



AYURVEDIC MANAGEMENT OF WAGNER'S GRADE II DIABETIC ULCER - A CASE STUDY

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ABSTRACT

Diabetic ulcer has been a challenge to be tackled since there is deficiency of growth factors and impaired immunity, which can lead to amputation if timely intervention is not done. A 59-year-old male patient with a history of uncontrolled diabetes mellitus for 10 years presented with a non-healing foot ulcer since 1 year. He was managed with Ayurvedic internal and external medications at OPD level. After 3 months, the outcome was encouraging with complete epithelialization along with improvement in his generalized complaints like lethargy, irregular bowel movements etc.

Keywords: Diabetes, ulcer, *Ayurveda*, *Mahamanjisthadi*, *Rasa Sindur*, *Guduchi Satva*.

INTRODUCTION

Diabetes Mellitus is a chronic clinical syndrome characterised by hyperglycemia, due to deficiency or

defective response of insulin.¹ The global diabetes prevalence in 2019 is estimated to be 9.3% (463 million

people), rising to 10.2% (578 million) by 2030 and 10.9% (700 million) by 2045.² The chronic complications of DM (vascular and nonvascular) are responsible for the majority of morbidity and mortality. The aetiology hints to the burden of longstanding hyperglycaemia and glycosylation of proteins that leads to accumulation of sorbitol and free radicals leading to permanent tissue damage.³ The most common neurological complication is peripheral neuropathy that predisposes to ulceration by reducing perception of pain and trauma by foreign bodies, walking or ill-fitting shoes. About 15% of individuals with diabetes develop foot ulcer.⁴ Risk factors for foot ulcer include male sex, diabetes >10 years (poor glycemic control), peripheral neuropathy, peripheral vascular disease and, smoking.⁵ Diabetic wounds become 'stuck' in the inflammatory and proliferative stages of healing which delays closure. Debridement is often required more than once as the healing process can stop or slow down allowing further devitalized tissue to develop. The signs of diabetic wound are delayed healing, increased exudates, bright red/pinkish discoloration of granulation tissue, friable and exuberant tissue, new areas of slough, undermining pain, malodour and wound breakdown⁶ Diabetic wound fluid has been found to contain high levels of proteases which have an adverse effect on wound healing by slowing down or blocking cell proliferation in particular keratinocytes, fibroblasts and endothelial cells.⁷ Treatment with recombinant growth factors is expensive with risk of infection transmission with chances of 30% recurrence.⁸ So there is a need for a comprehensive approach to tackle the stigma of ulcer leading to amputation by cost effective and time bound management with least recurrence rate with an enhanced immune system.

Vrana may be considered as an *upadrava* of *Prameha*. *Pramehajanya vranas* mostly fall into the category of *Dushta vrana*.⁹ Ayurveda has detailed scientific protocol for ulcer management (*Vranopachara*) after examination of the patient for routing the pathology. The present case study is of a diabetic ulcer managed through Ayurvedic principles of *Vrana Shodhana*, *Ropana* and *Vaikritapaha*.

Case Report (Patient Information & Examination)

A 59-year-old male with uncontrolled diabetes patient came to our OPD, with a non-healing painless ulcer on the big toe (hallux) of his left leg (plantar surface). He had occasional burning sensation on both feet and numbness in his left foot. He also had complaints of drowsiness, lethargy, constipation, body ache and low appetite.

History of Presenting Illness

The patient had noticed a burning sensation of feet and pain on pressure and a wound on his left big toe about one year ago. Since there was no pain he ignored, the wound gradually developed into an ulcer, which made the patient discomfort able and he went for antibiotics and debridement. The ulcer didn't heal. The patient is a known diabetic for 10 years. He is on oral hypoglycemic agents regularly (metformin 500mg bd, gliclazide 60mg od). no history of amputation.

Family History - No relevant history.

