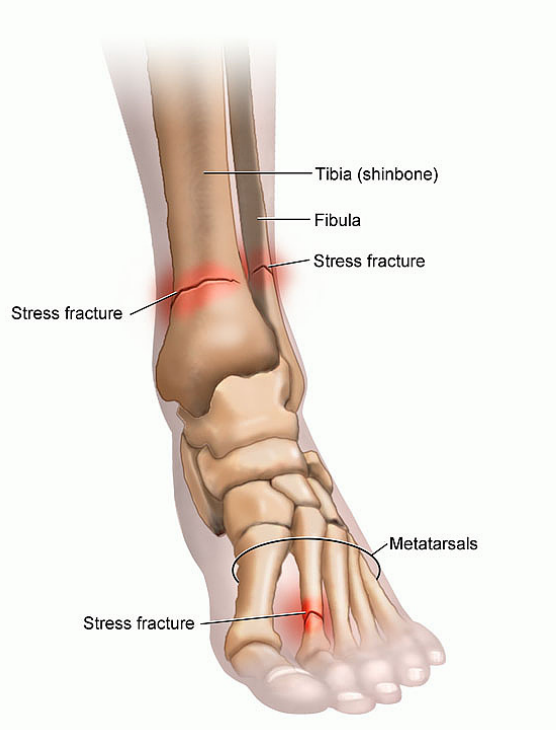
Fact Sheet

Stress Fractures of the Foot and Ankle

What is a Stress Fracture?

A stress fracture is a small crack in a bone, or severe bruising within a bone. Stress fractures can occur in any bone of the foot, but most commonly in the long metatarsal bones. This is the area of greatest impact on your foot as you push off when you walk or run.

Stress fractures are also common in the calcaneus (heel); fibula (the outer bone of the lower leg and ankle); talus (a small bone in the ankle joint); and the navicular (a bone on the top of the midfoot).



Causes

The most common cause of stress fractures is a sudden increase in physical activity. This increase can be in the frequency of the activity, such as exercising more days per week. It can also be in the duration or intensity of activity, such as running longer distances.

Even for the non-athlete, a sudden increase in activity can cause a stress fracture. For example, if you walk infrequently on a day-to-day basis but end up walking excessively (or on uneven surfaces) while on holiday, you might experience a stress fracture.

As a result, stress fractures are mainly caused from overuse. Bone is in a constant state of turnover, a process called remodeling. New bone develops and replaces older bone. If the activity is too great, the breakdown of older bone occurs rapidly, outpacing the body's ability to repair and replace it. The bone, as a result weakens and becomes vulnerable to stress fractures.

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Several other factors can increase your risk for a stress fracture:

Bone insufficiency

Conditions that decrease bone strength and density, such as osteoporosis, and certain long-term medications can make you more likely to experience a stress fracture, even when you are performing normal every day activities. Stress fractures are more common in the winter months, when Vitamin D is lower in the body.

Poor conditioning

Doing too much too soon is a common cause of stress fracture. This is often the case with individuals who are just beginning an exercise program, but it can occur with experienced athletes as well. Pushing through discomfort and not giving your body the opportunity to recover can lead to stress fractures.

Poor biomechanics

Anything that alters the mechanics of how your foot absorbs impact as it strikes the ground may increase your risk for a stress fracture. For example, if you have a blister or bunion, it can affect how you put weight on your foot when you walk or run. This may require an area of the bone to handle more weight and pressure than usual.

Change in surface

A change in training or playing surface, such as a tennis player going from a grass court to a hard court, or a runner moving from a treadmill to an outdoor track, can increase the risk for stress fracture.

Poor footwear

Wearing worn or flimsy shoes that have lost their shock-absorbing ability may contribute to stress fractures.

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Symptoms

The most common symptom of a stress fracture in the foot or ankle is pain. The pain usually develops gradually and worsens during weight-bearing activity. Other symptoms may include:

- Night Pain
- Pain that diminishes during rest
- Pain that occurs and intensifies during normal, daily activities
- Swelling on the top of the foot or on the outside of the ankle
- Tenderness to touch at the site of the fracture
- Possible bruising

Typical stress fracture of the distal shaft of the second metatarsal not seen on initial radiograph (left). Callus formation is seen at 4 weeks follow up.

Treatment

Stress fractures start as a tiny crack, so it is often difficult to see on a first x-ray. The fracture may not be visible until several weeks later when it has actually started to heal. After a few weeks, a type of healing bone called callus may appear around the fracture site. This is often the point at which the fracture line becomes visible in the bone.

If it is a suspected stress fracture and cannot be seen on xray, a bone scan or magnetic resonance imaging (MRI) scan may be done as these are more sensitive than x-rays and can often detect stress fractures earlier.

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Treatment (cont.)

The goal of treatment is to relieve pain and allow the fracture to heal. Treatment will vary depending on the location of the stress fracture and its severity. The majority of stress fractures are treated non-surgically.

In addition to the RICE protocol and anti-inflammatory medication, it may be recommended you use crutches to keep weight off your foot until the pain subsides. Other non-surgical treatment may include:

Modified activity

It typically takes from 6 - 8 weeks for a stress fracture to heal. During that time, switch to activities that place less stress on your foot and leg. Swimming and cycling are good alternatives.

Moon Boot, Casting, Crutches

Depending on the site of the stress fracture, immobilising and offleading the foot maybe indicated.

Footwear and Orthotics

Footwear assessment is vital and using a shoe with a stiff midsole is helpful.

Orthotics can be used to offlead, balance load and correct biomechanics.

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