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A Clinical Study to Evaluate the Effect of *Vrana Basti* with *Gouradhyajatikadi Taila* in the Management of *Dushta Vrana*

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ABSTRACT

Wound and its management are fundamental to the practice of surgery. Incidence of Non healing ulcer is increasing as age progresses above 50 years and becomes difficult in healing. *Dosha dushti* will results in *Dushta Vrana* which is characterized by foul smelling, pain, discharge and delay in healing. This stage of *Vrana* demands an effective treatment either in the form of systemic or local treatment. *Vrana Basti*, a local treatment with *Gouradhyajatikadi Taila* was selected to evaluate its *Shodhana* effect in *Dushta Vrana*.

Objectives:

1. To do the drug review on *Gouradhyajatikadi Taila*.
2. To standardize the procedure of *Vrana Basti*.
3. To evaluate the effect of *Gouradhyajatikadi Taila Vrana Basti* in the *Shodhana* of *Dushta Vrana*.

Methods: Twenty patients of *Dushta Vrana* fulfilling the inclusion criteria were selected & subjected to *Gouradhyajatikadi Taila Vrana Basti* for ten minutes every day for seven days or till *Vrana* attains *shuddha Vrana lakshana* along with internal medication. Follow up was done weekly once for four weeks.

Results: Local treatment of *Vrana Basti* with *Gouradhyajatikadi Taila* along with internal medication was found highly significant in reduction of Size of the ulcer, Pain, Discharge, Burning sensation, Itching, slough and Tenderness ($p < 0.001$).

Interpretation and Conclusion: In the present study 60% of *Dushta Vrana* healed completely & 40% of *Dushta Vrana* healed moderately. Thus *Gouradhyajatikadi Taila Vrana Basti* was proved effective in the *Dushta Vrana* management by its *Shodhana* and *Ropana* effect.

KEYWORDS

Dushta Vrana, Gouradhyajatikadi Taila, Shodhana, Ropana, Vrana Basti



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INTRODUCTION

While explaining the scope of *Shalya Tantra*, Acharya Sushruta has mentioned *Vrana Vinishcayartham* as a major part of *Shalya Tantra*¹. Acharya Sushruta explains *Vrana* as the condition where in tissues undergo destruction and also causes discolouration of the affected region². Healing of *Vrana* is a natural process, but due to interference of vitiated *Dosha*, *Vrana* becomes *Dushta* and normal healing gets delayed. The presence of *Dushta Vrana* worsens the condition of the patient's psychological and physical state to a greater extent. *Dushta Vrana*, being a chronic ailment causes long-term suffering and needs some effective treatment. Under *Dushta Vrana*, non healing chronic ulcers like infected traumatic ulcers, venous ulcer, diabetic ulcer, and arterial ulcer can be considered. In India the prevalence of chronic ulcer was at 4.5 per 1000 population³. Local factors of wound like slough, infection and foreign body, affect the normal process of healing. A clean wound in a normal body heals earlier with a minimum scar as compared to a contaminated wound⁴. Therefore in the present concept all efforts are directed to keep the wound clean during the various stages of its healing. Due to various ways of the manifestation of *Vrana*, various

methods of external application and internal administration are available. In case of external application various formulations for *Shodhana* and *Ropana* of *Vrana* are mentioned such as *Kashaya*, *Varti*, *Kalka*, *Sarpi*, *Taila*, *Rasakriya* and *Choorna* depending on the *avastha* of *Vrana* and *Dosha* involved⁵. In *Sushruta Samhita* we get reference of use of *Shodhana Taila* in wounds which are *Utsanna*, *Alpa mamsa* & *Alpa srava*. *Gouradhyajatikadi Taila* is indicated for *Sukshma*, *Gambhira* and *Dushta Vrana*⁶. *Vrana Basti* is the unique external method of drug administration for the treatment of wounds which are deep seated with a small opening. This procedure is explained by Acharya Sushruta and Sharangadhara. For the first time Dr Pankaj Patil done clinical trial on *Vrana Basti* in 2009 at RGUHS⁷. Considering various wound dressing concepts from both Ayurveda and contemporary science various modifications were done in the procedure of *Vrana Basti*^{8,9}. In the present clinical study of *Vrana Basti* procedure, oil was made to retain over the ulcer for the stipulated time period of 10 minutes every day for 7 days or till the *Vrana* attains *shuddha Vrana lakshana*, later patients are advised to continue the dressing with *Gouradhyajatikadi Taila* till wound heals completely. During follow up, assessment of the wound was done once in 7 days for



