



A Comparative Clinical Study to Evaluate the Shodhana Effect of Yava Kshara and Palasha Kshara Pratisarana Followed by Ropana Karma in the Management of Dusta Vrana.

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ABSTRACT

Under normal circumstances, wounds are expected to heal within a reasonable period of time through a series of a regulated cascade of events. However, when the cascade becomes interrupted, wounds fail to heal in a timely manner, resulting in non-healing wounds (ulcers). Over the years, variety of measures have been attempted in the treatment of non-healing wounds. However, not all wounds respond to the conventional modalities of treatment and consequently, non-healing wounds continue to be a significant burden in the hospital as well as the community.

Acharya Sushruta has mentioned management of these ulcers in *Chikitsa sthana*.¹ One among them is application of *kshara* for the *shodhana*² and *ropana*³ of *vrana*. Hence local application of *Yava kshara*⁴ and *Palasha kshara*⁵ for *shodhana* and *ropana* of *Dushta vrana* was selected for the present study.

INTRODUCTION

Ever since the life originated human being has been susceptible to injury which made him to think about healing from very early stage of development. Probably after being exposed to injury, the first dressings ever used were leaves of trees, which were easily available and by his constant research he may have found leaves of some plants useful in wound management. Almost every source of life and matter surrounding human beings has been used in some form or other to treat wounds and through a series of clinical experiences some results were obtained which were transmitted verbally to the respective generations.

In Ayurvedic, Particularly *Sushruta* has mentioned various types of wounds and their management which is of prime importance in any surgical practice. In recent past brilliant progress of surgery in various fields has immensely reduced the incidence of wound infection by decreasing the impediments associated with wound healing to certain limit. But still wound management continues to be a subject of speculation.

Sushruta has defined *vrana*⁶ as a phenomenon which consumes the tissue and on healing leaves "*vrana vastu*" i.e., permanent scar tissue. This definition is not limited to cutaneous lesions only but destructive lesions occurring in any tissue of the body has also been considered as *vrana*. This phenomenon, followed by inflammation and repair is critical for survival of body.

After injury, healing is a natural phenomenon and continues in sequential manner till the formation as a healthy scar. Certain general factor as nutritional deficiency, hormonal imbalance and various systemic disease like anemia, diabetes, malnutrition etc. and certain local factors like foreign body, infection, hematoma etc. either alone or in combination influence the normal pattern of wound healing, Hence, in present concepts all efforts are diverted to keep wound clean during various stages of healing.

Usually, nature takes complete care during healing. The defense mechanism of body like phagocytosis and its local enzymatic action on dead tissue help to keep a wound clean. But in some times when infection is massive, surface area of wound is very large and slough or necrotic tissue is too much this auto cleansing mechanism becomes inadequate.

Acharya Sushruta was aware of these facts and has indicated the process called *vrana shodana* and later healing process can be accelerated by the process described. under *vrana ropana*.

Acharya Sushruta has explained sixty different *Upakramas*⁷ for the management of various types of wounds. He has described specific types of wounds which by any external or internal factors have reduced to a condition where healing is delayed or absent. His basic understanding about wound, extensive classification and realization of problem of contamination of wound is specific in many aspects.

In Ayurveda debridement procedure is elaborated under heading of *Vrana Shodhana*. *Vrana Shodhana* (cleansing of the wound) which fulfils the aim of *Vrana Ropana* (wound healing) partially.

Kshara is a medicament obtained from ash of different plants is better for *Vrana shodhana* (debridement) because of its *Ushna* and *Tikshna* properties.

Sushruta Acharya clearly mentioned the conditions where *Pratisaraneeya kshara* help in Ulcer management, those conditions are: -

Utsanna mamsa (wound with elevated margin and base i.e., wound with hypergranulation tissue), *katina* (wound having hard consistency), *Kandu yukta* (wound with severe itching), *Chirothita* (chronic wounds) and those wounds are not cleansed easily are purified without any difficulty i.e., help in wound bed preparation. *Pratisaraniya kshara* also help in bursting (*Darana karma*) the large pus pockets having no opening.

