

## Management of Diabetic Foot Without Amputation and Conservative Approach : A Case Report

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**Abstract:** Diabetic foot is a life threatening complication of diabetes mellitus manifesting in the form of ulceration initially and later involving the entire foot including muscles, tendons and joints leading to increased disability and amputation of the affected foot. Management of a diabetic foot in poorly controlled diabetic status patient without amputation is a challenge and requires effective strategy with strict glycaemic control and regular dressings to retard the rate of wound infection thus saving patient from major amputation further preventing his disability.

**Keywords:** diabetic foot, amputation, split skin graft, debridement.

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### INTRODUCTION

Foot infections in persons with diabetes are a common, complex and costly problem. In addition to causing severe morbidities, they now account for the largest number of diabetes related hospital bed-days and are the most common proximate, non traumatic cause of amputations. Diabetic foot infections require careful attention and coordinated management [1]. Diabetes can cause damage to the nerve and vascular supply in the feet and legs. Patients with neuropathy have reduced or no sensation and therefore, might be unaware of any trauma to their feet. Continued walking on an injured foot will damage it further and minor lesions can become more serious [2]. Compared to patients without diabetes, those with diabetes are 15 to 46 times more likely to have an amputation[3]. Primary surgical treatment of diabetic foot with extensive tissue loss using split-thickness skin grafts is an important preferred modality[4]. Here we report a case of diabetic foot who presented at our hospital with diabetic foot ulcer and in accordance with strict glycaemic control and debridements with regular dressings was saved from major amputation. Later the wound bed was covered with split thickness skin graft and patient started weight bearing on the affected foot after the graft was taken on wound bed and diabetic foot ulcer healed.

### CASE HISTORY

A 50 year old alcoholic, smoker, diabetic male presented to emergency of our hospital with the chief complaint of wound over right foot with swelling and discharge (foul smelling, purulent) since 1 month and clouding of consciousness since 1 day .Patient was clinically examined and investigated for the disease status .Blood sugar levels being high and diabetic ketoacidosis being confirmed patient was shifted to intensive care unit where his ketoacidosis was managed. Along with this the regular wound dressings were done with local debridement (manual & chemical) of slough & necrotic areas of the wound. Intravenous broad spectrum, antibiotics, insulin, oral hypoglycaemics and other requisite treatments were started along with.Due to no improvement in wound condition, debridement of wound was performed under spinal anaesthesia thoroughly excising the slough and necrotic areas to achieve clear bleeding areas. In addition to this initial dressings with EUSOL & hydrogen peroxide were done to further improve the wound condition. Wound condition gradually improved over a period of time getting converted from large non healing ulcer to healing wound with red granulation tissue. Following this plan for covering the healthy wound bed was devised & after obtaining informed consent for the same, the patient underwent split thickness skin grafting under spinal anaesthesia after 1 & a half month of regular dressing, glycaemic control & debridements

.Post split skin grafting dressing from main wound or graft site was removed on 5<sup>th</sup> day & graft was taken on wound bed. Patient condition improved drastically & he resorted to weight bearing on the affected foot. Patient was discharged under satisfactory condition on oral hypoglycemic agent and advised physiotherapy exercises to the affected foot. After 10 days of follow

up period and dressings over graft site the patient resorted to walking without support. Three weeks after the split skin graft the donor site dressing was removed and donor site healed. No complication was noted in the follow up period and his diabetic status was controlled. Patient was educated about diabetic foot care.



**Fig-1:Diabetic foot on the day of admission(day 1) showing wound over the affected foot extending from above the medial malleolus to the sole with foul smelling,purulent discharge and islands of slough with necrotic areas and extensive cellulitis of the foot and ankle.**



**Fig-2:Wound status after first debridement under local anaesthesia in the intensive care unit showing inflamed margins with floor covered with pus and necrotic tissues and indurated edges.**



**Fig-3:Wound status after debridement under spinal anaesthesia and regular dressings showing exposed tendons with islands of slough and healthy granulation tissue in between.(Day 15)**



**Fig-4:** Wound status after first debridement, glycaemic control, i.v antibiotics and initial dressings with EUSOL and hydrogen peroxide showing healthy granulation tissue with healed margins and minimal areas of slough. Wound bed was ready for grafting after one and a half month.



**Fig-5:** Wound bed ready for split skin grafting to be undertaken showing healthy granulation tissue



**Fig-5:** Wound covered with split skin graft harvested from inner medial and anterior aspect of right thigh.



**Fig-3:** Graft secured in place over the wound bed



**Fig-7:** Wound status post 5 days split skin grafting showing graft taken on wound bed with no complication



**Fig-8:** Status after 10 days of follow up period showing healthy graft no infection and any associated complication



**Fig-9:** Status after three weeks of follow up showing the foot where grafting was done and healing of donor site after removal of dressing from donor site three weeks later.



**Fig-9:** Patient standing after all treatments

## **DISCUSSION**

The Center for Disease Control and Prevention (CDC) reports the incidence of diabetes nationally to be 9.3%, or 29.1 million people. Those with the disease are 1.5 times more likely to die from diabetes-related complications than those without diagnosed diabetes [5]. Diabetic foot ulcers evolve into large wound that result from multiple pathophysiological mechanisms mainly due to a complication of such a critical illness [6]. Diabetes can cause damage to the nerve and vascular supply in the feet and legs. Patients with neuropathy have reduced or no sensation and, therefore, might be unaware of any trauma to their feet caused by ill-fitting footwear or an object in their shoes, such as a piece of glass, a stone or a drawing pin. As a result of continued walking and microtrauma it can lead to serious spread of infection [2]. Aerobic gram-positive cocci are the predominant microorganisms that colonize and acutely infect breaks in the skin. *S. Aureus* and the b-hemolytic streptococci (groups A, C, and G, but especially group B) are the most commonly isolated pathogens[1]. Considering the various chronic complications associated with diabetes, the diabetic foot is particularly considered as the main cause of hospital admissions for a significant portion of diabetic patients, and is also a major cause of prolonged hospitalization among these patients [6]. Management of diabetic foot involves multidisciplinary approach comprising strict glycaemic control, regular dressings, debridement of the slough and necrotic tissues and later when the wound condition permits covering the wound appropriately to facilitate healing and prevent amputation. Primary surgical treatment of DFU with extensive tissue loss using split-thickness skin grafts flaps usually fails because of the local condition. That's the reason why preparing the wound bed and providing it with appropriate granulation tissue is essential prior surgical closure [7-9]. As relevant to our case as we described the multidisciplinary approach plays an important role in preventing major disability in diabetic foot patient resulting after amputation.

## **CONCLUSION**

Diabetic foot is a life threatening complication associated with diabetes mellitus and requires extensive treatment in a schematic manner so as to prevent amputation and disability of the patient. Devising a proper treatment plan including i.v antibiotics for local and systemic infection control, debridement for removal of infectious foci and regular dressings in combination with strict glycaemic control with the help of insulin and oral hypoglycaemic agents plays a major role in the healing of wound. All these if followed strictly result in major improvement in the wound status leading to formation of red granulation tissue, minimal areas of slough and healthy wound bed thus saving patient from amputation. Later split skin grafting can be undertaken as an important modality to provide proper wound cover.

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