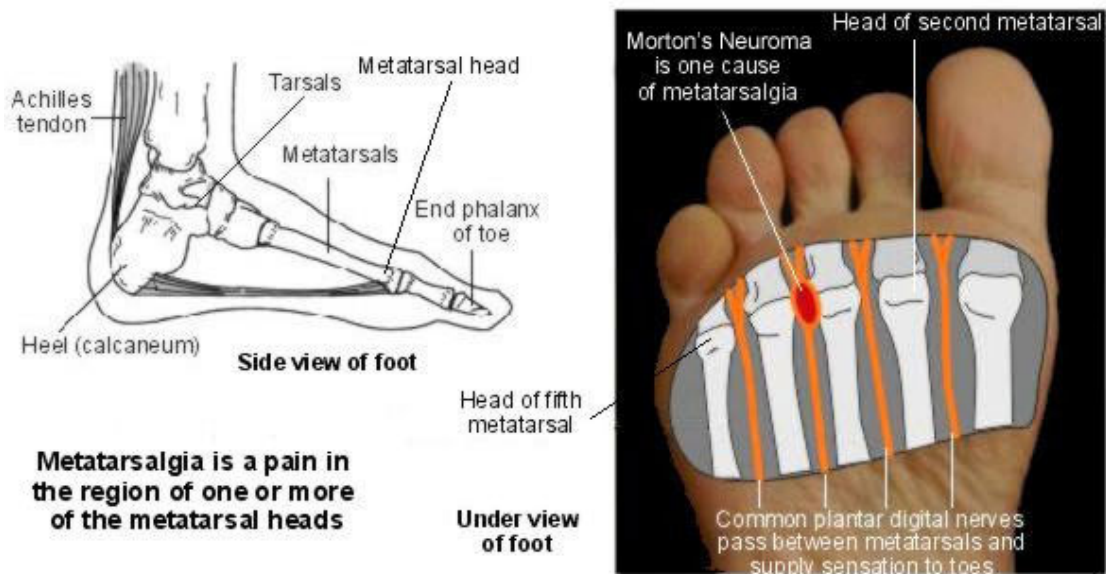
Metatarsalgia is the name given to pain in the front part of your foot under the heads of your metatarsal bones – the ball of your foot. Metatarsalgia can be caused by a number of different conditions affecting the foot. You may need some investigations to find the cause of your pain. Treatment will depend on the underlying cause. Simple measures such as changes to your footwear, rest and losing weight can sometimes help.

What is metatarsalgia?

Metatarsalgia is a general name given to pain in the front part of your foot under the heads of your metatarsal bones. This is the area on the sole of your foot, just before your toes. It is sometimes called the ball of your foot. Metatarsalgia can be caused by a number of different conditions affecting the foot. It is really a symptom of other problems rather than a specific disease itself.

Anatomy of your foot

Spare a thought for your feet – they have to bear the weight of your whole body. There are many bones in each foot and these can briefly be divided into the tarsal bones, the metatarsal bones and the phalanges. See the image on this page. The tarsal bones are the larger bones that form the back section of your foot, with the heel bone (calcaneum) being the largest. There are five metatarsal bones and these are given names from the first to the fifth. The first metatarsal bone is the largest and is the bone that joins to your big toe. Each toe has three phalanges, except the big toe which only has two. This means that there are three joints in the toes (two joints in the big toe).



There are also many muscles, tendons and ligaments within your foot. The bones, ligaments and tendons within your foot form the foot arches. These arches are called the longitudinal and transverse arches. It is your foot arches that allow your foot to hold up the weight of your body. Nerves provide sensation to the skin of your foot.

What causes metatarsalgia?

Metatarsalgia can be caused by a number of different conditions. Common causes include:

Overuse

For example, overuse in runners and athletes, which can cause some mild inflammation in the metatarsal heads and nearby joints. Other sports such as tennis or sports that involve jumping may also put extra stress on the metatarsal heads and lead to inflammation and pain.

Wearing high-heeled shoes

This can put extra stress on the metatarsal heads. Footwear that is poorly fitted or too tight may also be a cause.

Being overweight

This can put extra stress on the feet in general, but particularly on the metatarsal heads.

Having a stiff ankle or Achilles tendon (the tendon at the heel)

This can affect the way that pressure is distributed across the foot and may lead to extra stress on the metatarsal heads.

Morton's neuroma

This is sometimes called Morton's metatarsalgia. It is a condition that affects one of the nerves that run between the metatarsal bones in the foot (the plantar digital nerves). Symptoms include pain, burning, numbness and tingling between two of the toes of the foot. [See the separate leaflet called Morton's Neuroma for more detail.](#)

Claw foot (pes cavus)

In pes cavus, your foot has a very high arch which does not flatten when you put weight on your foot. It happens because of an imbalance in the muscles of the foot. It can run in families. Sometimes pes cavus can happen out of the blue. However, most people with pes cavus also have a neurological problem such as cerebral palsy, spina bifida, [muscular dystrophy](#) or polio. Pes cavus can mean that extra stress is placed on the ball of the foot, which can lead to metatarsalgia.

