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AYURVEDIC MANAGEMENT OF MADHUMEHA AND DIABETIC FOOT ULCER: CASE STUDY

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ABSTRACT

Prameha, an Ashtamahagada, arises due to Santarpana Nidanas involving ten Dushyas and progresses to Madhumeha. Improper management leads to complications in the form of Prameha Pidaka, which may further develop into Madhumehajanya Dusta Vrana, characterized by delayed healing and foul-smelling wounds. Diabetic foot ulcer (DFU) is a serious complication of diabetes mellitus. Diabetic foot ulcer is one of the most common complications of diabetes mellitus and carries a poor prognosis due to microvascular and macrovascular changes resulting from uncontrolled blood glucose levels. In this case study, 54-year-old male patient, known case of uncontrolled diabetes mellitus since 12 years, complains of non-healing ulcer over the mid plantar aspect of the right foot, pricking sensation and numbness in bilateral foot and discharge with slight bleeding, pus, foul smell. Swelling over the lateral aspect of the right foot since one and half year. Burning sensation of the bilateral foot occasionally. The management of diabetic foot ulcer includes multimodal approaches like infection control, debridement of wound, vascular assessment and proper wound care. The patient was treated on the line of Ubhayaparimarjanachikitsa. Anthaparimarjana chikitsa: Shodhana Chikitsa: Snehapana with Guggulu Tiktaka Gritha followed by Virechana, Shamana Chikitsa: Nimbadi Guggulu, Shiva Gutika, Triphala guggulu, Cap. Grab, etc. Bahirparimarjana Chiktsa: Jaloukavacharana, Vranaharin and Jatyadi Taila for wound packing. The ulcer was effectively managed through Ayurveda intervention, resulting in significant improvement in clinical signs, symptoms.

KEY WORDS: *Dusta Vrana, Anthaparimarjana Chikitsa, Bahiparimarjana Chikitsa*

INTRODUCTION

Diabetes affects approximately 11.1% of adults worldwide and prevalence rate of Diabetes in India is estimated to be 70-100 million. It is associated with various short- and long-term complications, many of which if left untreated, can be fatal. Diabetic foot ulcers (DFUs) are among the most serious and debilitating complications of diabetes mellitus, exerting a substantial negative impact on patients' quality of life and contributing significantly to morbidity and mortality. These ulcers are highly susceptible to infection and frequently progress to lower-limb amputationns. Foot complications are commonly encountered in individuals with long-standing diabetes, primarily due to the cumulative effects of chronic hyperglycaemia. Chronic hyperglycaemia causes diabetic peripheral neuropathy, which diminishes pain and pressure sensation in the feet. Loss of protective sensation increases the risk of unnoticed trauma, repetitive pressure injuries, and damage to the skin, soft tissues, and underlying bone. The interplay of peripheral neuropathy, vascularr insufficiency and persistent hyperglycemia significantly increases the risk of diabetic foot ulceration. Epidemiological studies indicate that approximately 15% of individuals with diabetes will develop a foot ulcer during their lifetime[1], with recurrence rates reported to be as high as 70%. Furthermore, nearly 85% of diabetes-related lower-limb amputations are preceded by a diabetic foot ulcer, and the five-year mortality rate following an initial amputation is approximately 50%[2]. These alarming statistics highlight the severity of diabetic foot disease and underscore the need for early prevention, timely intervention and effective management strategies.

Diabetes mellitus can be correlated with *Madhumeha*, a subtype of *Vataja Prameha*. *Madhumeha* is considered *Tridosha-nimittaja*, *Vata* and *Kapha* predominantly contribute to its pathogenesis. According to *Sushrutha Samhita,* the vitiation of *Meda* and *Rakta*, along with the involvement of other *Doshas* and *Dushyas*, leads to the formation of *Prameha Pidika*, which subsequently progresses into chronic, non-healing ulcers. There is no direct classical reference to *Madhumehajanya Dushta Vrana*, ulcers arising from *Prameha Pidaka* may be considered under this entity. In *Nija Madhumehajanya Dushta Vrana*, *Vatadi Dosha prakopa* precedes the formation of *Vrana. Sushruta* has described these ulcers as *Kastasadhya*[3] (difficult to treat). *Acharya Sushruta* explains that due to the incompetence of *Dhamanis*, the vitiated *Doshas* tend to accumulate in the lower part of the body. *Sushruta* has further emphasized that wounds occurring over the lower extremities are particularly challenging to heal.[4,5]

CASE REPORT

Patient Information

Chief Complaints

Patient complaints of non-healing ulcer over the mid plantar aspect of the right foot with slight bleeding, foul smelling pus discharge since one and half year.

