

MANAGEMENT OF DIABETIC WOUND (*DUSHTA VRANA*) WITH JATYADI GHRITA – A CASE REPORT

Dr. Vinod Kumar Banasia^{*1}, Dr. Govind Meena² and Prof. Lakshman Singh³

^{1,2}Junior Resident-III and ³Professor & Former Head

Department of Shalya Tantra, Faculty of Ayurveda, Institute of Medical Sciences, Banaras
Hindu University, Varanasi (up), India.

Article Received on
20 May 2021,

Revised on 10 June 2021,
Accepted on 30 June 2021

DOI: 10.20959/wjpr20218-21046

*Corresponding Author

Dr. Vinod Kumar Banasia

Junior Resident-III,
Department of Shalya
Tantra, Faculty of
Ayurveda, Institute of
Medical Sciences, Banaras
Hindu University, Varanasi
(up), India.

ABSTRACT

Diabetes mellitus (DM) is a complex disease affecting almost all the vital organs in the body. The classical triad of Diabetic foot ulcer is neuropathy, ischemia, and infection. Which include decreased cell and growth factor response, diminished peripheral blood flow and decreased local angiogenesis. Feet's are influenced by damage to peripheral nerves, the peripheral vascular disease, ulcerations, deformities, and gangrene. *Acharya sushruta* indicated the process by which impediments to *Dushta vrana* (infected wound) can be removed by process known as '*Vranashodhana*' (wound bed preparation). Once these impediments are removed normal healing process accelerated by the process '*Vranaropana*' (wound healing). This is case study of 48 years old male patient complain of wound present over medial side of right foot with foul smelling, purulent discharge for one month. Patient

had given no any previous history of amputation or ulceration. Patient was known case of diabetes for two years and taking oral hypoglycemic drugs, patient also known case of hypertension for six month and taking antihypertensive drugs. This patient was treated normal saline for *Vrana shodhana* (wound cleaning) followed by surgical debridement and local application of *jatyadi Ghrita* used for *Vranaropana* (wound healing). After follow-up wound was healed completely without any complications, patient showed significantly improved.

KEYWORDS: Diabetic foot ulcer, *Vranaropana*, *Vranashodhana*.

INTRODUCTION

Diabetes is a chronic disease of worldwide importance caused by genetic and environmental factors. There is a gradual rise in the National and International incidences, particularly within the obese and elderly population.^[1] The complications of diabetes are broadly classified under macro vascular and micro vascular. The pathogenesis behind the macro vascular complications primarily revolves around atherosclerosis. Micro vascular complications include diabetic retinopathy, diabetic nephropathy, and diabetic neuropathy. Diabetic foot ulcers can develop in neuropathic feet called as Neuropathic Ulcer or can develop as a result of ischemia associated with neuropathy called as neuro-ischemic ulcers.^[2] Diagnosis of diabetic foot by giving patient medical history, physical examination, local examination, blood test hemoglobin, total leucocytes count, protein, blood sugar test, HbA1c etc, previous history of foot amputation or ulceration, duration of diabetes, peripheral vascular disease, foot X ray useful for rule out in case of osteomyelitis. Wound infection has been one of the major problems in process of wound healing and to manage it application of appropriate debridement, cleansing and dressing method is needed. Today in modern medicine various modification are available to treat non-healing chronic or infected wound. Standard therapeutic modalities include debridement, pressure offloading, dressing regimens (Film, foam dressing, hydrogel, hydrocolloid, Alginate dressing etc.) hyperbaric oxygen, antibiotics, gene therapy, and topical growth factors.^[3] New treatment strategies in wound healing, such as bioengineered dressings and cellular applications.^[4] *Acharya sushruta* has given the importance to *Vrana*(wound)by giving the term '*Vrana vinischayartham*' in the definition of *Shalya tantra* itself which reflects that all the *Shalya tantra* moves around *Vrana*. In *Sushruta samhita* he not only elaborated the description of *Vrana*, its etiopathogenesis, types, principles of management, sixty procedures named as *Shastiupakrama*, but also described locally applied drugs as well as systemic application of drugs in wound management along with the cosmetic management of wound scar. *Dushta vrana*(infected wound) is a broad phenomenon which not only includes non-healing wounds but it also includes some serious life-threatening conditions like diabetic foot, Fournier's gangrene, necrotizing fasciitis etc. *Sushruta* diagnosis was based on clinical observation of wound during those days. He mentioned six kind of examination that includes examination using all five senses and interrogation. *Acharya sushruta* described local examination of *Vrana* on the basis of five important findings such as *Vedana*(various kinds of pain according to vitiated *doshas*-as feature of all type of pain), *Varna*(colour of wound), *Gandha*(smell of wound), *Aakriti*(size and shape), and *Srava*(discharge). *Sushruta* described two types of drugs for wound management i.e.