For the management of *Vrana* the commonly involved procedures are cleansing, debridement and dressing. These treatments may need hospitalization, anesthesia, time consuming, and expensive. Drugs treating infections like the Penicillin's, Cephalosporin's, Tetracycline's, Iodine, Hydrogen peroxide, Eusol solution etc are the common Antibacterial agents used in the treatment of various Non healing ulcers. Everyday new antibiotics, antiseptics and disinfectants are coming to combat these infections, but they are effective up to certain extent and then become resistant to them.

Even though many studies were done over the *shodhana* of *Dushta Vrana*, various procedures like *vrana lepana*, *vrana prakshalana*, *avachurnana*, *taila* application etc; but these procedures are expensive, time consuming and shelf-life of medicaments for these are less, while potent effective measure for *shodhana* of *Dushta Vrana*, is *Kshara Pratisarana* which is much beneficial, because it is cost effective and simple procedure without any major complications. Hence, it is necessary to create evidence to basic principles mentioned in Ayurvedic texts, for its worldwide acceptance.

The main intention of this study was *Vrana shodhana*, i.e., improvement in blood circulation in the region of *Dushta vrana* by the removal of slough and foreign material by *Anushastra karma - Kshara Pratisarana*. With this point of view the following study was undertaken.

AIMS AND OBJECTIVES

1. To evaluate the effect of *Yava Kshara Pratisarana* in the management of *Dusta Vrana*.
2. To compare the therapeutic effect of *Yava Kshara* and *Palasha Kshara Pratisarana* in the management of *Dusta Vrana*.

MATERIALS AND METHODS:

SOURCE OF DATA:

a) **Literary Source:** Literary aspect of study was collected from Library of S.J.G.A.M.C Koppal, Classical Ayurvedic texts, modern texts, recent journals and e-medical journal, related websites about the disease and the drug.

b) **Sample Source:** 40 diagnosed patients with clinical features of *Dusta vrana* coming under the inclusion criteria approaching the *Shalya tantra* OPD of S.J.G. Ayurvedic Medical College Hospital and Research Centre, Koppal.

c) **Drug Source:** The required raw drugs were purchased from approved vendors and post purchase of the raw drugs was authenticated by the faculty of *Dravya Guna* department and prepared under guidance of *Rasashastra* and *Baishajya Kalpana* department in SJGAMC and Hospital, Pharmacy, Koppal.

Properties of *Kshara*⁸:

Varna:Shukla

Guna:Teeksa

Veerya: Ushna Veerya

Karma: Tridosahara, Paachana, Vilayana, Shodhana, Ropaka, Shoshana, Lekhana, Krimigna, Aamahara, Kushtagna, Medohara, Pumsatvahara, when it is used extensively.

Methods of Collection of Data

- I) Study Design:** An Open Label Randomised Comparative Clinical Trial.
- II) Sample Size:** A total 40 cases of *Dusta vrana* after consideration of below mentioned criteria have included for the study. These 40 cases were randomly allotted into 2 groups.

NAMELY - Group A-20 Patients

- Group B- 20 Patients

A) Diagnostic Criteria:

Based on the Signs and Symptoms of *Dusta Vrana* (Non healing Ulcer)

B) Inclusion Criteria:

- Patients of either sex.
- Patients with age group between 25-65 years.
- Patient who are suffering from *Dusta Vrana* (Non-Healing Ulcer)

C) Exclusion Criteria:

- Uncontrolled Systemic disorders like Diabetes and Hypertension.
- Patients with HIV Positive, HBsAg Positive.
- Tubercular ulcers, Diabetic ulcers and Malignant ulcers.

