

# Amputation of right little toe with traumatic ulcers in type -2 Diabetes Mellitus: Antibiotics and Split thickness Skin Grafting Technique (STSG)

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## ABSTRACT

Diabetic foot ulcer is one of the major complication in Diabetes mellitus. The infective diabetic toe ulcer was mainly caused due to the trauma affecting the surrounding tissue of the toe . the area of the right little toe of the dorsal region was affected by the microbial infection in an uncontrolled situation . In this case the possible study efforts were made to prevent the diabetic foot ulcer of a patient which was mainly due to the trauma. The diabetic foot ulcer with tissue exposure and microbial infection on the dorsal surface of the little toe was mainly due to the trauma .The right lower limb of little toe was amputated due to uncontrolled type -2 diabete mellitus which is associated with infection. To control microbial infection associated with traumatic ulcers split skin grafting was done to reduce the infection and promoting re-epithealisation. For fast healing of the wound Antibiotics like Beta-lactum antibiotics, Cephalosporins and Fluroquinolones was suggested.

**Keywords:** Amputation, Trauma, PAD, STSG, Grafting, Autologous

## INTRODUCTION

Due to the trauma, the surface of the skin and underlying tissues get damaged severely. It is one of the major cause in skin ulcerations .However in Diabetic condition the ulcers mostly developed on lower limbs and feet. In type-2 Diabetes condition the wound healing is delayed and time taking process (1,2). Diabetes mellitus major complication is foot ulceration and often results in Amputations of lower extremities associated with the disease or infection (3).Ulcerations are pivotal events in limbless because of infections and progressive tissue necrosis of the wound due to Ischemia (4).It may also cause long term Hospitalisation and may risk to Amputation if the infection is aggressively progressed (5). In progressive studies it was observed that split skin grafting is the dominant process followed in humans and whereas contraindicated in rodents (6). PAD is common in diabetes persons and it is a major risk factor for lower extremity amputation (7). This research indicates that diabetic foot ulcer is affected by several factors including the patient age, educational status, weight of the patient, type of Diabetes mellitus , and the presence of complicated PAD (8,9,10). In this case study we report that the recovery of diabetic foot ulcer by following split skin grafting therapy with Antibiotics continuously, the site of amputation that is little toe and dorsal

surface area get healed and discharged for 1 month 22 days.

## CASE REPORT

A 60 years old male patient with type-2 DM was reported at the emergency department on 18 may 2019 with blisters formation right foot associated with pus discharge. Due to the trauma the ulcers were spread over to the dorsal aspect of the right little toe. Additionally he had fever, inflammatory signs around the site of the wound and known type -2DM. The Empirical Antibiotic therapy like amoxicillin, ceftriaxone and linezolid was given without knowing the microbial infection. The patient was admitted to the general surgery ward for the wound care. There is a continuous pus discharge from the wound, the exudates were collected and sent to the microbial culture evaluation it revealed positive to the streptococcus aureus . The following treatment does not show a significant improvement of wound healing process. The surface area of the wound rapidly increased from the little toe to dorsal region due to aggressive and severity of the infection with type-2 DM was amputated on 18th day. Later skin about a small stamp size from the right thigh region was grafted and placed over the infective wound .Where the tissue growth seen at the wound region by this split thickness skin grafting therapy. The infection was reduced with this dressing and providing continuous Insulin therapy

with Antibiotics to control Diabetes mellitus and microbial infection . As in Diabetic foot ulcer the wound healing is a time taking process this was overcome by split skin grafting technique, where no progression or recurrent attack of infection is seen by this process.



**Fig.1: Before the treatment**

## DISCUSSION

Diabetic foot ulcer is defined as the ulceration of tissues due to the trauma and frequently become infected which leads to major cause of Hospital Admission (11). PAD is a major complication which is mainly caused due to Hyperglycemia and other metabolic disorders. The health care professional must understand the patient problems and make necessary life style changes to minimize the complications(12).In this case the patient got amputated of his right little toe due to severity of the infection and uncontrolled type-2 DM after followed certain empirical therapy . There is a decreased elasticity of the arteries causing vascular diseases at the lower extremities of the limbs .In this study the primary role is to control the DM which is a multifactorial disease and prevention of its

complications (13) by controlling the increased sugar levels in the blood. The split thickness skin grafting and antibiotics are used to reduce the infection at the amputation. Where this STSG was an autologous. The skin taken from the right thigh region and placed at the site of amputation for extensive wound healing process. The Donor site can be healed by Re-epithealisation from the dermis and surrounding skin requires dressings and that same site can be harvested again after six weeks (14). This Autologous grafts and some forms of treated allografts can be left on permanently without rejection (15). The modifiable risk factors like PAD, subcutaneous edema and some inflammatory condition of the foot are commonly seen in Diabetes patients.