next 28 days. For the clinical study, 20 patients of *Dushta Vrana* attending the OPD and IPD of S.D.M. Ayurveda Hospital, Kuthapady Udipi, who have fulfilled the inclusion criteria were selected and subjected to *Gouradhyajatikadi Taila Vrana Basti* along with internal medication. Assessment criteria were statistically analyzed with student 't' test & Wilcoxon signed rank test and statistically highly significant results were obtained in all the parameters.

MATERIALS AND METHODS

Ethical committee clearance number-SDMCAU/ACA-49/ECA80/16-17 Date: 24/05/2017

Study design:

This is an open label single group clinical study with pre-test and post –test design.

Source of data:

Source of Drug: *Gouradhyajatikadi Taila* was prepared at SDM Ayurveda Pharmacy, Kuthapady. ef: ISO 9001:2015, DOC.NO.SDMAP/QC/02/R001.

Source of subjects: Patients diagnosed as *Dushta Vrana* were selected from Outpatient and Inpatient department of SDM Ayurveda Hospital, Kuthapady, Udupi.

Methods of collection of data:

Twenty patients of *Dushta Vrana* irrespective of age and gender were selected as per inclusion criteria. Before the intervention all the necessary data regarding *Dushta Vrana* were collected. Later selected 20 patients were subjected for clinical trial.

Intervention:

Vrana Basti followed by dry gauze dressing was done once in a day for 10 minutes for 7 days or till *Vrana* attained *shuddha Vrana lakshana* whichever was earlier.

Internally:

Tab *Triphala Guggulu* 450mg 1 TID with lukewarm water till the wound heals

Tab *Gandhaka Rasayana* 250 mg 1 TID with lukewarm water till the wound heals

In subjects with multiple ulcers, study was extended to those ulcers which fulfill inclusion criteria were also selected.

Procedure of Vrana Basti:

Poorva karma:

After taking informed written consent from patient the procedure was explained in brief to the patient. *Anushnasheeta Taila* was taken into a vessel around 10-20ml.

Drug- Gouradhyajatikadi Taila

Pradhana Karma:

The patient was made to lie down on dressing table in comfortable position with wound area exposed properly. Floor of the *Vrana* was cleaned with Normal saline and dried with a cotton swab and surrounding



area was cleaned with surgical spirit using an artery forceps under aseptic condition. Meanwhile sufficient quantity of wheat flour was taken and made into dough by adding required quantity of water. A wall was erected around the *Vrana* by dough of suitable height and into this well *Anushnasheeta Gouradhyajatikadi Taila* was poured up to a height of 1 cm from the floor of the *Vrana* by using a spoon. The *Taila* was retained in it for 10 minutes. Same procedure was repeated every day for minimum of 7 days or till *Vrana* attains *shuddha Vrana lakshana* whichever was seen earlier. Every day fresh oil was used.

Pachata Karma:

After 10 minutes the *Taila* was taken out with help of cotton swab and dough ring was taken out completely and surrounding area again cleaned with surgical spirit and ulcer was covered with a dry sterile gauze and pad and dressing was done.

Duration of the treatment:

7 days/ Till *Vrana* attains *shuddha Vrana lakshana*+ 28 days (Weekly follow up for 4 week)

Observation and follow up period:

Till *Vrana* attains *shuddha Vrana lakshana* every day *Dushta Vrana* was observed and after completion of intervention at an interval of one week for 28 days to record assessment criteria and any other findings.

