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# Ayurvedic treatment protocol in the management of Diabetic Foot Ulcer - A Single Case Report

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## ABSTRACT

The most common debilitating complication of diabetes mellitus is nonhealing diabetic foot ulcers worldwide. This case report presents a complete wound healing of 4-months chronic nonhealing diabetic foot ulcer in 66 years old retired male. Complete wound healing was achieved in 15 days with help of local as well as systemic management of *Ayurveda*. Cleaning of the wound with *Triphala Kwatha* followed by dressing with *Apamarga Kshara Taila* was done regularly. Footwear modification was also done in the patient for faster healing of the wound. For systemic management, *Punarnavashtak Kwatha* 20ml twice a day, *Snjivani Vati* 1 tab four times a day, and *Haritaki Churna* 5gm HS with lukewarm water for 1 month were prescribed orally for 15 days. This is a single case report presenting complete healing of a diabetic foot ulcer with a positive outcome in short term through Ayurveda management.

**Key words:** *Apamarga Kshara Taila, Callus, Diabetic foot ulcer, Healing, Vrana,*

## INTRODUCTION

A diabetic foot ulcer is the outcome of peripheral neuropathy and peripheral arterial disease among individuals with diabetes. Out of 62 million diabetics in India, 25% are people affected with Diabetic foot ulcers (DFUs).<sup>[1]</sup> DFUS is one of the devastating complications of diabetes that usually fail to heal and leads to lower limb amputation. There are various precipitating factors for the development of DFUs such as calluses, blisters, cuts, burns, and ingrown toenails. A patient with diabetes may not be aware of these minor injuries due to peripheral neuropathy so, lack of awareness leads to

the development of ulcers and it's enlarged before they are noticed.<sup>[2]</sup> Among all DFUs literature identified that 90% are caused by neuropathy alone or with ischemia. Additionally, it has been demonstrated that foot deformities and gait instability increase plantar pressure, which can result in the development of callosity and corn in the foot letter on they are infected and result in a non-healing foot ulcer.<sup>[3]</sup>

The foremost goal for DFUs is to obtain wound closure as expeditiously as possible and prevent further complications. A multidisciplinary approach is needed in the management of DFUs as diabetes is a multiorgan systemic disease. All factors that affect wound healing must be considered while managing the DFUs. Based on research optimum control of blood sugar, antibiotics for managing infection, wound debridement, appropriate dressings, and offloading are basic and essential components in the management of DFUs. Advanced therapy such as hyperbaric oxygen therapy, negative pressure wound therapy (NPWT), bioengineered skin, and growth factors also plays a major role in the rapid healing of DFUs.<sup>[4]</sup> Appropriate patient education and foot care are must in order to prevent DFUs and their complications.

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In Ayurveda DFUs more or less can be correlated with *Madhumeha Janya Dushtavrana*. *Sushruta* stated *Shashti Upkrama* for treating different types of wounds on the basis of their clinical presentation.<sup>[5]</sup> *Ayurveda* as well as contemporary science described the management in-depth with their own limitation. However, previous studies reported the local application of *Apamarga Kshara Taila* in non-healing wounds along with systemic oral *Ayurvedic* medication gives better outcomes without any untoward effects. The purpose of this retrospective case study was to see the healing effect of *Ayurvedic* medication in DFU caused by callosity and it refers to cost-effective, OPD base treatment of DFU with a positive outcome.

### Patient information

A 66-year-old, retired male approached our Shalya tantra OPD with a non-healing ulcer over the callosity at the lateral aspect of the right foot and watery discharge from the wound for 4 months along with bilateral foot swelling for 1 month. The patient was a known case of diabetes mellites and hypertension for the last 15 years. For this diseases patient-reported history of oral hypoglycaemic medication (tablet metformin 500mg three times a day before meal TDS) and antihypertensive medication (Tablet Enalapril BD and tablet amlodipine 1 BD after meal). The patient was consulted at a government hospital 3 months ago and undergone for surgical debridement of the wound and continuous dressings with povidone-iodine solution for 2.5 months but he noticed no signs of improvement in healing then the patient came to Ayurveda hospital. Patient reported a history of left-side inguinal hernioplasty before 3 years along with bilateral cataract surgery before 8 months.

### Clinical findings

On general examination, the patient was fit and well oriented with the absence of pallor and icterus. There were no enlarged inguinal lymph nodes. B/L foot pitting edema was present. All vitals of the patient were within normal range.

### Local examination

Location – lateral aspect of 5<sup>th</sup> tarsometatarsal joint of right foot, size – 2cm x2 cm, shape - spherical,

discharge – absent, odour - absent, floor - mild slough, margin - poorly defined, edge - sloping, base - Muscle, surrounding skin - oedematous and thickened with blackish discoloration, tenderness - absent, pulsation - dorsalis pedis and posterior tibial artery well appreciated, peripheral sensation - completely lost. The clinical finding suggested a diabetic foot ulcer with grade I Wagner Maggit classification of the diabetic wound. [Figure 1]

Blood investigations are reported in the table. (Table 1) There was no significant abnormality noted in the foot X-ray.

