

# Charcot Foot and Ankle Management: prevention and appropriate care to save limbs

Patrizia Salvaterra

Scientific writer and journalist, the University of Milan

Diabetes is a worldwide pandemic that impacts patients and caregivers.

Current demographic data highlight the severity of diabetes. The statistics are clear and startling. In 2000, between 150 and 170 million people had diabetes world wide. Today the number is between 350 and 422 million, and estimates predict there will be 595 million people with diabetes in the year 2035. Over six percent of adults today have diabetes, and this number is predicted to increase to 7.7% by the year 2030.

On May 20 and 21, 2019, Orthofix held a Masterclass on Charcot foot and ankle disease management at the Orthofix Academy in Verona. Expert participants hailed from Europe, the United States, South America, and South Africa.

Estimates show approximately 9% of patients with diabetic neuropathy and foot ulcers develop a Charcot foot. This pathology often goes unrecognized until severe complications occur, such as an abnormal pressure distribution on the plantar fascia with bones weakened enough to fracture, ankle and foot deformities, and/or compromise of soft tissues, nerve and vascular damage.



**Ludwig Schwering** is the director of Pediatric Orthopedics and Limb Reconstruction, General and Special Foot Surgery at the Mariannen Hospital Werl in Germany. He explained how to manage osteomyelitis in a patient affected by Charcot disease: *"A surgical deep debridement of the necrotic tissues is mandatory, followed by antibiotic therapy. Once infection has been eradicated, limb salvage, when possible, may continue."* He pointed out that *"external fixation has an established role for the treatment of osteomyelitis: it helps in maintaining bone and joint alignment and allows earlier weight bearing. A therapeutic option that has led to the salvage of limbs that would have required amputation in the past."*

**Brian Martin**, one of the major specialists in Foot & Ankle Surgery from the Nepean Blue Mountains Local Health District, Sydney, Australia, reinforced the concept that *"A specialized multidisciplinary team approach is mandatory. From the radiologist to the diabetes nurse, from the cardiologist and plastic surgeons to the orthopedic surgeon and the psychologist: all team members are critical in providing appropriate care for patients plagued with this complex disease. Such a team is also key in ensuring that patients remain compliant with post-operative instructions after discharge and between follow-up appointments."*



Diabetic foot ulcers are often the beginning of a terrible pathway, which ends with a patient's limb amputation. During the acute phase, the treatment with immobilization of the foot and off-loading has become more common. Ulcers and possible infections must be managed with dressing and antibiotics, debridement, revascularization, and off-loading with external fixation frame to protect the foot.

**Venu Kavarthapu**, head of the Diabetic Foot Unit at the King's College Hospital NHS Foundation Trust, London, United Kingdom, affirmed that there is a growing need to promote Diabetic Foot Clinics, Educational Guidelines and Consensus Guidance: *"Education and awareness are important not only for the doctor, but also for the patient. The diabetic patients should become compliant and accept that they need to*

*undertake an overall transformation in terms of lifestyle (diet, physical activity). The General Practitioner should be educated to identify a foot at risk in good time, raising awareness and promoting proper foot care. Orthopedic surgeons should understand **the complexity of Charcot neuroarthropathy**; know the principles of both internal and external fixation, and how to use these devices. **Learning is a never-ending process.**"*

**Peter A. Blume**, director for Heart, Vascular and Chronic Limb Reconstruction and Limb Ischemia, Yale New Haven Hospital, U.S., emphasized the importance of **mechanical stabilization** when treating Charcot foot and ankle. He said: *"I tried to explain to the participants all the treatment options, with correct indications and proper surgical procedures. **External fixation seems to play more of a role in Charcot foot and ankle management, but internal devices such as nailing and beaming are also appropriate treatment options.**"*

**Edgardo Rodriguez-Collazo**, director of the Foot and Ankle Surgery and Deformity Correction Service, Amita Saint-Joseph Hospital, Chicago, U.S., said: *"I invited the participants to think like a plastic surgeon, showing them how skin and muscle flaps are performed. Most of them had never tried flaps before and they particularly appreciated this part of the course, mostly run in the laboratory with human specimens."* In smaller centers, orthopedic surgeons may have to perform flaps on their own. This session was also useful for surgeons working in big centers, where soft tissue reconstruction is usually performed by plastic surgeons, because they learned how to run their practice without ruining or affecting subsequent soft tissue procedures.

The goal of the Masterclass was fully reached:

- Share **update and evidence-based therapeutic solutions** for the management of Charcot foot and ankle disease;
- Become acquainted with a **multidisciplinary treatment approach**;
- **Master surgical skills** on Charcot foot treatment;
- **Discuss different and new treatment techniques** of Charcot foot and ankle;
- **Share and discuss challenging and unique cases** and examine the clinical evidence behind today's surgical practice.

All participants gained a better understanding of this complex disease and how and when to use different devices for each case.



**Brian Martin and all Faculty** finally commented *"External and internal fixation have changed the surgical approach to Charcot foot and ankle deformities. Now we can choose appropriate devices for different cases and patients, from beaming and nailing to percutaneous techniques using traditional or computer assisted external fixators. **Reconstruction goes hand-in-hand with stability.**"*