All the findings were analyzed clinically and statistically.

Inclusion criteria:

- Patients having *lakshana* of *Dushta Vrana*
- *Dushta Vrana* within size of 5cm×5cm×1cm were selected
- *Vrana* in which *Taila* is indicated were selected
- Patients were selected irrespective of sex and religion
- Patients were selected from age group of 20 to 70 years.

Exclusion criteria:

- Wound caused due to burn
- Patients found positive for HIV & HBsAg
- Malignant ulcers

Investigations:

1. Blood for- Hemoglobin percentage
Total Leukocyte count
Differential count
Bleeding time
Clotting time
Blood sugar level
2. HIV & HBsAg
3. Tissue biopsy if needed
4. Culture & sensitivity if needed
5. Any other investigations if needed

Assessment criteria:

Grading of parameters for assessment of *Dushta Vrana*:



Subjective criteria were assessed as per Table 1 and Table 2

Table 1 Subjective criteria grading

Grade	Burning sensation (Vrana Daaha)	Itching (Vrana Kandu)- VAS	Smell (Vrana Gandha)
	No burning sensation	No itching	No odor
1	Mild – Occasional episodes of burning	Mild- Occasional episodes of itching	Faint odor after opening dressing
2	Moderate- Continuous burning	Moderate- Continuous itching	Strong odor after opening dressing

Table 3 Objective criteria grading

Grade	Discharge	Tenderness	Surrounding area	Floor & granulation tissue
0	No discharge/ dressing	dry	No tenderness	No skin color change
1	Small stains on gauze after 24 hours	dry	Tenderness on deep palpation	Skin discoloration
2	Gauze fully wet, pad stained after 24 hours	dry	Tenderness on moderate pressure	Skin discoloration, edema
3	Gauze & pad soaked with discharge, need to change 2-3 times within 24 hours	dry	Tenderness on touch	Scab, edematous & indurated
4	-	-	-	Uneven floor, no granulation tissue, fibrous tissue and pale, yellow or black color slough

Size of ulcer assessment criteria: Linear method

Table 4 Assessment of size of ulcer by linear method

Length in cm	A sterile thread is placed across the wound. Linear measurement of a wound was taken at the greatest length head-to-toe and the greatest width side-to-side, with measurements taken perpendicular to each other. Deepest part of the wound is measured as depth with same thread. sterile thread is then measured on cm scale
Width in cm	
Depth in cm	

RESULTS AND DISCUSSION

Out of 20 patients of this study maximum patient's i.e.45% were from age group of 50-60 years, 85% were male, 100% was belongs to Hindu religion, 40% were cook

3	Severe- Continuous burning disturbing sleep	Severe- Continuous itching disturbing sleep	Strong odor even with dressing
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Pain assessment criteria- Numerical Rating Scale (NRS)