Shodhana(~converting tidy wound into clean wound) and *Ropana*(~ promote healing). The main purpose of treatment of *Dushta vrana*(infected wound) is mainly converting *Dushta vrana*(~ infected wound) into *Shuddha vrana*(~healthy wound) and then healing takes place because healing is natural process. The concept of wound bed preparation is similar to that mentioned by *Sushruta* for management of *Dushta vrana*. *Sushruta* explained about sixty different procedures for the management of *Dushta vrana* of which about forty procedures aimed at converting *Dushta vrana* into *Shuddha vrana* i.e. associated with concept of wound bed preparation. These include surgical and medical management. In sixty procedures use of number of drugs for the local application to manage the *Dushta vrana* in various form for *Vranashodhna* and *Vranaropana*. i.e. *Kashaya*(~decoction), *Kalka*(~paste), *Varti*(~medicated lint or plug), *Ghrita*, *Taila*, *Raskriya*, *Kshara* etc. is also mentioned. In *Ayurveda*, *Sushruta samhita* Diabetic foot ulcer can be co-related with '*Madhumehaj vrana*'(~diabetic foot ulcer) in *Sushruta samhita* management of this type of *Vrana* all though it is *Krichysadhya*.^[5] (~ difficult to get cure). According to *Sushruta Meda* and *Rakta* along with *Doshas* and *Dushya* lead to the formation of *Premeha pidika*(~carbuncle)which converted to non-healing ulcer. This paper contains a case report of Diabetic foot ulcer as follow-

Case report- A male patient 48 year of age, came to OPD(outpatient department) of presented with chief complains Wound over medial side of right foot with foul smelling, purulent discharge for one month, fever (intermittent) for last ten days, and Weight loss.

Present history- According to the patient he was asymptomatic well before one month, gradually he was developed wound over medial side of right foot, having complained of foul smelling purulent discharge. He was consulted private practitioner doctor and taken treatment like antibiotic therapy and daily dressing with Mega heal ointment but patient did not get properly relief. After that patient came to outpatient department for better treatment.

Past history- Patient was suffering from diabetes type-2 for two years he was taking oral hypoglycemic drugs. The patient admitted in IPD (inpatient department) and given insulin subcutaneous for control blood sugar level as advised by endocrinologist. Patient also had history of hypertension in the past six month and was taking anti hypertensive drugs as advised by cardiologist. Patient had no any previous history of amputation/ulceration/surgical intervention. Patient had no history of drug allergy/tuberculosis/bronchial asthma/epilepsy/other systemic disease.

Family history– All family members are alive and healthy, no any relevant family history found.

