

Evaluating the Wound Healing Potential of *Vrana Ropan* Compound in Diabetic Foot Ulcer: A Case Study

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Abstract: Diabetic foot ulcers pose a serious challenge due to their prolonged healing process and risk of complications, often leading to amputation. This case study examines the efficacy of *Vrana Ropan* Compound, an Ayurvedic formulation containing Aloe vera, Honey, Yavakshara, and Jasad Bhasma, in managing a non-healing diabetic foot ulcer. A 53-year-old male with a long-standing ulcer unresponsive to conventional treatment was administered a combination of external application and internal Ayurvedic medication. Over three months, significant improvement was observed in wound dimensions, tissue regeneration, and overall healing progress. The study highlights the synergistic role of natural wound-healing agents in promoting tissue repair, reducing infection, and enhancing recovery in diabetic patients. While the findings suggest that *Vrana Ropan* Compound has promising therapeutic potential, larger clinical trials are necessary to validate its efficacy and establish standardized treatment protocols.

Keywords: Diabetes, Diabetic Foot Ulcer, Ayurveda, *Vrana Ropana*, Wound Healing, Pilot Study

1. Objectives

Present study an undertaken to evaluate the gross wound healing effect of the *Vrana Ropan* Compound.

Ghridakumari (Aloe vera Tourn. Ex. Linn.), *Madhu* (Honey), *Yavakshara* (*Potasii carbonas*) and *Jasad Bhasma* (Incinerated Zinc) all in equal quantity were utilized for *Lepa* preparation.

All ingredients were taken in equal quantity and made it into Compound by incorporation method. In this method the component of the Compound *Ghridakumari* (Aloe vera Tourn. Ex. Linn.), *Madhu* (Honey), *Yavakshara* (*Potasii carbonas*) and *Jasad Bhasma* (Incinerated Zinc) were mixed together until a uniform preparation was attained. Prepared Compound was utilized clinically to treat a chronic case of diabetic foot ulcer.

Wound measurement was depth 1 cm, width 1.3 cm, length 1.4 cm, Foul smell with wound secretion, unhealthy granulation, gangrenous, no fever, and appetite good. After that the *Vrana Ropan* Compound has applied for 3 months and the healing was significant. The wound dimension in 1st month was depth 0.8 cm width 1.1 cm length 1.2 cm, in 2nd month depth 0.5 cm width 0.6 cm length 0.7cm and in 3rd month depth 0.3 cm width 0.4 cm length 0.5 cm, granulations are healthy. The Study suggests that *Vrana Ropan* Compound has considerable wound healing action.

2. Introduction

The term 'Diabetic foot' is somewhat a misnomer, as the condition has been defined as a group of syndrome that can involve Neuropathy, Ischemia and Infection with the neuropathic type being the most common. Diabetic ulcer tends to occur most commonly on the plantar weight bearing surfaces of the foot underneath the pressure point. Most

common cause of diabetic patient to get hospitalized is Diabetic foot ulcer. As many as 15% of people with diabetes will develop foot ulceration and its related complication and 3% will have lower limb amputation. [1] In present study an attempt has been made to elaborate the wound healing property of the *Vrana Ropan* Compound prepared by using 1) *Ghridakumari* (Aloe vera Tourn. Ex. Linn.) which has the properties of *Bhedana* (Penetration), *Vrana Ropan* (Wound Healing), *Krimighna* (Anti - bacterial), [2] 2) *Madhu* (Honey) has the properties of *Vilekhana* (Removes the dead tissues), *Vrana Shodhan* & *Ropan* (Purifies and Heals the wound), *Krimighna* (Anti - bacterial), [3 - 4] 3) *Yavakshar* (*Potasii carbonas*) has *Lekhana* (Removes the dead tissues), *Raktashodhak* (Blood purifying), *Kaphanisarak* (Removes the sticky discharge) properties [5] and 4) *Jasad Bhasma* (Incinerated Zinc) which is used in *Dushta Vrana* and has *Vranasravrodhak* (Stops the discharge from the wound) properties. [6] *Vrana Ropan* Compound was prepared to know its clinical benefits. Preparation was done by following classical method of *Lepa* preparation. Infection, ulceration or destruction of deep tissues associated with neurological abnormalities and various degrees of peripheral vascular in the lower limb diseases is called diabetic "foot ulcer". A case of diabetic foot ulcer was studied. *Vrana Ropan* Compound applied for 3 months which significantly healed the wound. Some drugs were given internally such as *Triphala Guggul*, *Amruta Guggul* to catalyze therapeutic action of *Vrana Ropan* Compound. As the study case was diabetic hence long duration was taken for wound healing but the study suggests that *Vrana Ropan* Compound has considerable wound healing action. Similar clinical studies are required to establish efficacy of *Vrana Ropan* Compound.