Table 2 Subjective criteria- Assessment of pain by Numerical Rating Scale

0	1	2	3	4	5	6	7	8	9	10
No pain					Moderate pain					Worst pain

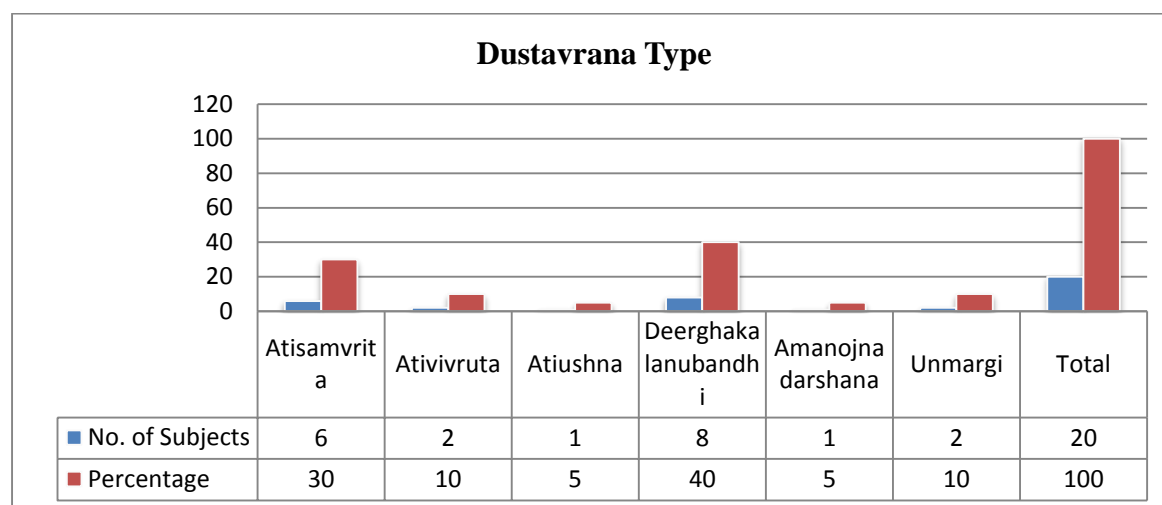
Objective criteria were assessed as per Table 3 and Table 4

by nature of work, 60% were having history of varicose veins, 50% were having involvement of rakta-mamsa Dhatu, 35% were with Vata-Pitta-Kapha vikruti, 60% Ulcers were of Vikruta Akruti, 15% were

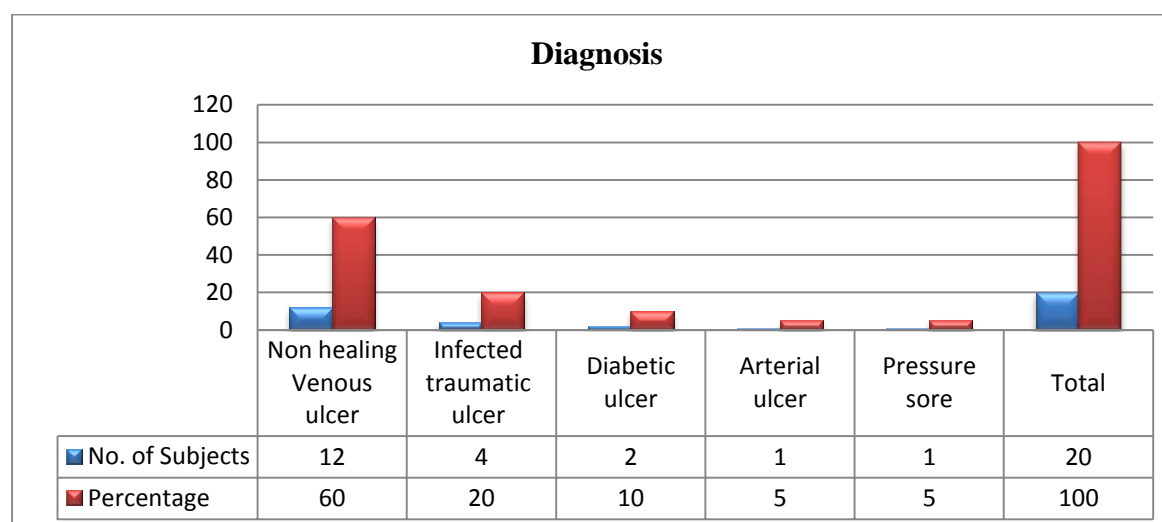


having Vrana Gandha, 100% were having pain and discharge. Maximum 40% of ulcers were of Deerghakalubandhi (Chronic