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Associated Complaints
Pricking sensation, numbness in bilateral foot and swelling over the lateral aspect of the right foot since one and half year and burning sensation of the bilateral foot occasionally.

History of Presenting Illness
A 54-year-old male patient, known case of uncontrolled diabetes mellitus since 12 years,hypertension since 3 years, diabetic kidney disease since 1 year was apparently healthy about one and half year ago, he noticed development of small boil over the mid right foot within 3 days it increased in size and ruptured spontaneously to produce blood and foul smelling pus.For these complaints, he visited Nanjangudu Government Hospital, from where he was referred to Karnataka Iinstitute of Eendocrinology and Rresearch, Bangalore. There he was diagnosed with diabetic foot ulcer and was treated for uncontrolled diabetes mellitus but despite glycaemic management, the ulcer persisted. Due to the persistence of symptoms, the patient has approached our hospital, seeking further evaluation and management of the recurrent ulcer.

History of Past Illness
K/c/o uncontrolled diabetes mellitus since 12 years, hypertension since 3 years, diabetic kidney disease since 1 year. H/O similar ulcer over the medial aspect of the right heel two years ago.

Treatment History
under medication Inj. Insugen 20-0-15 units, T. Gemerforte 1-0-1, T. Telmikind 1-0-1, T. Rose Day 0-0-1.
During the first visit to our hospital on 12/8/2025
T. *Nimbadi Guggulu* 1-0-1 A/F
T. *Agnitundi Vati* 2-2-2 B/F
Cap. Grab 1-0-1 A/F
T. *Shivagutika*1-0-1A/F
T. *Triphala Guggulu* 1-0-1
Vranaharin and *Jatyadi Taila* wound packing
No relevant family history was noted.

PERSONAL HISTORY
Aahara- Vegetarian [more intake of sweet, milk and curd products]
Kshuth- *Pravara*
Mala- Once in 2 days [*Prakrutha Srushta Mala]*
Mutra- 4-5 times/day, 2 times/night
Nidra- sound [sleeps every day in the afternoon]
Vyasana- Nil

CLINICAL FINDINGS
GENERAL PHYSICAL EXAMINATION
Nourishment-well nourished
Pallor-Absent
Icterus-Absent
Cyanosis-Absent
Clubbing-Absent
Lymphadenopathy-Absent
Edema- Absent

VITALS
Temperature-Afebrile
Pulse-70bpm
Heart rate-74bpm
B.P-140/90mmhg
Respiratory rate- 20/min

ANTHROPOMETRY
Height-182cm
Weight-92kg
BMI-27.8[over weight]

INVESTIGATIONS
Fasting plasma glucose-190mg/dl
Postprandial plasma glucose-264mg/dl
HDL Cholestrol-18.3mg/dl
LDL Cholestrol-121mg/dl
Urine sugar-4+
Urine albumin-4+

ASTASTHANA PAREEKSHA
Nadi-*Pitta kapha*
Mala-Once in 2 days
Mutra- 4-5 times/day, 2 times/night
Shabda- *Prakruta*
Sparsha- *Sheetha*
Drik- *Prakrutha*
Akruti-*Sthula*

DASHAVIDHA PAREEKSHA
Prakriti- *Kapha-pitta*
Vikriti-Dosha- *Tridosha* with predominance of *kapha*
Dushya-*Twak, Raktha, Mamsa*
Sara- *Pravara*
Samhanana- *Pravara*
Pramana- *Pravara*
Satva- *Madhyama*
Sathmya- *Sarva rasa satmya*
Aharashakthi- *Abhyavarana shakti-Pravara*
Jarana shakti-*Pravara*
Vyayama- *Avara*
Vaya-*Madhyama*

