

Charcot Foot (Charcot Neuroarthropathy)

What is Charcot Foot (Charcot Neuroarthropathy)?

Charcot foot is a rare foot and ankle condition that can lead to bone and joint deformities. People who develop Charcot foot have a higher risk of getting ulcers (sores) and amputations due to the deformities. Charcot is a destructive form of arthritis and can affect any joint in the body, but most commonly affects the foot and ankle. The mid-foot joint is the most common joint that becomes deformed (called rocker bottom foot).

What are the symptoms?





The most common sign is nerve damage in the foot or ankle that leads to numbness, pain, redness, and swelling. The affected foot may also feel warmer than the other foot. Numbness increases the chance that you could fracture or injure your foot and not feel it. This means your injury or fracture can become serious and you may not notice it until later. Your joints can collapse and the foot can become deformed, making it difficult to walk. Charcot can occur multiple times throughout one's lifetime, without a significant triggering event.

Who gets Charcot foot?

Less than 40,000 people a year are diagnosed with Charcot foot. Charcot foot is most commonly seen in people with diabetes who have nerve damage. Not all patients that have Charcot foot have diabetes and not all patients with diabetes will develop Charcot foot. Charcot foot can be caused by any disease that leads to nerve damage, also called neuropathy.

What does Charcot look like?

Left to right are the stages of Charcot: Stage 0, Stage 1, Stage 2, Stage 3.

Stage 0	Stage 1	Stage 2	Stage 3
			

What stage is my Charcot?

Stage 0:

Charcot is in early stages.

Symptoms

- Swelling
- Redness
- Warmth
- No deformity

Imaging:

Normal x-ray with no deformity. MRI shows bone swelling and stress fractures



Treatment:

- Frequent evaluations/monitoring with your foot care specialist and serial x-rays.
- Offloading: Immediate restriction of foot movement to prevent more fractures and dislocations and allow areas to heal. This is done with total contact casting or prescribed devices.

Stage 1: Destruction**Symptoms:**

- More swelling
- Redness
- Warmth
- Minor bone deformity
- Joint weakening

This is the stage where you are most at risk for fractures and dislocations.

Imaging:

X-rays show the bones around the joint are becoming dis-jointed and break into small pieces (fragments).

**Treatment:**

- Frequent evaluations and monitoring with your foot care specialist and serial x-rays.
- Offloading: Immediate restriction of foot movement to prevent more fractures and dislocations and allow areas to heal. This is done with total contact casting or prescribed devices.

Surgical correction of the deformities, or surgery to put bones back into place (open reduction) and insert screws, plates, or steel rods to hold them together (internal fixation).

Stage II: Coalescence

Symptoms:

- Less swelling
- Less redness
- Less warmth
- Major bone deformity
- Joint weakening

Imaging:

X-rays show formation of callus. The bone fragments harden. They start to fuse together and cause deformities.



Treatment:

- Frequent evaluations and monitoring with your foot care specialist and serial x-rays.
- Offloading: Immediate restriction of foot movement to prevent more fractures and dislocations and allow areas to heal. This is done with total contact casting or prescribed devices.
- Surgical correction of the deformities, or surgery to put bones back into place (open reduction) and insert screws, plates, or steel rods to hold them together (internal fixation).

Stage III: Remodeling

Symptoms:

- No swelling
- No redness
- No warmth
- Fixed bone deformity
- Joint stiffness

Imaging:

- X-rays show rounding and smoothing of bone fragments.
- The joints become fixed and may collapse.
- Tissue may grow between joints.

**Treatment:**

- Frequent evaluations and monitoring with your foot care specialist and serial x-rays.
- Appropriate shoes and inserts as recommended by your foot care specialist.

What are my Treatment Options?

Offloading is the use of special footwear to help reduce pressure to the bottom of the foot. Offloading devices also help ulcers heal by “taking off the load”.

Your doctor may recommend any of the following offloading footwear:

- Boot (removable cast boot)
- CROW boot-CROW stands for Charcot Restraint Orthotic Walker. The boot stabilizes your foot and ankle. It has a curved sole so you can walk without bending the ankle.
- Total contact cast-A cast that reduces pressure and has the highest rate of wound healing success. The cast consist of two parts: an open weave cast and a walking boot.
- Crutches/walker/wheelchair

Will I need surgery?

Surgery may be necessary to stabilize a Charcot foot. Surgery would be aimed at treating the fractures and dislocations and preserving the normal structure and function of the foot. Surgery could include:

- Using plates and screws for readjusting bones after fractures
- Fusing the joints

- Foot reconstructions
- Amputations

What medications are used for Charcot?

There are no specific medications currently widely used for the treatment of Charcot.

What are the risks for ulceration and amputation?

Charcot can cause major foot deformities due to fractures and dislocations. Once the foot has these deformities, it can make it difficult if not impossible, to have a stable foot. Ulcerations can occur and lead to infections, and possibly result in the need for an amputation.

Disclaimer: This document contains information and/or instructional materials developed by University of Michigan Health for the typical patient with your condition. It may include links to online content that was not created by U-M Health and for which U-M Health does not assume responsibility. It does not replace medical advice from your health care provider because your experience may differ from that of the typical patient. Talk to your health care provider if you have any questions about this document, your condition or your treatment plan

Author: Crystal Holmes, DPM

Reviewers: Gary Rothenberg, DPM and Brian Schmidt, DPM

Patient Education by [University of Michigan Health](#) is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International Public License](#). Last Revised 08/2021