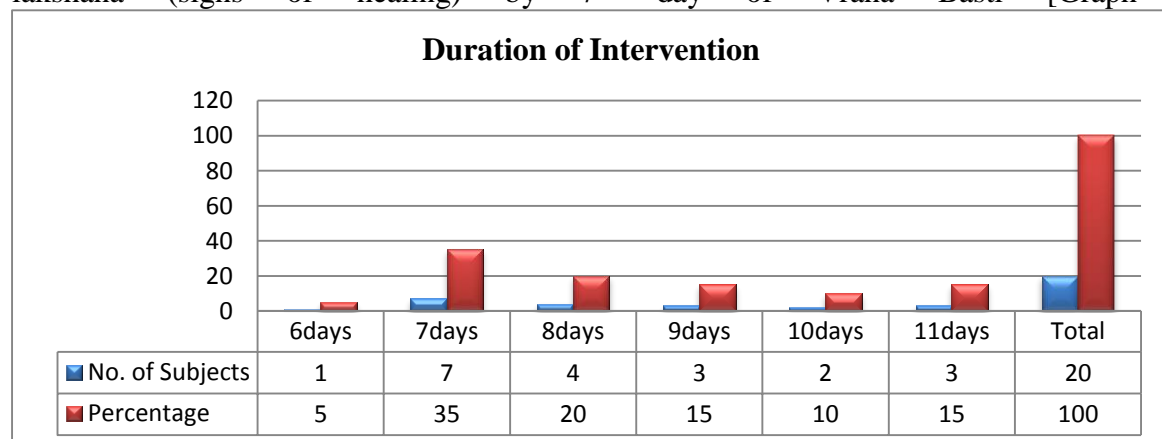
in nature) [Graph 1], 60% were diagnosed as Non healing venous ulcers[Graph 2],



Graph 1 Distribution of Subjects according to Dushta Vrana type



Graph 2 Distribution of patients based on Diagnosis maximum 35% ulcers showed shuddha Vrana lakshana (signs of healing) by 7th day of Vrana Basti [Graph 3],



Graph 3 Distribution of subjects based on Duration of intervention



Statistical Methods:

Statistical analysis was done using Statistical package for social science (SPSS) Ver.23. All the results were analyzed statistically for 'p' value before and after the treatment using paired "t" test and Wilcoxon signed rank test. All the subjective parameters and objective parameters except size of the ulcer were statistically analyzed with Wilcoxon signed rank test. Size of the ulcer was statistically analyzed with paired 't' test

DISCUSSION

Chronic wounds impact on virtually every aspect of daily life: pain is common, disturbed sleep, restricted mobility and work capacity, psychologically patients are affected thinking of their wound 2 hours every day and personal finances are often adversely affected.

Dushta Vrana being chronic element with involvement of all *Tridosha* with *Rakta Dhatu* always needs treatment for its healing. It is necessary to normalize *dosha dushti* in a *Vrana* by virtue of *Vrana Shodhana*. For *Shodhana* drugs should possess *Tridosahara*, *Krimigna*, *Kandugna*, *Vedanahara*, *Vrana Shodhaka* and *Vrana Ropaka* properties. By action of *Shodhana Dushta Vrana* becomes *Shuddha*

and needs *Ropana chikitsa* for complete healing.

Rationality behind selection of Vrana Basti with Gouradhyajatikadi Taila:

In *Sushruta Samhita* we get reference of use of *Shodhana Taila* in wounds which are *Utsanna*, *Alpa mamsa* & *Alpa srava*. *Gouradhyajatikadi Taila* was selected for the present study from *Bhaisajyaratnavali Vranashodhadikara* which is indicated for *Sukshma*, *Gambhira* and *Dushta Vrana*.

