

## Case Report

# Treatment of Diabetic Foot in Patients with A Midfoot Wound Over the Lateral Malleolus: A Case Report

Xinjuan Sun, Wei Wang, Jin'an Chen, Lei Wang, Zhiwei Hu, Gai Li, yuedong chen, Leilei Dong, Aiping Wang\*

Department of Endocrinology, Air Force hospital of Eastern Theater Command, China

\***Corresponding author:** Aiping Wang, Department of Endocrinology, Air Force hospital of Eastern Theater Command, China. Email: 27966509@qq.com

**Citation:** Sun X, Wang W, Chen J, Wang L, Hu Z, et al. (2020) Treatment of Diabetic Foot in Patients with A Midfoot Wound Over the Lateral Malleolus: A Case Report. Ann Case Report 14: 292. DOI: 10.29011/2574-7754/100292

**Received Date:** 19 December, 2019; **Accepted Date:** 17 January, 2020; **Published Date:** 20 January, 2020

### Abstract

**Background:** Diabetic foot is a leading cause of admission, amputation, and mortality in diabetes patients. Although it is well established that a multidisciplinary team approach is highly recommended for the management of patients with foot problems, the diagnosis and treatment remain complex due to insufficiency procedure.

**Case presentation:** A 55-year-old Chinese man with a ten-year history of diabetes was diagnosed with his left ankle wound. An effective procedure was performed successfully. To avoid serious complications during treatment, different stage was followed different Strategy prednisone. The patient was subsequently treated with debridement, peroneal artery perforator flap and recovered well.

**Conclusion:** There is a lack of reports for treatment of diabetic foot in patients with a midfoot wound over the lateral malleolus. This report provides an effective way to diagnose and illustrates a successful therapy strategy for this complex medical condition.

**Keywords:** Diabetic Foot Ulcers; Therapy Strategy; Peroneal Artery Perforator Flap

## Background

Diabetic foot ulcers are classified as neuropathic, ischemic, or neuroischemic, but the presence of concomitant venous disease or other conditions that cause foot edema can also delay healing [1]. Treatment includes: optimizing vascular supply, early detection and treatment of deep and surrounding tissue infection, and plantar pressure redistribution [2]. However, the lower limb amputation rate is still higher in China. Thus, there is a strong aspiration for developing treatments procedure for diabetic foot ulcer patients in hospital. Here, we describe and discuss a case that uses SIAMN for the treatment of a patient with diabetic foot ulcer. The patient was totally closure the wound followed this procedure, despite had exposed of midfoot and osteomyelitis. The steady regression of the disease over the course of the treatment highlights the value of totally considerate the main problem for overcoming diabetic foot

in the clinic. The treatment was approved by the Air Force hospital of eastern theatre command in Nanjing, and the patient signed an informed consent.

## Case Presentation

A 55-year-old male patient was diagnosed with Type 2 diabetes 10 years' ago, and has been receiving oral and insulin injection irregularly. Starting from 1 month ago, the patient had sustained a traffic accident injury on his left ankle over the lateral malleolus, resulting a wound measured 10 × 6 centimeters, and used the traditional drug for dressing the wound. The wound had become progressively worse over the previous 2 weeks, and the patient was referred to our hospital. Physical examination on admission was normal except for a foot wound, about 10 centimeters plus 6 centimeters. A large amount of liquid exudation with malodor, necrotic tissue and partial tendon exposure can be seen on the wound surface. Laboratory data displayed a high level of neutrophil and C-reactive, and the Bacteria culture: *Bacillus proteus vulgaris*, sensitive to Penicillin (Table 1).