In our study we used the Antibiotics like Amoxicillin ,cefotaxim and vancomycin combination for the treatment of Diabetic foot ulcer to boost up/accelerate the healing process and to counter the infection of open wound split skin grafting was followed. This combination completely cured the disease with in 1month 22 days.



**Fig.2: After Antibiotic treatment and Split thickness skin grafting**

## CONCLUSION

In this exploratory clinical studies it was proved that safety and efficacy of Antibiotics for the treatment of diabetic foot ulcer mainly this STSG technique plays a significant role in wound healing process. It also depends on the size of the injury and efficacy of treatment followed. The entire wound surface area get healed by the combination of both antibiotics and STSG technique. Educate the patient to actively involve actively in their care for better comes.

The results confirmed that patient got cured by the treatment which was conducted in our tertiary care teaching hospital.

## REFERENCES

1. Almeida, C.C., 2016. Collagen implant with gentamicin sulphate as an option to treat a neuroischaemic diabetic foot ulcer: Case report. *International journal of surgery case reports*, 21, pp.48-51.
2. Frykberg, R.G., 1999. Epidemiology of the diabetic foot: ulcerations and amputations. *Advances in Skin & Wound Care*, 12(3), p.139.
3. Boulton, A.I., Vileikyte, L., Ragnarson-Tennvall, G. and Apelqvist, J., 2005. The global burden of diabetic foot disease. *The Lancet*, 366(9498), pp.1719-1724.
4. Lavery, L.A., Armstrong, D.G., Murdoch, D.P., Peters, E.J. and Lipsky, B.A., 2007. Validation of the Infectious Diseases Society of America's diabetic foot infection classification system. *Clinical infectious diseases*, 44(4), pp.562-565.
5. P.N. Nyamu, C.F. Otieno, E.O. Amayo and S.O. McLigeyo, "Riskfactors and prevalence of diabetic foot ulcers at Kenyatta National Hospital, Nairobi," *East African Medical Journal*, vol.80, no. 1, 2003. View at Google scholar.
6. Ahmad, I., Akhtar, S. and Masoodi, Z., 2012. Role of early radical debridement and skin cover in diabetic foot ulceration. *journal of wound care*, 21(9), pp.442-447.
7. Greyg et al 2004
8. Viswanathan, V. and Kumpatla, S., 2011. Pattern and causes of amputation in diabetic patients—a multicentric study from India. *J Assoc Physicians India*, 59(3), pp.148-51.
9. Mariam, T.G., Alemayehu, A., Tesfaye, E., Mequannt, W., Temesgen, K., Yetwale, F. and Limenih, M.A., 2017. Prevalence of diabetic foot ulcer and associated factors among adult diabetic patients who attend the diabetic follow-up clinic at the University of Gondar Referral Hospital, North West Ethiopia, 2016: Institutional-Based Cross-Sectional Study. *Journal of diabetes research*, 2017.
10. Gebrekirstos, K., Gebrekiros, S. and Fantahun, A., 2015. Prevalence and factors associated with diabetic foot ulcer among adult patients in ayder referral hospital diabetic clinic mekelle, North Ethiopia, 2013. *J Diabetes Metab*, 6(579), p.2.
11. Wu, S.C., Driver, V.R., Wrobel, I.S. and Armstrong, D.G., 2007. Foot ulcers in the diabetic patient, prevention and treatment. *Vascular health and risk management*, 3(1), p.65.
12. Helfand, B.T., Mendez, M.G., Pugh, J., Delsert, C. and Goldman, R.D., 2003. A role for intermediate filaments in determining and maintaining the shape of nerve cells. *Molecular biology of the cell*, 14(12), pp.5069-5081.
13. Ronnemma et al 1997; Plank et al 2003
14. Barret-Nerin ,Juan Herndon David N (2000) principle and practice of Burnsurgery Newyork Marcel Dekleer ISBN 0824754530
15. Tompkins, R.G., Burke, I.F., Schoenfeld, D.A., Bondoc, C.C., Quinby Jr, W.C., Behringer, G.C. and Ackroyd, F.W., 1986. Prompt eschar excision: a treatment system contributing to reduced burn mortality. A statistical evaluation of burn care at the Massachusetts General Hospital (1974-1984). *Annals of surgery*, 204(3), p.272.