SYSTEMIC EXAMINATION
CVS: S1S2 Normal
CNS: Normal
RS-Normal

Local Examination
Foot appearance-loss of medial arch due to the swelling in the lateral border of the right foot.
Location-Mid Plantar aspect of the right foot
Number of ulcers- 1
Size-length-2cm, width-3cm, depth-3mm
Shape-circular
Discharge- Blood, pus discharge present slightly
Odour-Foul smell present slightly
Floor-Uneven and covered with granulation tissue
Margin- well defined and slightly undermined and indurated
Edge- sloping in some areas, inverted/undermined and indurated in other areas
Surrounding skin-Dried, thickened with reddish and blackish discoloration.
Tenderness- absent

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Peripheral pulses of the foot-Dorsalis pedis, posterior tibial artery feeble in bilateral foot.

Modified Wagner grading system- Grade 1- Superficial ulcer

Diabetic Neuropathy Symptom Score

Symptom	Score	Scoring Criteria
Unsteadiness in walking	0	1=present 0 =absent
Numbness	1	1=present 0 =absent
Burning and aching pain	1	1=present 0 =absent
Pricking sensation	1	1=present 0 =absent

Michigan Neuropathy screening instrument [MNSI]

Symptoms	Score	Scoring Criteria
Appearance of feet	1	Normal=0 Abnormal=1
Ulceration	1	Absent=0 Present=1
Ankle reflex	0.5	0=present 0.5=reduced 1=absent
Vibration perception	0.5	0=present 0.5=reduced 1=absent

>7 score is said to be abnormal

Toranto clinical neuropathy score [TCNS]

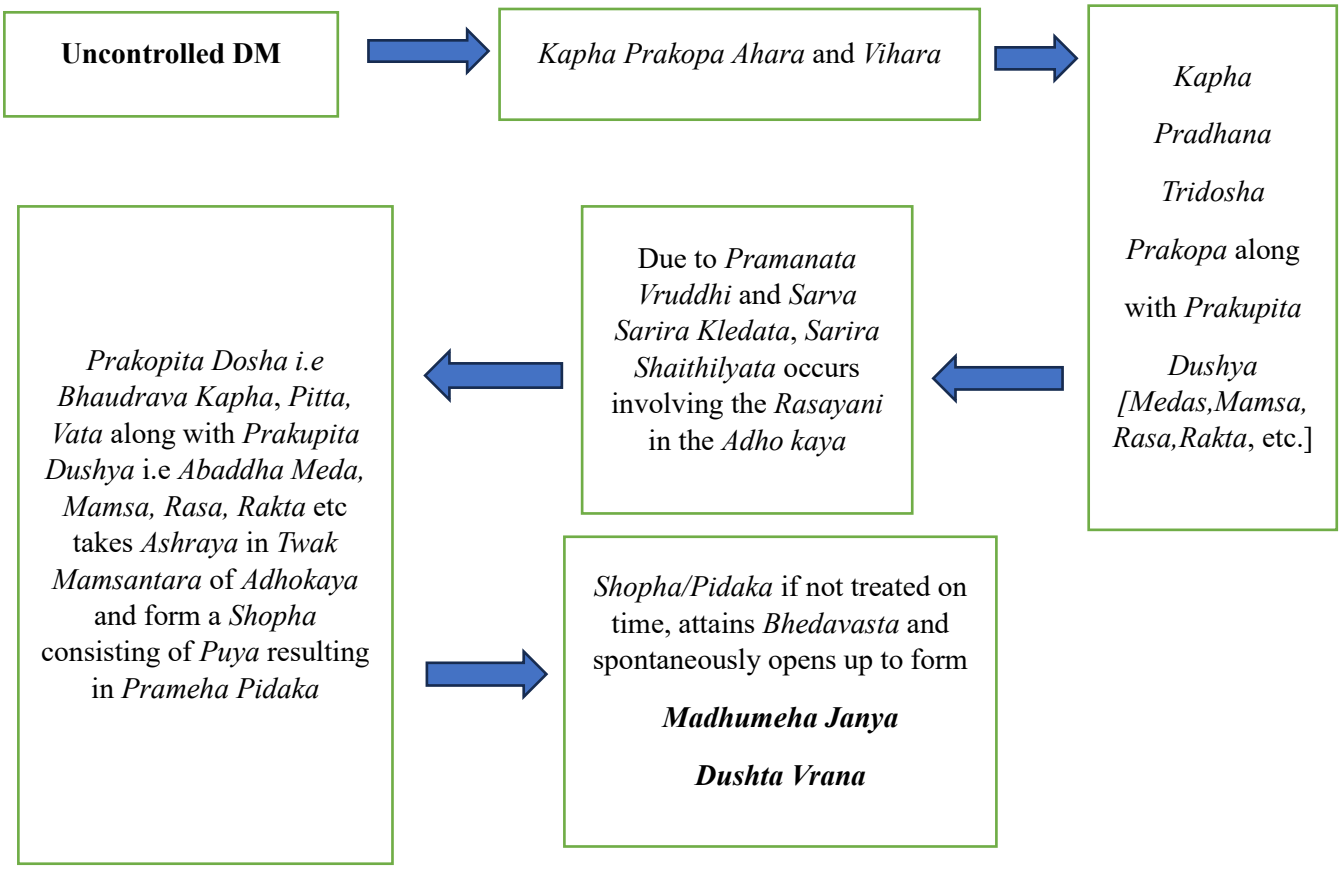
Symptoms	Score	Scoring
Pain	0	0=absent 1=present
Numbness	1	
Tingling	0	
Weakness	0	
Ataxia	0	
Reflex Score		0=normal, 1=reduced, 2=absent
Right Knee Reflex	0	
Left Knee Reflex	0	
Right Ankle Reflex	1	
Left Ankle Reflex	1	
Sensory Test Score		0=normal 1= abnormal
Pin Prick	0	
Temperature	1	
Light Touch	1	
Vibration Sense	1	
Position Sense	0	
Total Score	6 Mild Neuropathy	