IV) STUDY GROUPS:

SL. NO	GROUP	INTERVENTION	DURATION
1	A	<i>Yava Kshara Pratisarana</i>	7 days
2	B	<i>Palasha Kshara Pratisarana</i>	7 days

VII) ASSESSMENT CRITERIA

Assessment will be done based on the Subjective and Objective parameters on the 1st day (Before treatment), 3rd day, 7th day, 14th day and 28th day.

a) Subjective Parameters:

- i. Pain-Visual Analogue Scale.

b) Objective Parameters:

- ii. Discharge:
- iii. Wound Size
- iv. Depth Of the Cavity
- v. Granulation Tissue

VIII) FOLLOW UP PERIOD

Follow up period was scheduled on 28th day to know the recurrence rate in which observations were recorded in the concerned proforma.

IX) STATISTICAL TEST USED

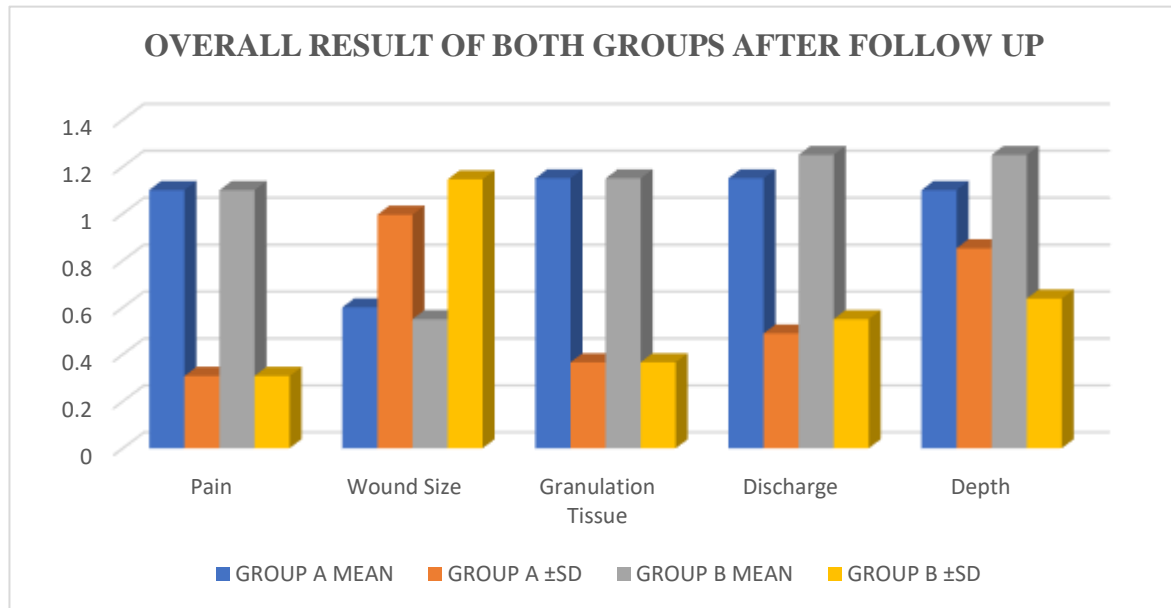
A detailed proforma will be prepared and assessment is done based on gradations given for the parameter. The data will be analyzed using Mann-Whitney U test, Repeated Measures of ANOVA Test.

RESULTS

OVERALL RESULT OF BOTH GROUPS AFTER FOLLOW UP

TABLE NO.66

OVERALL RESULT OF BOTH GROUPS AFTER FOLLOW UP				
Parameters	GROUP A		GROUP B	
	MEAN	±SD	MEAN	±SD
Pain	1.1	0.308	1.1	0.308
Wound Size	0.60	0.995	0.55	1.146
Granulation Tissue	1.15	0.366	1.15	0.366
Discharge	1.15	0.489	1.25	0.550
Depth	1.10	0.852	1.25	0.638