Personal history – **Diet**-Mixed diet (vegetarian & non veg.), **Appetite**-Decrease, **Bowel**-Regular (normal), **Micturition**-5-6 times per day/ 2-3 times per night, **Sleep**-6-8 hour in 24 hours, **Addiction**-Smoking and tobacco (Irregularly). **General examination** - General condition – average, Weight- 58 kg, Blood pressure- 150/96mmHg, Pulse rate- 92/min, Respiration rate -18/min, Temperature- 99.6 F. **Physical examination**- Pallor –present, Icterus- absent, Cyanosis-absent, Clubbing-absent, Edema-mild present, Regional lymph node- not palpable. **Systemic examination**- **Central nervous system**- patient was conscious and well oriented to time, place and person. **Cardiovascular system**- No cardiac murmur heard. **Respiratory system**- trachea is centrally placed, bilateral equal air entry normal, bilateral chest expansion normal, Bronco-vesicular sound normal. **Per abdomen** - **Inspection**- Abdomen skin normal, No any scar mark present on abdomen, No visible vein, No abdomen distention. **Palpation**- Abdomen soft and non tender, no palpable swelling/mass, no palpable organomegaly. **Auscultation**–Bowel sound heard normal pattern. **Percussion**- No shifting dullness, Fluid thrills absent.

Local examination of wound

Anatomical location- medial side of right foot, **Size**- 4×4cm, **Margin**- irregular, **Edge**-well defined, not attached to base, **floor/Base**- not visible covered with adherent yellowish slough and Eschar, **Necrotic tissue**- firmly adherent black Eschar with yellowish slough, **Exudates**- purulent, thick yellowish discharge with odor, **Peripheral wound skin**- Mild edematous, **Granulation tissue**- Healthy granulation tissue not present, **Appearance of wound**- covered with slough and necrotic tissue and Surrounding wound skin mild edematous.



FIG-1 Before Treatment.

Treatment: Surgical debridement was done and all dead and devitalized tissue was excised, slough was removed. Normal saline wash was used to wash the wound followed by dressing with application of *Jatyadi ghrita*^[6], Gauze covering over the wound once daily.

Oral medications *Panchtiktaghrita guggulu* 2 BD, *Arogyavardhani vati* 2 BD, *Aamalki rasayana* 1 TSF BD, *Madhumeha churna* 1TSF BD were taken regularly.

Wound was observed for its healing process under following criteria. (Bates Johnson tool kit used for assessment)

- Peripheral edema
- Discharge from wound(exudate)
- Granulation tissue

OBSERVATIONS

BATES- JESSEN Wound Assessment Tool was used to assess the wound healing, in this case report we only assess the 3parameters-Peripheral Tissue Edema, Exudate Amount, Granulation Tissue.^[7]