Arterial Doppler
Impression
Right leg
ABI - normal
TBI indicates early small vessel disease, microvascular circulation is impaired
Left leg
ABI&TBI is normal, both large and small vessels are supplying adequate blood flow

NIDANA PANCHAKA
Nidana- uncontrolled DM, dyslipidaemia, diabetic kidney disease.
Purvaroopa- Stage of *Prameha Pidaka*.
Roopa- Non healing ulcer associated with slight discharge of blood and pus.
Upashaya-ulcer shows signs of healing when there was reduced blood glucose levels.
Anupashaya- signs and symptoms starts to aggravate, when blood glucose levels increase.

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SAMPRAPTI[6]



After analysing the signs and symptoms according to modern and Ayurvedic principles, the patient was diagnosed as *Madhumehjanya Dusta Vrana* (Diabetic foot ulcer) and treatment was planned accordingly.

MATERIALS AND METHODS

THERAPEUTIC INTERVENTION

The treatment was customized based on the severity of the ulcer, the *Dosha* and *Dushya* involved in the disease manifestation. *Ayurvedic* treatment was planned to control diabetes mellitus (DM) and enhance the ulcer healing process.

TREATMENT PROTOCOL DONE IN HOSPITAL

On 19/8/2025-20/8/2025

T. *Nimbadi Guggulu* 1-0-1 A/F
T. *Agnitundi Vati* 2-2-2 B/F
Cap. Grab 1-0-1 A/F
T. *Shivagutika*1-0-1A/F
T. *Triphala Guggulu* 1-0-1
Vranaharin and *Jatyadi Taila* wound packing
On 19/8/25 *Jaloukavacharana* was done.

From **21/8/25-24/8/25** *Snehapana* with *Guggulu Tiktaka Gritha* 30,40,100,140ml respectively. [All allopathic and *Ayurvedic* internal medications was withdrawn during *Snehapana]*.