Table 1 Laboratory data

	Value
Hemoglobin	113 g/L
neutrophil	70.1 %
BNP	321.8 pg/ml
INR	1.25
PT	190s
APTT	53.9s
C-reactive	98 mg/L
Pathogen:	HBsAb (+), HbeAb (+),HbcAb(+);
Bacteria culture :	<b>Bacillus proteus vulgaris ; Penicillin (sensitive)</b>

Table 1

Upper foot x-ray scan showed that no obvious bone destruction (Figure 1a). Foot nuclear magnetic resonance scan revealed heel bone, talus, humerus, foot scaphoid, distal radius, external malleolus and fifth metatarsal osteomyelitis; and left ankle joint soft tissue swelling (Figure 1b). Lower limb vascular ultra- sound: Femoral artery, Anterior tibial artery, Dorsal artery no narrow. Cardiovascular ultra- sound: Left ventricular diastolic function is slightly diminished. Based on the evaluation mentioned above, we make a comprehend management followed the procedure as (Figure 2), we called SIAMN. It includes glucose control, infection control, debridement and surgery. For glucose control, oral drug considered as a preferred strategy. However, the patient had surfer foot infection, which decreases the susceptibility to insulin. Thus, in order to avoid hyperglycemia, the patient was administered insulin instead of oral drugs during surgery (0.5 mg/kg/day, including the day before and after surgery).



Figure 1a and b

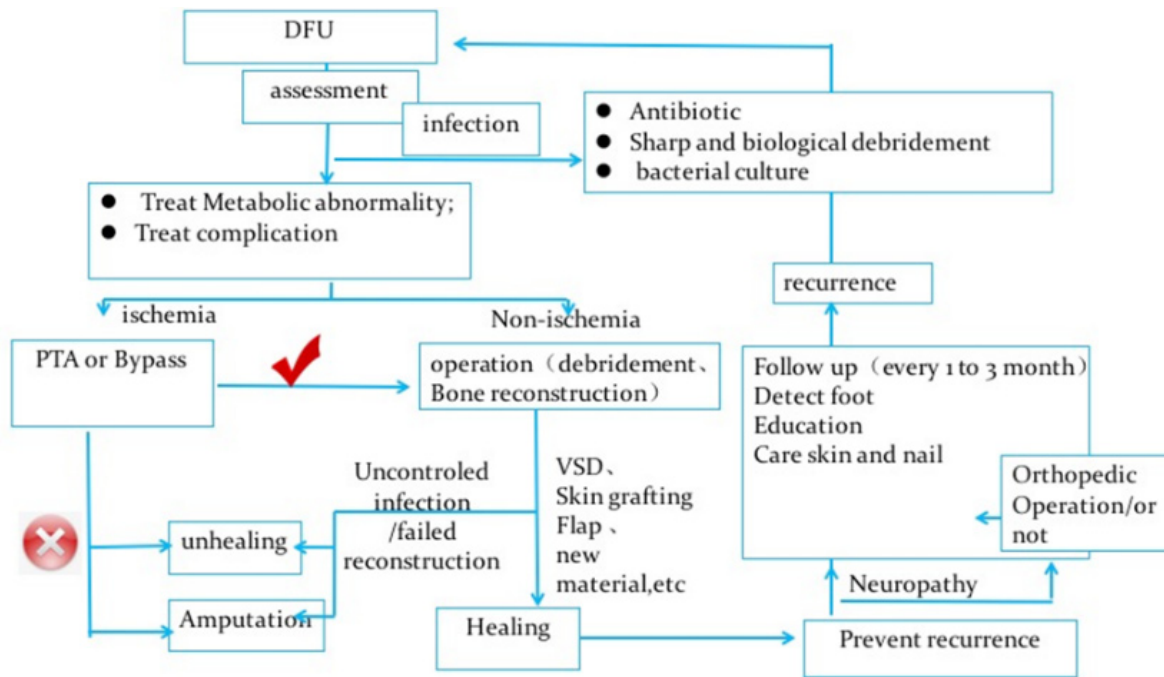


Figure 2

Diabetic foot wound with a higher risk of infection and need appropriate antimicrobial therapy. Followed new guidelines established by the IDSA, we use the Piperacilin Sodium and Tazobactam Sodium at the beginning (2.5ug Intravenous infusion per 12hours), then change the antibiotic after the cultures. Fortunately, the culture is sensitive to Piperacilin Sodium and Tazobactam Sodium. As the same time, we debride the wound with sharp and maggot debridement therapy. After one-week treatment, the glucose level is stable, the wound could see the fresh granulation, and the necrosis is less than before. The next, we do debridement operation and Vacuum suction draining. After two times of Vacuum suction draining, we can see the fresh and filled wound, but we need to closed the wound. Finally, we do the peroneal artery perforator flap to cover the wound. After surgery, the flap was all survived. The patient recovered well after the surgery (Table 2 and Figure 3).