Location: Medial side of Right Foot

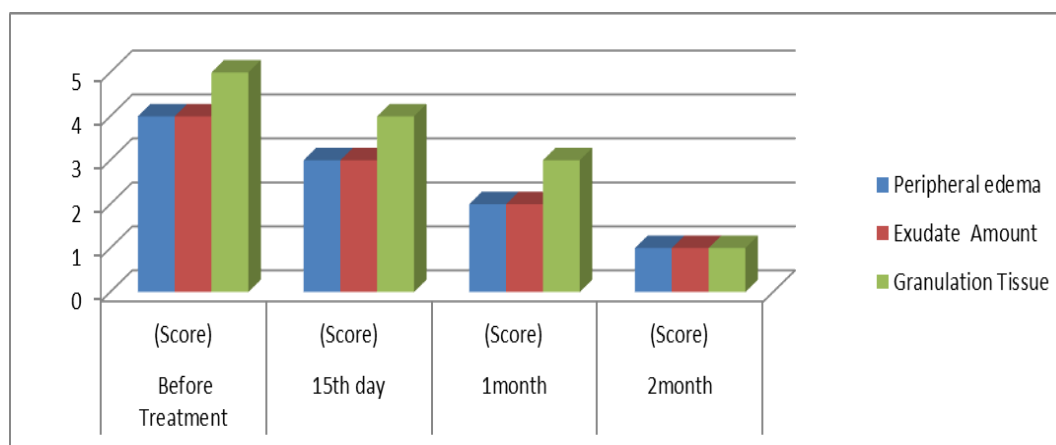
Shape- Oval shape

Assessment Parameter	Scoring
Peripheral Tissue Edema	1 = None present 2 = Induration, < 2 cm around wound 3 = Induration 2-4 cm extending < 50% around wound 4 = Induration 2-4 cm extending \geq 50% around wound 5 = Induration > 4 cm in any area around wound
Exudate Amount	1 = None, dry wound 2 = Scant, wound moist but no observable exudate 3 = Small 4 = Moderate 5 = Large
Granulation tissue	1 = Skin intact or partial thickness wound 2 = Bright, beefy red; 75% to 100% of wound filled &/or tissue overgrowth 3 = Bright, beefy red; < 75% & > 25% of wound filled 4 = Pink, &/or dull, dusky red &/or fills \leq 25% of wound 5 = No granulation tissue present

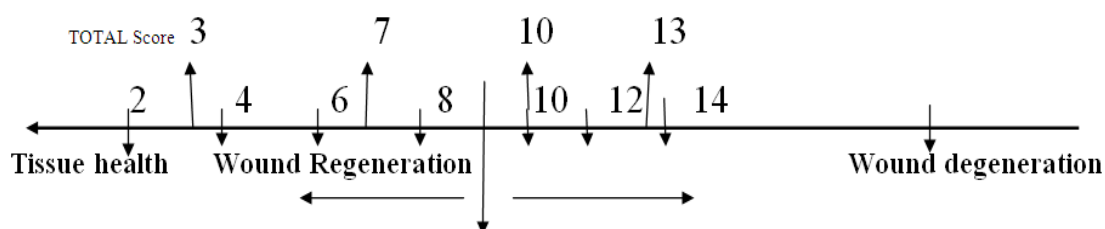
On the basis of Bates Jensen Wound Assessment tool wound scoring was done on 0,15th day, 1Month, and 2 Month.

OBSERVATION AND RESULTS

Assessment Parameter	Before Treatment (Score)	15 th day (Score)	1month (Score)	2month (Score)
Peripheral edema	4	3	2	1
Exudate Amount	4	3	2	1
Granulation Tissue	5	4	3	1
Total Score	13	10	7	3



WOUND STATUS CONTINUUM



According to this wound Status continuum when total increases day by day its means wound condition deteriorate. If total score day by day decreases its means wound regeneration occurs.

In this case total wound score on 0 day, 15th day, 1month, 2month is 13,10,7,3 respectively.

Total score gradually decreases day by day, its means wound is regenerating. wound was completely healed within 2month.

Lab investigation

	BT (0 day)	15 day	1 month	(AT)2 month
Hb- (gm/dl)	10.6	10.4	10.8	10.8
TLC-(10 ³ /μl)	12.2	10.3	8.2	7.20
Urea -(mg/dl)	54.6	42.3	41.5	35.8
Creatinine-(mg/dl)	1.6	1.2	1.1	0.9
Protein/albumin-(gm/dl)	7.2/2.7	7.2/2.7	7.2/2.9	7.4/3.4
FBS	160mg/dl	130mg/dl	108mg/dl	106mgdl

Serial Photograph



DISCUSSION

Diabetic foot is one of the most significant and devastating complications of diabetes, and is defined as a foot affected by ulceration that is associated with neuropathy and peripheral arterial disease of the lower limb in a patient with diabetes. The four fundamental principles of wound bed preparation are acronym as TIME^[8] T-Tissue management by debridement of devitalized and unhealthy tissue, I -Infection or inflammation control by reduction of bacterial load, M-Moisture maintenance, E- Epithelization of wound Edge.

In the present wound Peripheral edema and Surrounding skin is Edematous, moderate Necrotic tissue and exudates, sloughed base, slopping edges, Escher present, purulent discharge present and 3mm depth and 4x4 cm size, oval shape. After application of *Jatyadi ghrita* significant changes was occurred in wound.