Blood Glucose monitoring during *Snehapana*

Dates	*Snehapana* dose	FBS	PPBS
21/8/25	30ml	133mg/dl	186mg/dl
22/8/25	40ml	160mg/dl	172mg/dl
23/8/25	100ml	168mg/dl	190mg/dl
24/8/25	140ml	190mg/dl	200mg/dl

From **25/8/25- 27/8/25** *Sarvanga Abhyanga* with *Murchitha Tila Taila* followed by *Bashpa Sweda* was done.
On **28/8/25**-*Virechana* with *Nimbamrita Eranda Taila* 70ml+*Phalatrikadi Kwatha* 25ml+warm water 25ml was given. Total *Vegas* -9
On **30/8/25**- *Jaloukavacharana* was done once again and patient was discharged.

DISCHARGE MEDICATIONS

T. *Nimbadi Guggulu* 1-0-1 A/F
T. *Agnitundi Vati* 2-2-2 B/F
Cap. *Grab* 1-0-1 A/F
T. *Shivagutika* 1-0-1A/F
T. *Triphala Guggulu* 1-0-1 A/F

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OBSERVATIONS



1st day on 18/8/25



On 19/8/25 after 1st setting of *Jaloukavacharana*



After *Virechana* and during *Jalouka vacharana* on 30/8/25



1st follow up - after *Jaloukavacharana 10*/9/25



on 15/10/25 during 2nd follow up

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RESULT

Blood Glucose Monitoring

	Date	FBS	PPBS
Before intervention	11/8/2025	288mg/dl	499mg/dl
After one week of internal medication	19/8/2025	167mg/dl	200mg/dl

VRANA AVASTHA	*LAKSHANA*	BT	AT	AF
DUSHTA VRANA	*Amanojna Darshana*	+	-	-
	Amanojna Gandha	+	-	-
	Raktavarna	+	-	-

SL. NO.	Features of the ulcer	BT	AT	AF
1	**Size of the ulcer**	2cm*3cm*3mm	1.8cm*2.7cm*3mm	1.8cm*2.7cm*3 mm
2	**Bleeding from the ulcer**	+	-	-
3	**Discoloration around the ulcer**	+	Slightly present	-

Once the intervention started, the condition got improved and ulcer started healing, size of the ulcer reduced, bleeding and discoloration of the ulcer was completely relieved.

Effect of *Virechana* on *Varna*:
Change in colour occurred when *Dushta Vrana* get converted into *Rhuyamana Vrana* (healing ulcer) which was due to elimination of *Doshas* out from the body.

Effect of *Virechana* on size of the wound:
The *Virechana* undertaken has helped for proper circulation to the wound and hence accelerated the healing process. Thus, it resulted in the reduction of size of the *Dushta Vrana.*

DISCUSSION

In the present study, the chronic non-healing wound was understood as *Dushta Vrana*, which is indicative of a *Bahudosha* condition.[7] The underlying pathogenesis revealed a predominance of *Kapha* and *Pitta Dosha* with involvement of *Rasa, Rakta* and *Mamsa* as the principal *Dushyas.* Based on this pathological background, *Samshodhana Chikitsa* was considered essential for effective management and *Virechana* is one of the *Shashtiupakrama. Treatment* was initially directed towards controlling blood glucose levels and subsequently towards promoting ulcer healing, since poor glycemic control was responsible for delayed ulcer healing.

***Guggulu Tiktaka Ghrita*[8]**
Guggulu Tiktaka Ghrita with its key ingredient *Guggulu,* pacifies *Vata* and *Kapha doshas*, making it highly effective in wound healing. Its *Tikta Dravyas* like *Nimba, Amruta, Patola,* and *Kantakari* possess *Shodhana, Ropana* and *Pitta Shamaka* properties, aiding in purification, tissue repair and regeneration. *Shothahara* action helps reduce inflammation and swelling, creating favorable conditions for healing. From a modern perspective, its anti-inflammatory and antimicrobial actions help control inflammation, prevent infection and promote collagen synthesis thereby accelerating wound healing and improving tissue quality.