**Table 1: Investigations**

| SN | Investigations | Before treatment | After Treatment |
|----|----------------|------------------|-----------------|
| 1. | Hb             | 13.3gm%          | 13.4gm%         |
| 2. | RBCs           | 3.23mill/c.mm    | 3.25mill/c.mm   |
| 3. | WBCs           | 6320/c.mm        | 7000/c.mm       |
| 4. | ESR            | 56mm             | 20mm            |
| 5. | FBS            | 220mg/dl         | 180m/dl         |
| 6. | PPBS           | 252mg/dl         | 200mg/dl        |



**Fig. 1: Before treatment**



**Fig. 2: After 7 days of treatment**



Fig. 3: After completion of treatment

### Therapeutic plan

The treatment plan was established on the basis of Ayurvedic principles for wound management given by *Acharya Sushruta*. *Parisheka* with *Triphala Kwatha* for 5 minutes followed by local wound dressing with *Apamarga Kshara Taila* under aseptic precautions was done on regular basis up to complete wound healing. External treatment was done for wound cleansing, debridement of the wound and to improve wound healing. The patient was prescribed oral Ayurvedic medication such as *Punarnavashtaka Kwatha* 20ml twice a day empty stomach, *Haritaki Churna* 5gm at bedtime with lukewarm water, and *Sanivani Vati* (125gm) 1 tablet four times a day after meal with lukewarm water. All these medicines were continued for 1 month and the patient was allowed to continue their oral antihypertensive and hypoglycaemic medications. During the complete course of treatment, the patient was advised *Pathya - Apathya* to fasten wound healing and prevent further complications. The patient was also told to replace footwear with diabetic micro cellular rubber (MCR) footwear.

### Outcome measurements and follow-up

Local and systemic Ayurvedic approaches in the non-healing diabetic foot ulcer caused by callosity help in complete wound healing after 15 days of treatment. On the first consultation, patient was presented with non-healing callus DFU at the lateral side of the right foot. After 7 days of external treatment with *Triphala Kwatha Parisheka* and dressing with *Apamarga Kshara Tail* along with internal medication exudation was completely ceased and the wound was covered with

healthy granulations. The wound size was also reduced by upto half compared to before treatment. [Figure 2] After 15 days of treatment, the wound was completely healed and covered with pinkish skin. [Figure 3] By the time of the 1-month complete relief was observed in the patient.

### Follow-up

The patient was living symptoms free for the last 12 months and there was no recurrence of the wound was reported.

### DISCUSSION

The DFUs associated with neuropathy and ischemia need specialized care and appropriate treatment. The primary goal of this patient was to achieve complete wound healing along with maintaining the blood sugar level. The second aim was to prevent the further degradation of wound conditions as diabetes is vulnerable to infections.

*Parisheka* is one of the *Shashti Upkrama* mentioned by *Sushruta*. In this case, *Triphala Kwatha* was used for *Vrana Shodhan* and *Vrana Ropan* effect. *Triphala Kwatha* is a well-known drug for decreasing microbial load and preventing further infection through its antimicrobial activity or antifungal activity. The active compounds of *Triphala* such as, Chebulinic acid, Flavonoids, Tannins, and Polyphenols are responsible for the stimulation of immunity which is further helpful in wound healing mechanisms.<sup>[6]</sup> *Apamarga Kshara Taila* is evidence-based oil preparation having a potential effect on autolytic tissue debridement by its alkaline property and might help in the development of healthy granulation. In short *Apamarga Kshara Taila* perform multi-model actions which involved *Chedan*, *Lekhana*, and *Ropan* by virtue of their properties to promote wound healing.<sup>[7]</sup> *Haritaki Churna* which was given orally works at the metabolic level in the body and thus it can also help in removing toxic catabolites ultimately improving cellular growth. Again, the active components of *Haritaki* i.e., phenolic acids, and flavonoids are known for their antioxidant effects and thus they help in improving immunity and directly or indirectly help in wound healing.<sup>[8]</sup> *Punarnavashtaka*

*Kwatha* helps in wound healing through its anti-inflammatory, antioxidant, and immunomodulatory actions.<sup>[9]</sup> *Sanjivani Vati* works on all *Agni* thus it works at a metabolic level which helps in producing good quality *Dhatu* formation in the body through their anabolic and catabolic activities at the cellular level and helps in improving nutrition in the body by their systemic effect and increasing granulations of tissue at the wound site and fastens the wound healing through their localized effect.<sup>[10]</sup>

## CONCLUSION

This case report shows a significant effect of systemic as well as localized *Ayurveda* treatment in the management of diabetic foot ulcers.

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