Effect on *Vrana shoth*(edema): Initially there was pitting edema present around the wound but after 7 days of primary wound care, Edema started to subside gradually. Due to The action of *Tikta rasa* is *Rakta prasadaka* (blood purifier), *Ushna veerya* is *Shothahara*, *Ushna and Teekshna* and *Krimighna* in nature, action on *Tridoshas* as calms as *Pitta*, its topical application reduce pain, discharge and oedema of the surrounding tissue.

Effect on *Varna* (Colour): Changes in the wound colour started to appear after 7 days of treatment and it got converted to *Shudha Vrana* (healthy wound) after 7 days of treatment, the

slough and the necrotic tissue and discharge started to disappear gradually and the healthy granulation tissue appeared.

Effect on *Strav* (Discharge): There was presence of purulent discharge initially. But after application of dressing with *Jatyadi ghrita* at the 15th days, discharge from the wound started to reduce, this might be due to *Shodhana* properties of *Jatyadi Ghrita*. There was mild serous discharge present throughout the treatment and complete disappearance of discharge was noticed by the end of 1 month. Initially drugs acts as a debriding agent, removing slough and necrotic material from wound and subsequently it promotes wound healing.

Effect on *Akriti* (Shape): After 2month of careful treatment the wound healed completely showing signs of *Rudha Vrana* (healed wound). This might be due to *Shodhana* and *Ropana* properties of *ghrita* which provided healthy environment for the wound to heal. The content *Katuka* improves re-epithelialisation, neo-vascularisation and migration of endothelial cells, dermal myofibroblasts and fibroblasts into the wound bed.^[9] The *Jati*, *Patola*, and *Siktha* have *Vrana ropana* (Wound healing) action.

CONCLUSION

The case study revealed that in the infected wound, dressing with *Jatyadi ghrita* produces good and faster wound healing. It can also help in wound debridement and minimized the post healing wound complication like hyperpigmentation, Fibrotic scar formation. It can be concluded that formulation has both *Shodhana* (wound debridement) and *Ropana* (Wound Healing) properties indeed which provide healthy and ideal environment for a wound to heal. It could be a better option for treatment of all type of wound. It is cost effective and easily available and no any complication occurs after application of this.

REFERENCES

1. Frank B. Hu. Globalization of Diabetes The role of diet, lifestyle, and genes Diabetes Care June 2011; 34(6): 1249-1257.
2. Edmonds ME, Foster AVM. Diabetic foot ulcers. BMJ: British Medical Journal, 2006; 332(7538): 407-410.
3. Mustoe TA, O'Shaughnessy K, Kloeters O. Chronic wound pathogenesis and current treatment strategies: A unifying hypothesis. Plast Reconstr Surg, 2006; 117: 35S-41S.
4. Panuncialman J, Falanga V. The science of wound bed preparation. Clin Plast Surg, 2007; 34: 621- 632. [PubMed: 17967618].

5. Ambikadatta shastri, editor, sushruta samhita of sushruta part -1 sutrasthan, chapter 23/7, readition Varanasi chaukhambha Sanskrit sansthan page no. 126.
6. Astang Hriday Uttar Sthan 25/67.
7. Bates-Jensen Wound Assessment Tool: Pictorial Guide Validation Project. *Journal of Wound, Ostomy & Continence Nursing*, 37(3): 253-259.
8. Schultz, G. S., Sibblad, R. G., Falanga, V., et al. (2003). Wound bed preparation: A systematic approach to wound management. *Wound Repair and Regeneration*, 11(Suppl 1): S1–S28.
9. Sushruta: Sushruta Samhita with commentary of Dalhana, edited by Vaidya Jadavaji Trikamji Acharya, Chowakhamba subharti prakashan, Varanasi, reprint 2009, sutra Sthana, 45th Chapter, Verse 96, pp- 824, pg.