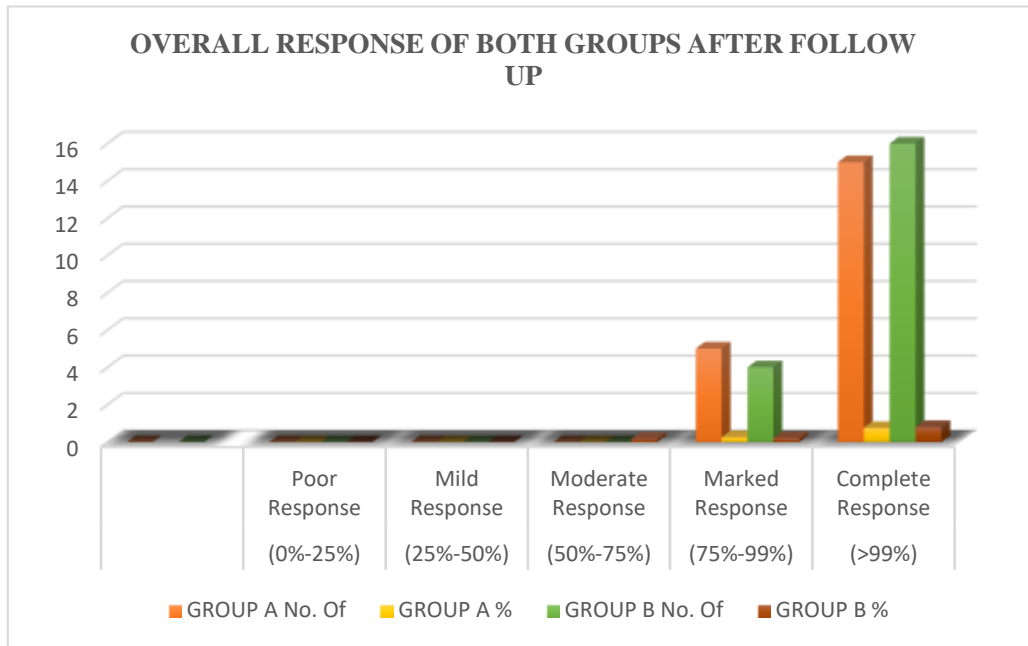
**GRAPH NO.29**

- The mean of Pain in group A is 1.10 after follow up and in group B it is 1.10.
- The mean of Wound Size in group A is 0.6 after follow up and in Group B is 0.55.
- The mean of Granulation Tissue in Group A 1.15 after follow-up and in group B is 1.15.
- The mean of Discharge in group A is 1.15 after follow up and in Group B is 1.25.
- The mean of Depth in group A is 1.10 after treatment and in Group B was 1.25.

OVERALL RESPONSE OF BOTH GROUPS AFTER FOLLOW UP**TABLE NO.65**

Overall Response After Follow-Up					
Grouping	Response	GROUP A		GROUP B	
		No. Of Subjects	%	No. Of Subjects	%
(0%-25%)	Poor Response	0	0%	0	0%
(25%-50%)	Mild Response	0	0%	0	0%
(50%-75%)	Moderate Response	0	0%	0	15%
(75%-99%)	Marked Response	5	25%	4	20%
(>99%)	Complete Response	15	75%	16	80%
Total		20	100%	20	100%

GRAPH NO.28



DISCUSSION

DISCUSSION ON PROBABLE MODE OF ACTIONS OF YAVA PRATISARANEYYA KSHARA, IN DUSHTA VRANA.

- The *doshagnatha* of *Yava kshara* is *Tridoshagna*⁹ and *Tridoshas* are mainly held responsible for *dushta vrana*.
- The pus formation is due to vitiated *kapha* and *pitta* whereas *prasara* of pus is due to vitiated *vata*.
- *Kshara guna* helped in removal of slough by the property of *Chedana*, *Bhedana* and *lekhana*.
- The drug having *Ushna guna*, *Ushna vreeya* with *Vata hara* which is effective in *lekhana* and *vedanahara*.
- *Ushna guna*, *Chedana*, *Bhedana* and *Lekhana* property of drug irritates the tissue at wound site which induces the Inflammation (First stage of wound healing).
- Once inflammation is induced at local wound site means Histamines are activated and local vasodilatation will occur which helps in bringing of more plasma proteins towards the wound site which are required for clearing infection and enhancing the healing process.
- As it is having the *stambhana* and *shoshana* property helps to reduce the discharge and helps in wound contraction (Second stage of wound healing)
- *Yava Kshara* is like *agni* and removes *sleshma vibhanda* there by increases circulation so helps for epithelization and granulation tissue formation (Third and fourth stage of wound healing).