Discussion on Observations:

The majority of patients, i.e. 85% were male and only 15% were females. As males are more exposed to strenuous work outside the house, chances of getting injured or exposure to infections are more. Maximum i.e. 45% of subjects were found by age group of 50-60 years,

Incidence of chronic ulcer was said to be more in age group above 5th decade. As this age group is more susceptible for systemic illness like Diabetes, Hypertension and Peripheral vascular diseases etc may result in development of non healing ulcers. In the present study Diabetes mellitus and venous hypertension was found as the maximum causative factor in this age group. Maximum of 50% subjects in this study were cook by nature of work which demands prolonged standing resulting in development of varicose veins, one of the causes for leg ulceration. Maximum 35%



subjects were observed with Tridosha and maximum 50% were noticed with Twak, Rakta and Mamsa vikruti. Three cases of Dushta Vrana which are involved *Asthi Dhatu* in the present study also healed moderately with Vrana Basti. Maximum 35% of patients were having history of ulcer from 3months-6months. This suggests that most of the ulcer were chronic in nature. Vrana Basti with GJT showed encouraging improvement in all chronic ulcers along with internal medications. Maximum 60% of patients have given history of varicose veins. Varicose veins will results in venous hypertension and results in ulceration as a complication. Varicose vein is the leading cause for leg ulcer. In present study patients with varicose vein got treated with many other treatment modalities including surgery in their past life but no improvement was found. Along with Vrana Basti Limb elevation and Exercise, helped in complete healing of venous ulcers without any side effects. Vata dosha if involved with destruction of deeper structures will cause severe pain at the ulcer site. Prostaglandins and pressure over nerves by swelling is the cause for pain. Patients with severe pain found complete relief after *GJT Vrana Basti* because of its *Vedanasthapana* and *Shothahara* action. *Sthambana* action of *Panchavalkala* and *Shodhana* action of

Jaati, Nimba, Yastimadhu in *GJT* helped in reduction of discharge at wound site. Moisture balance was achieved with *Vrana Basti* and significant improvement was noticed in all 20 cases. Only 15% of patients were having *Vrana Gandha* as a symptom which means, ulcers were with necrotic tissue or with microbial colonization. All 3 patients showed complete reduction in smell after completion of *Vrana Basti*. No recurrence was noticed during follow up period. This might be due to *Putigandhahara* and *Lekhana* action of *Tuttha* in *GJT*. Maximum numbers of patients i.e. 40% were having *Deerghakalanubandi lakshana* of *Dushta Vrana* which is due to *Vata dosha*. Majority of patients i.e.60% were diagnosed with Non healing venous ulcer followed by 20% of an Infected traumatic wound, 10% of diabetic ulcer, 5% of arterial & 5% pressure sore. Even with controlled Diabetes mellitus, patients were found to have delayed wound healing. *Vrana Basti* with *GJT* as a local treatment with internal antidiabetic medications wounds became *Shuddha* and moderately healed. In this study maximum number of patients, i.e. 35% was attained *Shuddha Vrana lakshana* after 7 days of *Vrana Basti* with *Gouradhyajatikadi Taila*. This procedure successfully helped to achieve proliferation of granulation tissue by



reducing inflammatory process thus by making wound bed ready for healing.

Discussion on Results - Subjective & Objective criteria:

Clinical findings during intervention: As *Vrana Basti* is a new concept in *Vrana* management it was found that to set the duration of intervention and selection of drug was challenging. Even though the previous study was done on *Vrana Basti* and effective result was noticed still it was in doubt and less practiced. So the present study was taken to standardize the procedure in such a way that it can be easily and frequently practiced. Considering various factors like *Atisnigdha* and

Atirukshata of dressing concepts in *samhita* an attempt was made to set the duration for 10 minutes and keeping the oil *Anushnasheeta*. Warm or Luke warm oil when used for *Vrana Basti* it may damage the fragile newly forming capillaries and granulation tissue. So to avoid this *Anushnasheeta Taila* was used.

Masha Pishti was very sticky it became difficult to remove it completely after procedure. So Wheat flour was used and better result was noticed.