Personal History

Sleep -disturbed Appetite-reduced, Bowel -irregular, constipated. Habits - no addictions, BP -140/80 mm Hg P-76/mt, Ht: 170cm weight:74 kg, Lab reports, hb-13g% cbc-wnl, lipid profile-wnl, bsl-fbs -216 ppbs-320.

Systemic Examination

CVS: S1 S2 Normal CNS: Normal RS: Normal, **Locomotority:** knee joint- flexion, extension painful, restricted.

Local Examination: Diabetic foot

Inspection: Lower limbs, No skin colour change / no hair loss/ no erythema / no swelling

Palpation: No temperature difference; dorsalis pedis, posterior tibial pulse-present

Sensation

Monofilament test- diminished sensation. Vibration (tuning fork)- diminished., Proprioception-impaired ankle jerk reflex- diminished.

Ulcer Examination

Inspection

Site - plantar aspect of left big toe, Size & shape- 2.5x1.5cm, triangular, 3mm depth, number -1 Onset-spontaneous, Edge and margin- inflamed, irregular

border with sloping edge, Floor - pale reddish, granulation tissue Base-exudate, Discharge- purulent According to **wagner's ulcer classification** system, **grade 2**

Palpation

Skin temperature - cold Capillary filling time -2 sec
Tenderness- nil.

Ashta Sthaana Pariksha

Nadi - Vatapittaj Drshti - Timira (Dviteeya Patala),
Mutra - Bahu, Aavila Sparsha – Haani, Mala - Badham
Shabda – Saadharanam, Jihva -Saama Aakrti -
Madhyama

Samprapti Ghataka

Hetu - Madhura, Amla, Lavana Atiyoga, Eka Sthaana
Aasana, Vidhi Varjitandira, Ahara; Vishaada
Purva Rupa- Daaha, Trshna, Arati, Gouravam,
Klamam

Dosha - Vata (Vyana, Apana, Samana), Pitta
(Pachaka), Kapha (Avalambaka)

Dushya - Rasa, Rakta, Mamsa, Meda, Kleda, Pureesha,
Mutra

Srotas - Annavaha, Medovaha, Rasavaha, Raktavaha
Roga Marga -Bahya

Rogibala - Avara Hetubala - madhyama
Agni -Vishama

Samprapti Bala - Madhyama

Koshta-Krura Lakshana Bala - Madhyama

Kaala -Purana. Roga Bala -Madhyama

Chikitsa

The tedious steps of ‘‘Vrana Ropana’’ has been inculcated foreseeing every step back by Ayurvedic standard protocols. Acharya Sushruta has advised to follow Vrana Chikitsa in Madhumeha Janya Vrana. As it was an OPD case, the patient was advised to follow Parisheka and Taila Pichu Dharana at home along with internal medicines.

Table 1:

TIME PERIOD	MEDICINE	DOSE & ANUPANA	OUTCOME
14 days 06.06.20- 20.06.20	<i>Arogyavardhini</i> <i>Gandhak rasayan</i> <i>Kaishor guggulu</i> <i>Triphala guggulu</i>	250 mg tds(warm water) 250 mg tds(warm water) 250mg bd (warm water) 250mg bd (warm water)	Not much change
14 days 20.06.20- 04.07.20	1.Mahamanjishtadi ks 2.Rasasindur 3.Guduchi satva 4.Triphala guggulu 5.Triphala dhavana	40 ml(warm water) 125mg tds 500mg tds 250mg tds	No discharge and foul smell from wound
30 days 04.07.20 - 04.08.20	1-4 continue 5.Jatyadi tail	<i>Pichu dharan</i>	No discharge or foul smell, occasional fresh bleed, wound margin, floor healthy.
30 days 04.08.20- 05.09.20	1-4 continue <i>Murivenna</i>	<i>Pichu</i>	Healthy granulation tissue

Follow Up After Treatment

After treatment, the patient was called for follow-up with continuation of *maha manjishtadi kashayam* and *Guduchi Satva* alone as internal medicine. The patient was thoroughly educated for hygiene, to follow *Pathya Ahara and Vihara*. He turned for follow up in November and January with complete healing without a mark.