3. Materials

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The drugs are collected from the local market.

Ghritakumari

Madhu

Yavakshara

Jasad Bhasma

Table 1: Contains of the *Vrana ropan* Compound with their properties and references.

Drug Name	Latin Name/English Name	Properties	References
<i>Ghritakumari</i>	<i>Aloe vera</i> Tourn. Ex. Linn.	<i>Madhur - rasa, Bhedan, Vrana ropan, Krimighna</i>	Bhavaprakash Nighantu Guduchyadi varg 118/229 - 230
<i>Madhu</i>	Honey	<i>Vilekhana, Vrana shodhan and ropan, Krimighna</i>	Bhavaprakash Nighantu Madhu varg 1/1 - 2
<i>Yavakshara</i>	<i>Potasii carbonas</i>	<i>Lekhana, Raktashodhak, Kaphanisarak</i>	Su. Chi.1/39 - 40
<i>Jasad Bhasma</i>	Incinerated Zinc	Used in <i>dushta vrana, Vranasravrodhak</i>	Rasatarangini 19/146 - 147

Methods: The *Vrana Ropan* Compound is prepared by incorporation method. In this method the component of the Compound *Ghritakumari* (*Aloe vera* Tourn. Ex. Linn.), *Madhu* (Honey), *Yavakshara* (*Potasii carbonas*) and *Jasad Bhasma* (Incinerated Zinc) are mixed together in equal proportion by various means, like motor and pestle, spatula and ointment slab, until a uniform preparation has been attained.

Studied Case Report:

Aim and objective of case study:

To evaluate the efficacy of *Vrana Ropan* Compound in the patient with Diabetic foot ulcer.

Case Details:

A 53 years old male patient came with the chief complaints which includes non healing ulcer over the right foot on the plantar surface of the great toe with unpleasant smell, swelling and mild discharge, no pain since one and half year.

Brief History (Including Onset and Progress):

Patient is a case of Diabetes Mellitus (On oral anti - diabetic drugs) for 15 years with Peripheral neuropathy for 6 years. He visited to Garghchiroli and walked for long duration and stay in standing position for long time 1 and half year back. Later on after some days he developed blisters over the foot below the right great toe which turns into the ulcer. He took treatment for the same at private clinic but wound got infected and was not healing in spite of treatment for around 1 and half year hence he came to *Shree Vishwamitra Ayurvedic Chikitsalaya* for further management.

Treatment advised:

- 1) *Vrana Ropan* Compound for local application
- 2) *Triphala Guggul* 2 tablets twice in a day
- 3) *Amruta Guggul* 2 tablets twice in a day
- 4) Debridement (Removing of the dead tissues)

4. Observations and Result

Table 2: Investigations of parameters before and after treatment.

Investigations	Before treatment	After treatment
S. Cholesterol	224.7 mg/dl	146.5 mg/dl
S. triglycerides	170.5 mg/dl	90.7 mg/dl
HDL	51.6 mg/dl	46.2 mg/dl
LDL	139 mg/dl	82.16 mg/dl

VLDL	34.10 mg/dl	18.14 mg/dl
S. Cholesterol / HDLC ratio	4.35	3.17
HbA1C	7.8 %	5.14%
Sr. Urea	24.6 mg/dl	20.9 mg/dl
Sr. Creatinine	0.9 mg/dl	0.6 mg/dl
Sodium	142 mmol/lit	139 mmol/lit
Potassium	4.2 mmol/lit	3.8 mmol/lit
BSL (R)	279 mg/dl	121mg/dl
BSL (F)	256 mg/dl	119 mg/dl
(PP)	370 mg/dl	140 mg/dl

Wound measurements:



Figure 1: Shows wound before treatment.

Table 3: Shows the measurements of wound before treatment.