So *Yava Kshara* had been selected for this study. An attempt was made to explore the *Shodhana* and *ropana* property of the *Kshara* in *Dushta vrana* scientifically.

DISCUSSION ON PROBABLE MODE OF ACTIONS OF PALASHA PRATISARANEYYA KSHARA, IN DUSHTA VRANA.

- *Palash* possesses properties like *Katu*, *Tikta* and *Kashaya rasa*, *Ushna veerya*, *Ruksha*, *Laghu guna* and *Katu vipaka* hence acts as *Vrana sodhana*¹⁰ i.e. (wound debridement).
- The drug reduces excessive exudates, and necrotic tissues. It also reduces local discharge and facilitates granulation tissue formation which is necessary for wound healing.
- *Palash* has element predominantly of *Vata* and *Agni* property, hence these types of drugs have tendency to reduce exudates of wound, decrease oedema. (i.e., helps in *Vrana lekhana*).
- *Palash* as such has significant wound healing properties like fast epithelization, increase collagen deposition and hydroxyproline in granulation tissue, increase tensile strength of wound, antioxidant properties and antimicrobial activities.

- *Kshara* as method of application for *Palash* reaps the benefit of both, as *Kshara of Palash* is a very effective debriding agent, it helps to prepared wound bed, resulting healing take place faster.

DISCUSSION ON PROCEDURE REVIEW

- The present study was carried out to compare the effects of two *Kshara yogas* in the management of *Dushta Vrana*. *Kshara karma* is a treatment for *Vrana* having the property of both *Shodhana* and *Ropana*. In the current surgical practice debridement is one of the procedures to remove the slough and to promote healing process.
- First, *Vrana sthana* and surrounding area were cleaned with *Sukoshnajala*. Then crystals of *Kshara* was placed on unhealthy wound over the slough by *Sandamsa yantra* left up to 100 *matra kala* or till *samyak dagdha lakshanas* were seen. Then wound was washed with Distil water, for *Vrana Ropanaartha* sufficient quantity of *jatyadi gruta* was applied and bandaging done.
- *Kshara* was applied on alternative day till *shudha vrana lakshana* seen for 7days.
- In most of the cases *shudha vrana lakshanas* were seen after second sitting later daily wound wash and *jatyadi ghruta* was applied daily twice till *Vrana ropan*.
- During application of *Kshara* we have to be very care full because if it touches healthy granulation tissue patient will have sever burning sensation.

DISCUSSION ON PROBABLE MODE OF ACTIONS OF JATYADI GRUTHA IN DUSTA VRANA

After the overall analysis of the drug *Jatyadi Grutha*, it is inferred that because of *tikta rasa* of all the drugs *Jati*, *Nimba*, *Patola*, *Naktamaala*, *Siktaka*, *Madhuka*, *Kusta*, *Haridra*, *Dhaaruharidra*, *Katurohini*, *Manjistha*, *Padmaka*, *Lodhra*, *Abhaya*, *Nilotpala*, *Tutha*, *Saariva*, are having *Vrana Shodhana*, *Ropana*, *Pootihara*, *Vedana Sthapana*, *Tridoshagna* action which are directly helping in wound/ulcer healing. Salicylic acid present in *Jati* is antibacterial, antifungal, antiviral and anti-inflammatory etc. Nimbine Margosin present in *Nimba* is anti-inflammatory, anti-bacterial, analgesic etc. Glycyrrhizi of *Madhuka* is having wound healing property. Curcumin is present in *Haridra* and it is also anti-inflammatory, Antiseptic, Antibacterial and Antimicrobial etc. CuSO₄ present in *Tutha*, which helps in *Lekhana*. *Grutha* acts as good vehicle in bringing out pharmacological actions of other ingredients in the formulation. In this way all the drugs which were used for the *Jatyadi Grutha* are contributing for the healing of *Dushta Vrana*. This may be the reason that *Jatyadi Grutha* has shown significant healing effect on the patients of *Dushta vrana*.