Hammer toe or claw toe deformity

With a claw toe you have an abnormal position of all three of the joints in the toe. The joint with the metatarsal bone is bent upwards, the middle joint in the toe is bent downwards and the end joint in the toe may also be bent downwards. The toe resembles a claw. With a hammer toe, your toe is permanently bent at its middle joint so that it looks like a hammer. There are a number of conditions that can cause these toe deformities. These can include poorly fitted shoes, injury to the toes, bunions and [rheumatoid arthritis](#). Hammer and claw toe can also occur in someone with pes cavus. They can also run in families. These toe deformities can mean that extra stress is placed on the ball of the foot, which can lead to metatarsalgia.

Bunion (hallux valgus)

A bunion is a deformity of the base joint of the big toe, causing the big toe to be angled towards the second toe. This causes a bump on the side of the foot at the base of the big toe. There is often thickening of the skin and tissues next to the affected joint. The thickened skin and tissues may become inflamed, swollen and painful. Because of the bunion, extra stress is put on the ball of the foot and this can lead to metatarsalgia. [See the separate leaflet called Bunions for more detail.](#)



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Previous surgery to the foot

This can include, for example, previous surgery for bunions.

Stress crack (fracture) of a metatarsal

A stress fracture is a type of incomplete fracture in a bone. Stress fractures tend to occur as a result of overuse and are known as overuse injuries. A metatarsal stress fracture is a stress fracture in one of the metatarsal bones in the foot. [See the separate leaflet called Metatarsal Fractures for more detail, including metatarsal stress fractures.](#)

Freiberg's disease

This is a rare disease characterised by death of some bone (osteonecrosis) of the second metatarsal, most commonly seen in teenage girls.

Arthritis or gout

This can cause inflammation of the joints in the ball of the foot or of the big toe and can be a cause of metatarsalgia. [See the separate leaflet called Gout](#) and those on arthritis for more detail.

Diabetes

This can cause damage to the nerves in the feet and can be a cause of metatarsalgia. [See the separate leaflet called Diabetes \(Diabetes Mellitus\).](#)

Metatarsalgia symptoms

Metatarsalgia causes pain in the ball of your foot that can be made worse by standing, walking or running. Some people describe the pain as feeling like they are walking on pebbles. Others describe more of a general aching pain. The pain can occur in one or both feet. In some people the pain is felt under one or two metatarsal heads; in others it is felt under all of them.

Metatarsalgia usually comes on gradually over some weeks rather than suddenly. The affected area of your foot may also feel tender when you (or your doctor) press on it.

Morton's neuroma has other specific symptoms and is explained further in the separate leaflet.

Do I need any investigations?

If you have metatarsalgia, your doctor will usually try to establish the cause for the pain. They may be able to identify the cause just by listening to you, asking you questions and examining your foot. However, they may also suggest one or more of the following investigations:

- [Blood tests](#). These can check for diabetes, arthritis and gout.
- [X-ray](#) of your foot. This can show a problem with the bones or joints in your foot.
- An ultrasound scan may be used to detect Morton's neuroma.
- Other tests. Occasionally more detailed tests, such as a [magnetic resonance imaging \(MRI\) scan](#) of your foot, are needed.

How to treat metatarsalgia

Simple measures can help to relieve the symptoms of metatarsalgia. These include:

- Resting with your feet elevated where possible.
- [Losing weight](#) if you are overweight.
- Wearing shoes that are well fitted, low-heeled and have a wide toe area.

- Metatarsal pads and orthotic inserts for your shoes may help to relieve pain in your foot by reducing the pressure placed on the heads of your metatarsal bones.
- Physiotherapy may also be helpful. This may include exercises to help a stiff ankle or exercises to help stretch your Achilles tendon if these are problems for you.
- Simple [painkillers](#) such as [paracetamol](#) and [non-steroidal anti-inflammatory painkillers \(NSAIDs\)](#) such as [ibuprofen](#) may help to relieve pain.
- Seeing a podiatrist can help to see if you have hard skin (callus) build-up which is altering the way you weight bear.

Other treatment will depend on the underlying cause of your metatarsalgia. For example, if [diabetes](#) is the cause, you may need better control of your diabetes. If gout or arthritis is the cause, you may need treatment for these conditions. Surgery is sometimes needed to treat metatarsalgia if other treatments have failed. This will depend on the underlying cause - for example, straightening of hammer or claw toes or surgery for Morton's neuroma.

How to prevent metatarsalgia

Some of the causes of metatarsalgia cannot be prevented - for example, metatarsalgia due to claw foot (pes cavus). However, there are some things that may help to prevent some of the other causes. These include:

- Ensuring that shoes are well fitted, low-heeled and have a wide toe area. This may help to prevent some causes of metatarsalgia, including Morton's neuroma.
- Ensuring that you wear good, properly fitted footwear when running or doing sports with high impact on the feet.
- Losing weight if you are overweight.
- If you have diabetes, good control of your diabetes may reduce your chance of developing foot problems.

Further reading

- [Metatarsalgia](#); Wheeless' Textbook of Orthopaedics
- [Besse JL](#); Metatarsalgia. Orthop Traumatol Surg Res. 2017 Feb;103(1S):S29-S39. doi: 10.1016/j.otsr.2016.06.020. Epub 2017 Jan 18.
- [Munir U, Tafti D, Morgan S](#); Morton Neuroma.
- [Malta JN, Martins J, Azenha A, et al](#); Diagnostic and Therapeutic Challenge of Metatarsalgia in a Patient With Rheumatoid Arthritis. Cureus. 2022 Jan 30;14(1):e21751. doi: 10.7759/cureus.21751. eCollection 2022 Jan.

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