



Mr Wilkinson Patient Information Leaflet

What Is A Short Toe (Brachymetarsia)?

Brachymetatarsia is a condition where there is a growth disturbance to a bone in the foot creating a short toe. Most commonly this affects the fourth toe although it could affect any toe. The toe itself is usually normal length, but the bone the toe attaches to in the arch, the metatarsal bone, is short. The toe will often float meaning it will sit higher than its neighbours as in the diagram below.

Toe Lengthening Patient



Symptoms of A Short Toe

A short toe is almost always embarrassing and is often associated with pain. Patients with short toes tend to hide their feet and avoid being barefoot. Depending on the severity of the short toe, pain could be present. The toe often sits higher up on the foot and can get irritated in shoes. Also the weight distribution of the ball of the foot is altered with a short toe and can cause pain and pressure calluses.

Causes of Brachymetatarsia

Hereditary is the most common cause, though trauma can also play a role. A short toe is a growth disturbance and NOT a birth defect. It occurs more in females than males.



There are five metatarsals in the foot, with the fourth metatarsal most commonly involved. Some people can have multiple metatarsals that are affected. It can occur in one foot or both feet.

Typically with brachymetatarsia, the metatarsal bone growth is stunted whereas the surrounding bone grow normally. Its usually noticed in early childhood during bone development.

When to Seek Short Toe Treatment

Common reasons patients seek treatment for brachymetatarsia are:

- Pain
- Interference with walking/activities
- Difficulty fitting shoes
- Worsening problem
- Pain at the ball of the foot
- Unsightly appearance
- Psychologically embarrassing

Non-operative Treatments for Short toe

Non-surgical methods for brachymetatarsia are aimed at decreasing symptoms (i.e., pain and/or calluses).

Simple treatments patients can do are:

- Wear supportive shoes
- Use an arch support
- Wear shoes with a wide toe box
- Modify activities
- Spot stretch shoes

Short Toe Lengthening Surgery

Depending on the severity there are several methods to surgically correct a short toe. In general, the surgery involves lengthening the metatarsal bone with either a bone cut, bone graft, and/or gradual lengthening.



How Are Short Toes Surgically Corrected?

The basis for toe lengthening involves restoring the length to the short bone. Many methods have been described, however three techniques are used today.

- **Sliding Bone-cut lengthening:** This is only used for very mild cases. It involves creating a specially oriented or angle cut in the metatarsal bone to lengthening the bone by shifting the cut bones onto one another. Because only a small amount of length can be gained, and most brachymetatarsal problems call for more advanced techniques, the sliding bone cut lengthening is the least performed type
- **Bone-graft lengthening** is a common ONE stage procedure where the toe length is achieved by inserting a structural bone graft into the short bone. The bone graft size is determined on the amount of length that is needed. However, there is a limit to how much length can be obtained with this method as well. The bone graft is stabilised with a bone plate and screws that stay in the foot. For this procedure we use bone graft from the patient's own heel bone.
- **Brachymetatarsia External Fixator lengthening.** Think of this a bone stretching or bone growing procedures. A precise bone cut that preserves the blood supply is made and an external fixator is attached to the bone segments to stretch the bone apart over a period the time. The patient turns the device 2-4 times per day to slowly grow the bone until the proper length is reached, then the fixator is removed.



Brachymetatarsia Surgery Recovery

Recovery after brachymetatarsia surgery generally depends on the method of surgery performed, and the amount of shortening that needs to be corrected. The minimal amount of time is generally 6-8 weeks. Large defects where the external fixator is used can involve casting up to 3 months. Factors that may prolong healing are age, smoking, poor nutritional status, and some medical problems.



Walking After Brachymetatarsia Surgery

Walking after short toe surgery is strongly dependant on the method (procedure) surgeons choose to correct the problem, techniques used to stabilise the bones while they mend, and amount of lengthening that is needed. In most cases, however, patients are non-weightbearing (or heel touch) weightbearing for a minimum of 6-8 weeks and can be up to 3 months or so.

What Anesthesia Is Needed For Brachymetatarsal Lengthening Surgery?

Most cases of toe lengthening surgery are performed as outpatient surgery under local anesthesia, which means that the patients go home the very same day.

Is Hardware Implanted Into The Foot With Toe Lengthening Surgery?

Surgical hardware is a necessary part of the brachymetatarsia surgery. Depending on the method used, some of the hardware is permanent. Bone plates and screws with the bone-graft lengthening are usually permanent, but can be removed at a patient's request at a later date. With the toe lengthening with external fixator, the rods used to hold the bone steady are removed once the bones is healed and no hardware remains.

What Are The Risks Of Toe Lengthening Surgery

There are general risks of brachymetatarsia surgery (or any surgery) and the use of anesthesia.

Complications may occur and are not necessarily your fault, or the fault of your surgeon. Nonetheless, you should understand the risks.

Brachymetatarsal surgery complications include, but are not limited to: disappointment with cosmetic appearance, infection, pain (temporary or permanent), swelling, hematoma, bleeding, blood clot, poor wound healing, incision breakdown, poor bone healing (delayed union, nonunion), malunion, nerve injury, disability, recurrence, hallux varus, metatarsalgia, unsightly scar, stiffness, shortness of toe, too much length to toe, weakness in toe, loss of toe, hardware problems, need for revisional surgery, and/or catastrophic loss.