DISCUSSION ON OVERALL RESPONSE AFTER TREATMENT AND FOLLOW UP

- Overall response of after treatment showed Complete response in 40% (9 patient) in group A, whereas 45% (9 patients) in group B, marked response in 60% (12 patient) in group A whereas 55% (11 patient) in group B moderate response, mild and poor response was 0% in both groups

Therefore, both the groups i.e., group A and group B are equally effective.

- Overall response of after follow up showed Complete response in 75% (15 patient) in group A, whereas 80% (16 patient) in group B, marked response in 25% (5 patient) in group A whereas 20% (4 patient) in group B, moderate response, mild and poor response was 0% in both groups

Therefore, both the groups i.e., group A and group B are equally effective.

CONCLUSION

Challenging aspect in the surgical field is wound and ulcer care, hence *Acharya Sushruta* has given prime importance to the management of *Vrana*.

Dushta Vranas are frequently encountered problem in present era produced commonly as a complication of trauma or pathologic insult and it causes long-term agony to the patient.

The features of *DushtaVrana* are *Athisamvritha*, *Athivivrutha*, *Athikatina*, *Athimridu*, *Utsanna*, *Avasanna*, *Krishna raktha peetha suklaadi varnas*, *Puthi puya dushta sonitha sravi*, *Daha*, *Paka*, *Raga*, *Athyarthavedana*, *Athyarthagandha*, *Pidaka*, *Kandu*, *Shopha*, and *Deerghakalanubandhatha*. So *Dushta vrana* can be correlated with non-healing ulcers.

If it's not treated effectively it may lead to delayed healing or non-healing and further causes many complications such as *Naadvirana*, *Kotha* etc.

The principal modalities adopted in the conventional system of medicine are long duration anti-biotic, wound debridement such as surgical, autolytic, enzymatic, mechanical, and bio surgery.

Intake of anti-biotic for a long duration produces gastric irritation may cause resistant against the anti-biotic and reduced immunity.

The management of *Dushta Vrana* with *Ayurvedic* parameters is one of the major areas of research and has comes under increased scrutiny.

Even though many studies were done over the *shodhana* of *Dushta Vrana*, various procedures like *vrana lepana*, *vrana prakshalana*, *avachurnana*, *taila* application etc. But these procedures are expensive, time consuming and

shelf-life of medicaments for these are less, while thought of a potent effective measure for *shodhna* of *Dushta Vrana*, *ksara pratisarana* is much beneficial.

The *Kshara* is *Pradhana* among *Shastra* and *Anushasthra*, because of its *Chedyā*, *Bhedyā*, *Lekhya*, and *Tridoshaghna* properties. *Utsanna mamsa*, *Katina*, *Kanduyuktha vrana* should be cleaned by *Ksharaprisarana*.

Kshara Pratisarana is cost effective and simple procedure without any major complications. Hence an attempt is made to study the comparative efficacy of *Yava Kshara Pratisarana* and the *Palasha Kshara Pratisarana* in the management of *Dushta Vrana*.

The *Kshara* shown better effect in clinical studies and also increase the rate of contraction produces healthier granulation tissue.

Aanesthesia, anti-biotic, and hospitalization are not necessary for *Kshara Pratisarana*.

Time consumption and cost is less compared to Other *Vrana Shodhana* Procedures. *Kshara* will remove only unhealthy granulation tissue, so the ulcer size will not increase.

Yava Kshara was very effective when there is more *shleshma vibhanda* and

Palasha Kshara was very effective when there was *gratitha rakta* in *Dusta Vrana*.

WOUND IMAGES.

Fig no-1 Before Treatment.



Fig no-3 During Kshara Application.

Fig no-2 After 1st sitting of Kshara Application.



Fig no-4 During Kshara Application



Fig no-5 After 2nd sitting of kshara



Fig no-6 14th day After Treatment. Application.



Fig no-7 At Follow Up (28th day).**Fig no-8 At Follow Up (40th day).****REFERENCES**

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