DISCUSSION

Diabetes mellitus is a cause for secondary immunodeficiency disorder. Chronicity of the disease leads to decreased mitogen-induced lymphoproliferation, defective phagocytosis, decreased chemotaxis.¹⁰ Although neuropathy and vascular factors are associated with the development of Diabetic foot ulcers, the main factors that are associated with failure to heal these ulcers are pre-existing

increased serum levels of inflammatory cytokines, including tumor necrosis factor α (TNF α), G-CSF, GRO, MCP-1, leptin, MMP-9, and resistance to growth factors as PDGF, Beta FGF, TGF, GM-CSF etc. along with reduction in interleukin2 receptor levels.¹¹ The spreading nature with chronicity if untreated makes amputation inevitable. Treatment with recombinant growth factors being so expensive with recurrence rate, it is necessary for a more comprehensive approach which is cost effective with rejuvenation of the system. Proper nutrition and regular exercise ensure balance formation and transportation of dhatus. *Dhatwagni* works for formation of *Dhatu* and for energy utilization during function of *Dhatus*. When *Preenana* is more with *Madhura*, *Amla*, *Lavana Rasa* and energy utilization is less with lack of exercise, it results in accumulation of *Kleda Vridhi* that predisposes to *Snigdha Pichila Vridhi* and slowing in circulation that leads to *Srotorodha* which if persistent lead to *Dhatu Agnimandya* and impairment of excretion of *Mala*. ie, *Samana Apana Vyana* axis dysfunction leading to *Santarpanotha Vyadhi* in the form of *Prameha*. *Prameha* causes susceptibility for affliction of *Trimarmas* that is considered as *Upadravas* (complications).¹² The Apathyacharana of *Hetu Sevana* when continued, along with *Abhishyandi* and *Vidahi Ahara* with *Ayaasa* (mental and physical) leads to *Shotha*, *Pidaka* and eventually *Vrana*. *Pramehaja Vrana* is *Krchrasaadhya* due to *Brhat Vyaapana Sheelata* and *Krchra Ropanatva*. *Ojovaigunya* and *Kleda Mala Vridhi* predispose to *Krimi Pradurbhava* that makes it a *Yaapya* condition that can afflict *Uttara Dhatus* that can turn to *Asadhya Avastha*.

Reversal of the condition can be done before reaching *Asadhya Avastha* by proper intervention through *Ahara*, *Vihara* and *Oushadha*. Since *Snigdha*, *Pichila*, *Kleda Vridhi* is evident, as per *Samanya Visheshha Sidhanta* and *Prameha Pidaka* and *Vrana Chikitsa*, *Apatarpana* (*Hetu Viparita*), *Anulomana* (*Samana-vyana-apana axis*), *Srotoshodhana*, *Dhatu Prasadana* and *Ojovardhana* should be done.

Maha Manjishtadi Kashayam:

Medodosha Hara, *Prasuptihara*, *Kushtahara*, *Vata Anulomaka*, *Rakta Prasadaka*, *Raktamedo Sroto*

