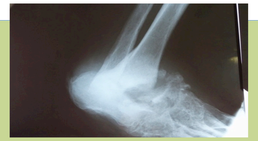
Lessons Learned from Complex Deformities of Charcot Diabetic Hindfoot and Ankle Reconstructive Surgery

Iozefina Botezatu MD PhD
Dan Laptoiu MD PhD
Andrei Bunea MD
Colentina Clinical Hospital
Orthopedic Clinic 2
Bucharest Romania

Objectives: Foot pathology is related to high morbidity and complex treatments represent the most common cause of hospitalization in patients with diabetes. The orthopedic surgeon has an important role in the treatment and prevention of diabetic foot complications.

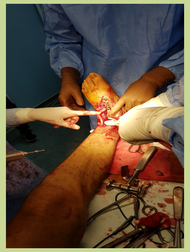
- To present the socio-economic, organizational and medical barriers in the management of severe hindfoot deformities (with severe instability and infected) in diabetic patients, in a deficient medical system - with lack of funding, deficiency of Charcot foot clinical recognition and screening, absence of a multidisciplinary team, deficiency of digitalization, lack of professional training in order to avoid amputation.
- Despite medical and non-medical difficulties, we tried to assemble a mini-team and improve our surgical technique in order to improve the quality of life of some diabetic patients proposed for limb amputation.

Material and Method: We operated between 2016-2019, 13 patients with deformed, unstable ankles (secondary to total or partial loss of talus), with superficial and deep ulcers present, as Sequelae of an unrecognized or insufficiently treated Charcot diabetic foot.
Five cases presented with osteomyelitis for which reconstruction was performed in **2 stages /** 4 cases with superficial ulcers / 4 cases without skin lesions. All patients had comorbidities in diabetes (diabetic nephropathy, diabetic retinopathy, chronic antiplatelet treatment).


Clinical evaluation: Xrays, CT scans

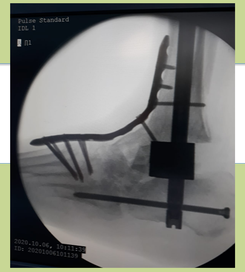
For the first patients, tibio-calcaneal fusion was performed with T2 Ankle Arthrodesis Nail (TM Stryker) or Expert HAN (TM Synthes) nail, and in the last 2 years we applied tibio-calcaneal arthrodesis with Phoenix rod (TM Zimmer Biomet) supplemented with contoured antero-medial plate for better stability: in 3 cases tantalum cones were used to replace the talus in order to preserve the length of the limb. In all cases vancomycin-impregnated peroneal malleolus and morcelized allograft were used.

Interventions in 2 steps: debridment, osteotomy







Grafting, reconstruction




Follow-up @1 year

Results: In the short and medium term the follow-up results were encouraging, in accordance with the specialized literature.
No immediate septic complications were noted, with only one infected case at 1 year (probably reactivation of the infection) that was amputated in another service.
We agree that tantalum cones require longer follow-up (1 year).
Clinical and radiographic patient control was difficult to manage due to the long distances that the patient had to travel at our clinic, having no specialists in the field to follow the clinical and radiographic evolution. The lack of digitalization of the medical system makes it difficult for the patient control system.

Conclusions:

- The lack of a dedicated medical team and a multidisciplinary center in the treatment of patients with diabetic foot does not make it impossible to save from amputation a pelvic limb. But much easier would be the joined effort of physicians in a health system prepared for this purpose.
- The deformities associated with ankle/hindfoot Charcot are often multiplanar, highly prone to ulceration and raise several challenges in the surgical reconstruction: from the enduring deformities with chronic soft tissue contractures to large defects in a osteopenic bone.
- Recent generations of retrograde ankle nails allow compression in the arthrodesis/reconstruction area but additional plates were required to increase torsional rigidity in these over-weighted, not so compliant patients.
- Due to the size of the bone defect, both **autografting, allografting and trabecular metal** are needed in local combination with antibiotic powder.