Depth	Width	Length
1 cm	1.3 cm	1.4 cm

After the application of *Lepa*



Figure 2: Wound after 1 month



Figure 3: Wound after 2 months



Figure 4: Wound after 3 months

Table 4: Shows the measurements of wound after treatment.

Measures & Durations	1 st month	2 nd month	3 rd month	% change
Depth	0.8 cm	0.5 cm	0.3 cm	70%
Width	1.1 cm	0.6 cm	0.4 cm	69.23%
Length	1.2 cm	0.7 cm	0.5 cm	64.28%

5. Discussion

Diabetic foot ulcer can be correlated with 'Madhumehaj vrana' described in *Sushrut samhita*. In *Madhumeh* the lower limb vessels become weakened and unable to expel *doshas*. This leads to accumulation of *doshas* (*Meda* and *Rakta* along with the other *dosh* - *dushyas*) followed by formation of *Prameh pidika* which converts into wound after putrefaction i. e., diabetic ulcer.

कुष्ठिनां विषजुष्टानां शोषिणां मधुमेहिनाम् । व्रणाः कुच्छ्रेण सिध्यन्ति येषां चापि व्रणे व्रणाः ॥

सु. सू.23/7

While describing the prognosis of 'Vrana' in *sutra sthan* chapter 23, *Sushrut* had stated that the 'Madhumehaj Vrana' i. e., diabetic ulcer are *Kashtasadhya* for management. Further, *Sushrut* specified that the wounds over the lower limbs are too delayed in healing. It is understood that *Rasa* & *Rakta* are the nutritive *dhatu's* required for healing purpose too. As in *Madhumeh Rasa* & *Rakta* are affected significantly hence healing mechanism of body get altered which leads to *Kruchrasadhya Vrana*.^[7]

The management of diabetic foot ulcers remains a major therapeutic challenge which implies an urgent need to review strategies and treatments in order to achieve the goals and reduce the burden of care in an efficient and cost - effective way. Questions remain as to which types of intervention, technology, and dressing are suitable to promote healing, and whether all therapies are necessary and cost - effective as adjunctive therapies.^[8]

In present case patient was suffering from diabetes and had taken modern medicines 7 years for diabetes and 1 & half year for wound. Patient was not feeling any relief from modern medicines and hence came for Ayurvedic treatment. As per Ayurvedic point of view patient has *Dushti* of mainly *Rasa* - *Rakta Dhatu* and *Dhatu Shaithilya*. In such case maintaining *Dhatu Samyata* of *Rasa* - *Rakta Dhatu*, increasing *Oja*, controlling *Madhumeh* and *Vrana Ropan Chikitsa* are the key points. The wound was looking surrounded by dead tissues and necrosis was in progress along with unpleasant smell. Removal of such tissues and purification of wound is expected for formation of new tissues to initiate healing mechanism. Considering these facts the line of treatment has decided which can be explained further on. *Amruta Guggul* is specifically indicated for diabetes and it is a *Tikta Rasa* formulation which helps in purification of *Rasa* & *Rakta Dhatu* which ultimately help in reducing *Dhatu Shaithilya*. *Triphala Guggul* has *Vrana Ropan* properties and it also helps in removing unwanted toxins from the body. Debridement was done to remove dead part from the wound and gives space for formation of new tissues. Here *Lekhana*, *Vrana Shodhak*, *Vrana Ropak* and *Vranasravrodhak Karma* are expected. In advised *Vrana Ropan* Compound *Ghridakumari* act as *Madhur* - *Rasa*, *Bhedan*, *Vrana Ropan*, *Krimighna*; *Madhu* act as *Vilekhana*, *Vrana Shodhan* and *Ropan*, *Krimighna*; *Yavakshara* act as *Lekhana*, *Raktashodhak*, *Kaphanisharak* and *Jasad Bhasma* has properties such as *Vranasravrodhak*. All these ingredients helped in breaking some *Samprapti* of the diseased condition and hence gave good relief in studied case. Although the duration of wound healing is slow but it suggests enough significant action of *Vrana Ropan* Compound.

6. Conclusion

As the studied case was diabetic hence long duration was taken for wound healing but the study suggests that *Vrana Ropan* Compound has considerable wound healing action. Clinical studies of *Vrana Ropan* Compound on large sample size are required to establish its efficacy. Present study is a single case report but can be considered as torchbearer for future research work.

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