

Multidisciplinary Approach in Diabetic Foot Ulcer (DFU) Management

Dr Leela Baid

Consultant Diabetologist, MV Hospital for Diabetes, Royapuram, Chennai.

Diabetes is a chronic disorder and is now a Global Epidemic, which is rapidly increasing. Diabetes is prevalent in 8.9% of the Indian population with an estimated 1 million diabetes-related deaths each year.⁽¹⁾

The prevalence of Diabetic Foot Ulcer is estimated to be between 12-25 % among people living with Diabetes and the treatment is challenging and costly.^(2,3) About 7-20% of the total expenditure on diabetes in North America and Europe might be attributable to DFU.⁽⁴⁾ Only a small portion of patients respond to standard care, while the majority of them require more advanced wound healing interventions.

Etiology of DFU

Multiple risk factors are associated with the development of DFU, which include duration of diabetes, advanced age, BMI, gender, HbA1c, high plantar pressure, infections, etc.⁽²⁾

Accepted standard treatment for the management of DFU is blood sugar control, surgical debridement, controlling the infection, off-loading, and revascularization procedures as needed.

Objective

We are presenting this case to demonstrate the importance of etiological diagnosis of the lesion taking into account all of the factors of diabetic foot ulcer.

We sought to implement a multidisciplinary team approach to treat this case.

Visit-1

This case presents a 45-year-old male with a long-standing history of poorly- controlled Type 2

Diabetes Mellitus for 12 years, Essential Hypertension, Recent H/O CVA and right foot cellulitis.

Initially, Mr. X came with H/O Cellulitis of Right ankle and foot for which he took treatment at an outside hospital where minor debridement was done. He also had right limb weakness after CVA. Laboratory workup showed HbA1c of 8.8%, and was started on Pre Mixed Insulin twice daily and OHA (Gliclazide once daily and Dapagliflozin with Sitagliptin combination once daily)

Ultrasound, X-ray of foot, and Doppler studies revealed soft tissue lesion on right foot, normal bony structures, and normal circulation.

All other laboratory investigations were normal except raised WBC count and Low Hemoglobin level.



Figure 1.1 Presentation of wound at base line.



Figure 1.2 Illustrates after initial procedure of extensive debridement.

Care Plan

Podiatric surgeon planned on extensive debridement. Orthopedic opinion obtained for suspected ankle joint involvement. Cardiologist opinion assured surgical fitness. Extensive debridement under nerve block was performed. He responded well to IV antibiotics with improving sugar levels, stable vitals, and healing wound. He was discharged to be reviewed after two weeks.

Advised on blood sugar monitoring, antibiotics; wound dressing, wearing proper offloading for other foot and bed rest.

Visit-2

Mr. X showed up after a month with necrotic right foot and ankle wound with Equinus deformity. His glycemic control was satisfactory, so was continued on Pre Mixed Insulin and OHA

for maintaining control. His right ankle joint capsule was exposed with unhealthy peroneal tendon and exposed necrotic Achilles tendon. Orthopedic opinion obtained to stabilize the foot by fixing the right ankle joint.



Figure 1.3 Illustrates exposed right ankle joint with unhealthy peroneal tendon



Figure 1.4 Unhealthy TA

Surgeon did wound debridement and external fixator was applied by orthopedic surgeon in the same sitting. Post debridement, the hybrid fixator was stable. Wound was healthy and granulating, so, he was deemed fit to be discharged on antibiotics. He was advised on regular wound dressing. Review was planned after two week



Figure 1.5 Illustrates the external fixator in situ

Visit-3

Due to financial constraints, Mr. X was reviewed after 1 month instead of 2 weeks. This time, he presented with right III toe gangrene and minimal slough over ankle joint and also sleep disturbance. Plastic Surgeon performed a sequestrectomy and gangrenous III toe amputation under nerve block. Postoperatively, he was continued on IV antibiotics and regular dressing.

Due to long term illness and financial issues, he was stressed and was having sleep disturbance. Psychologist gave counselling. He was taught exercises by physiotherapist, and was discharged on improving blood sugar levels and healthy wound.



Figure 1.6 Illustrates right III toe gangrene

Visit-4

Mr. X was reviewed after 5 weeks. The right foot wound bed looked healthy; hence the final procedure of split thickness skin grafting to accelerate the healing process was done by plastic surgeon. On the same day, Orthopedic surgeon removed the external fixator under aseptic precautions. The patient responded well to IV antibiotics, hence was discharged.



Image 1.7 Illustrates right III toe amputation under nerve block and SSG Done

His blood glucose levels, CBG, kidney functions were continuously monitored throughout the course, and was medicated for better control.

He was counselled on diet, exercise, yoga, foot care, wearing proper offloading, self blood glucose monitoring, insulin injection technique, and regular check-ups. He was advised to send wound photographs to podiatry department for continuous monitoring.

Mr. X had challenges meeting the cost of the procedures, so MV Hospital supported with some of the procedures.

The total wound healing process required 12 OP visits for wound dressing, and 5 IP visits.

Multidisciplinary management and timely procedures by the team helped in saving Mr. X's foot.

References

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