Table 2 Timeline in this case report

Date	Information
Oct/05/2019	
Oct/05-Oct/11	
Oct/12	Debridement operation and VSD
Oct/20	peroneal artery perforator flap

Table 2



Figure 3

## Discussion

Diabetic Foot Ulcer (DFU) constitutes an economic burden in many countries, and induces a dramatic decrease in physical, emotional and social functioning for patients with the condition [3]. It is associated with advanced micro- and cardiovascular complications, resulting in high morbidity rates and greater risk of amputation. It was reported that the annual mortality of the DFU patients were 14.4% in China [4]. So more intensive surveillance and aggressive care following a diagnosis of DFU and earlier referral to specialty care might improve the patient outcome. A multidisciplinary team approach is highly recommended for the management of patients with foot problems. We summarized the information of our central to management diabetic foot in China (Figure 2). Our report is also describing the details of the surgical preparations, e.g. glucose control, infection control and selecting proper surgical approaches for the possible stage of the treatment for diabetic foot, and reducing the day-time in hospital during and after surgery.

To considerate the risk for infection, the patient in our report was give flap to closer the wound [5]. The peroneal artery perforator flap is a preferred method to coverage the midfoot wound in this case. Before the surgery, an evaluation of the Brachial artery perforator condition is necessary to support the flap design. In this report, we insect the Vancomycin in the wound

bed for osteomyelitis, and after debridement, a  $12 \times 7$  cm peroneal artery perforator flap supplied by a pivot point 6 cm above the lateral malleolus was designed in an eccentric propeller shape, then flap transfer and in setting to the recipient site, split-thickness skin graft of the donor site. Thus, the patient in our report was recovery in one month.

## Conclusion

Reports on treating patients diagnosed with diabetic foot and had a midfoot wound over the lateral malleolus are extremely limited, and an established treatment strategy is lacking yet necessary. We demonstrated that manage the diabetic foot need a multidisciplinary team to treat wound in patients with diabetes has the potential to produce systematic complications. In this report, we provided a reference for safely and effectively treating a patient with diabetic foot through metabolism and surgery.

## Acknowledgment

Written consent was taken from the patient for publishing his clinical details.

## Availability of Data and Materials

Personal information will not be provided to ensure anonymity of the patient.

### **Author contributions**

Writing - original draft: Xinjuan Sun.

### **Ethics Approval and Consent to Participate**

The study was performed under the approval of the ethics committee of Junxie hospital.

### **Consent for Publication**

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

### **Competing Interests**

The authors declare that there are no competing interests.

### **References**

1. Boyko EJ, Ahroni JH, Smith DG, Davignon D (1996) Increased mortality associated with diabetic foot ulcer. *Diabet Med* 13: 967-972.
2. Perez-Favila A, Martinez-Fierro ML, Rodriguez-Lazalde JG, Cid-Baez MA, Zamudio-Osuna MJ, et al. (2019) Current Therapeutic Strategies in Diabetic Foot Ulcers. *Medicina (Kaunas)* 55: E714.
3. Boulton AJ, Vileikyte L, Ragnarson-Tennvall G, Apelqvist J (2005) The global burden of diabetic foot disease. *Lancet* 366: 1719-1724.
4. Jiang Y, Wang X, Xia L, Fu X, Xu Z, et al. (2015) A cohort study of diabetic patients and diabetic foot ulceration patients in China. *Wound Repair Regen* 23: 222-230.
5. Aoki S, Tanuma K, Iwakiri I, Mizuno H, Ogawa R, et al. (2008) Clinical and vascular anatomical study of distally based sural flap. *Ann Plast Surg* 61: 73-78.