Effect of *Virechana* in reducing blood glucose levels
Virechana Karma, the principal *Shodhana* therapy for *Pitta Dosha*, acts on its main sites-*Yakrit* and *Pleeha* and may reduce hepatic glucose output while improving impaired insulin secretion, thereby aiding glycemic control. Altered lipid metabolism, marked by increased lipolysis, elevated free fatty acids, and accumulation of intermediary lipid metabolites, contributes to insulin resistance, increased glucose production and ß-cell dysfunction. By correcting lipid metabolism and facilitating proper formation and excretion of metabolites, *Virechana* may help normalize pancreatic ß-cell function. Additionally, ß-cell dysfunction mediated by immune-inflammatory factors such as cytotoxic T cells, natural killer cells, and nitric oxide may be mitigated through the *Shodhana* action of *Virechana* which eliminates metabolic toxins and may reduce inflammatory processes, thereby harmonizing the function of ß-cells of the islets of Langerhans.[9] The elimination of vitiated *Doshas* through *Virechana* facilitated normalization of the affected *Dushyas,* which led to significant clinical improvement.

Mode of action of *Jaloukavacharana* in *Dushta Vrana*[10]
Jaloukavacharana removes vitiated blood and fresh blood flows to the part, thus reduces inflammation. The substances present in saliva of *Jalouka* have anticoagulant, anti-inflammatory and vasodilators which help in improving circulation to the part. This also helps in reducing inflammation. Due to the improvement in microcirculation in the region healing is faster after *Jaloukavacharana*.

Acharya Sushruta while mentioning *Raktavisravana* in *Sashti Upakrama*, mentioned *Jalukavacharana* on ulcers associated with *Sopha, Vedana, Katina, Dhyama* (hyper pigmentation), *Sarakta*, *Vishama* and which are *Samrabdha* (deeply seated). It is helpful in removing congested blood from local lesions quickly.

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Nimbadi Guggulu[11]
Nimba, Triphala, Patola, Vasa, Guggulu are ingredients of *Nimdadi Guggulu. Nimba* is well known for its antibacterial, anti-inflammatory, antifungal activity and *Guggulu* is well known for its anti-inflammatory action.

Shivagutika[12]
Main ingredient is *Shilajatu* and it is indicated in *Prameha.* It acts as antidiabetic, antibiotic, anti-inflammatory, antimicrobial agent.

Triphala Guggulu[13]
Triphala Gugglu is *Agroushadi* of *Vrana* with anti-inflammatory and anti-infective action of *Guggulu*. *Triphala* is *Vatashamaka, Vedanasthapana, Vrana shodhana, Vrana Ropana, Shothahara, Vatanulomaka, Kledahara, Deepana* and *Amahara* properties.

Jatyadi Taila[14]
Jatyadi Taila is *Tikta* and *Kashaya Rasa Pradhana,* which is *Pitta Kapharaahara* and have *Vrana Shodhana, Ropana, Pootihara, Vedanasthapana property.*

Nimbamrita Eranda Taila[15]
It was selected for inducing *Teekshna Shodana* in patient. Most of the drugs in *Nimbamrita Eranda Taila* possess *Raktashodaka-Prasadana* properties, which contribute to its anti-inflammatory action and act as an effective detoxifier.

Vranaharin[16]
It is a combination of *Nimba Taila, Karanja Taila, Tila Taila, Narikela Taila.*It is having antifungal and antimicrobial property.

Cap.Grab[17]
Contains *Arogyavardhini Rasayana, Gandhak Rasayana, Triphala, Vranapahari Rasa.* It has *Putighna, Kandughna* and *Lekhana* property thus very effective in wound healing. It also offers antimicrobial and anti-inflammatory property.

CONCLUSION
Chronic non healing ulcer can be taken as *Dushta Vrana*. After *jaloukavacharana* patient started appreciating pain, during *Snehapana* blood glucose levels was maintained, dryness of the skin and erythema was reduced after *Snehapana.* After *Virechana Karma* color, size and inflammation of ulcer was decreased. Quality of the life of the patient was improved and reduced the risk of amputation. This case study demonstrates the potential effectiveness of *Ayurveda* principles in the management of diabetic foot ulcers. By applying the *Ayurvedic* principles of wound management can heal the diabetic foot ulcers without the use of antibiotics locally and systematically.

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