Shodhaka. *Rasa*, *Rakta*, *Mamsa*, *Meda*, *Asthi*, *Majja Pachak Dravyas* are present in the *Kashayam*. The ingredients are *Tikta* (*Kleda*, *Meda*, *Laseeka*, *Pooya Upasoshana*), *Kashaya Rasa* (*Kleda*, *Medo Visoshana*; *Asra Visoshana*) *Pradhana* with *Vishada Guna*. *Vacha*, *Haridra*, *Daruharidra*, *Nagara*, *Abhaya*, *Chitraka*, *Varuna* are *Ushna Veerya*, *Laghu*, *Ruksha* Which Act in *Medo Kaphavrta Vata* in *Prasupti*. *Aragwadha*, *Triphala*, *Kutki*, *Trivrt* are *Kaphapittashamana* with *Anulomana* and *Vrana Shodhaka*. *Manjistha*, *Shariba*, *Haridra*, *Darvi*, *Nimba*, *Khadira* are *Kashaya*, *Tikta*, *Laghu* And *Rakta Prasadana* and *Pitta Kapha Hara*.¹³ As per pharmacological studies, wound contracting ability, wound closure, decrease in surface area of wound, tissue regeneration at the wound site and histopathological characteristics has been improved by vascularization,¹⁴ fibrin deposition (HPX, FN, and collagen), and epithelization.^{15 16 17} Some of the drugs like *Haridra* has multiple level of action as Inhibiting the activity of NF-(κ)B transcription factor, reducing the production of TNF- α and IL-1 cytokines, and thereby reducing inflammation; antioxidant activity, enhancing fibroblast migration, granulation tissue formation, collagen deposition, and in general re-epithelialization ;Being apoptotic in the early phase of wound healing, thereby eliminating unwanted inflammatory cells from the wound site Remodeling; Improving wound contraction by increasing the production of TGF- β and therefore increasing fibroblast proliferation etc.¹⁸

Rasa Sindur & Guduchi Satva^{19 20}

Rasa Sindur is *Pramehahara*, *Vrana Hara*, *Yogavahi*, *Srotoshodhaka*, *Sheeghra Kriyakari* and *Balya* which make it a best choice in *Prameha Vrana* with *Guduchi* as *Anupana*. For better potentiation, *Guduchi Satva* was used. *Guduchi* is *Pachana*, *Deepana*, *Tridoshahara*, *Pramehahara*, *Kushtahara*, *Krimihara*, *Dahahara*.²¹ As per pharmacological studies, *Tinospora* facilitate growth factor activation, angiogenesis and granulation tissue formation.²²

Triphala Guggulu²³ *Triphala Guggulu* is *Vrana Ropana* and *Medodoshahara*. *Triphala* is *Anulomana*, *Vrana Shodhana*, *Ropana*, *Rasayana*. As per pharmacological studies, *Triphala* significantly

prevents elevation of IL-4 levels as well as corrects decreased IL-2 and IFN- γ levels.²⁴

Bahya Upachara

1. **Parisheka With Triphala** Parisheka helps in removal of debris from the wound. *Triphala Kwath* was used for removal of discharge, cleansing of wounds, removing the slough and assisting in wound cleaning.

2. **Pichu Dharana**

a. **Jatyadi Tailam** -for 30 days

b. **Murivenna** -for next 30 days

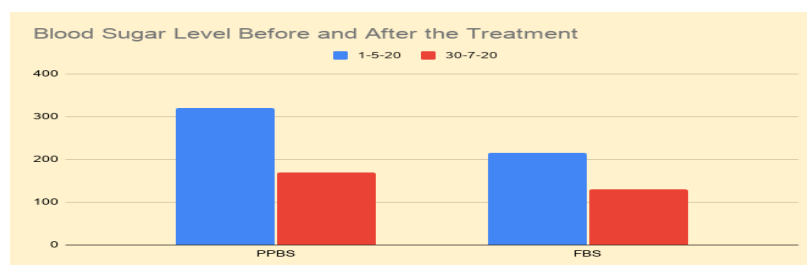
This helped in *Shodhana* and *Ropana Of Vrana*.

Pathya & Apathya:

Ahara - Anabhishyandi, Laghu, Avidahi Ahara which included *Mudga Yusha, Rakta Shali And Shaaka. Ushna Jala Pana. Vihara - Laghu Chankramana, No Divaswapna, No Ratrijagrana.*

CONCLUSION

Ayurveda has scientific protocols for the qualitative reversal of pathological conditions, which if employed in a systematic manner will help in assuring the intended results.



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