Results on statistical analyses:

For the Objective parameter Size of ulcer, Paired t test was applied to analyze the result statistically. [Table 5]

Table 5 Effect on size in Length, Width and Depth of the ulcer assessed with paired t test

Size of ulcer-	Parameter	Mean score	Difference in Mean	Paired "t" test			't' value	p value	Interpretation
				SD	SEM	% change			
Length	BT	2.87		1.42	0.31		3.28	0.004	S
	AT	2.45	0.42	1.11	0.24	14.63			
	BT	2.87		1.42	0.31		7.85	0.000	HS
	4 th wk FU	0.92	1.95	0.91	0.20	67.94			
Width	BT	2.43		1.25	0.28		3.30	0.004	S
	AT	1.93	0.50	1.17	0.26	20.57			
	BT	2.43		1.25	0.28		9.28	0.000	HS
	4 th wk FU	0.68	1.75	0.85	0.19	72.01			
Depth	BT	0.50		0.32	0.07		7.95	0.000	HS
	AT	0.30	0.20	0.25	0.05	40			
	BT	0.50		0.32	0.07		6.90	0.000	HS
	4 th wk FU	0.03	0.46	0.06	0.01	92			

Mean score of length in cm BT was 2.87, AT it was 2.45 & after 4th wk of FU it was reduced to 0.92. BT mean score of width in cm was 2.43, AT it was 0.93 & after 4th wk of FU it was reduced to 0.68. This indicates the Shodhana and more of Ropana effect of trial drug. During intervention period depth

of ulcer was drastically reduced this might be due to the drug as well as the effect of procedure. As *Panchavalkala*, *Nimba*, *Karanja*, *Manjista* and *Haridra* in the *Taila* used are mainly having antimicrobial, and antioxidant property.



Pain was significantly reduced in all patients with no tie and positive results which might be due to *vedanasthapana* action of *Haridra*, *Yastimadhu*, *Bhadramusta* and *Jatamamsi* which are present in the test drug and also due to *Guggulu* which is administered internally [Table 6]. Out of 20 patients, 18 patients were having burning sensation before

treatment. After the intervention 17 patients got improvement and 1 remained unchanged. Burning sensation relapsed during the 1st week of follow-up in 3 patients. At the end of 4th wk of follow up all 18 patients got drastic reduction in burning sensation [Table 6].

Wilcoxon signed rank test for statistical analysis

Table 6 showing effect of GJT Vrana Basti on subjective criteria

Subjective criteria	Parameter	Negative Ranks			Positive Ranks			Ties	Total	Z value	P value	Interpretation
		N	MR	SR	N	M	SR					
Pain	BT-AT	20	10.5	210.0	0	0.0	0.0	0	20	-3.99	0.00	HS
	BT- 4 th wk FU	20	10.5	210.0	0	0.0	0.0	0	20	-3.93	0.00	HS
Burning sensation	BT-AT	17	9.0	153.0	0	0.0	0.0	1	18	-3.78	0.00	HS
	BT- 4 th wk FU	18	9.5	171.0	0	0.0	0.0	0	18	-3.78	0.00	HS
Itching around ulcer	BT-AT	9	5.0	45.0	0	0.0	0.0	4	13	-3.00	0.00	S
	BT- 4 th wk FU	13	7.0	91.0	0	0.0	0.0	0	13	-3.30	0.00	HS
Smell	BT-AT	3	2.0	6.0	0	0.0	0.0	0	3	-1.63	0.10	NS
	BT-4 th wk FU	3	2.0	6.0	0	0.0	0.0	0	3	-1.73	0.08	NS

This might be due to *Daahaprashamana* action of drugs like *Saariva* & *Raktachandana* and most of the drugs in the trail drug are having *sheeta veerya*. Out of 20 cases, 13 patients had itching around the ulcer, 9 patients got improved AT and 4 remained unchanged. During 1st wk of FU 1 patient got aggravation in itching, 1 remained unchanged & 11 got improvement. After 4th wk of FU all 13 patients got complete reduction in itching

which is statistically highly significant [Table 6], due to *Kandughna* effect of *Goura sarshapa*, *Nimba* & *Haridra*. Out of 20 cases 3 subjects were having smell and when results were observed all three presented with negative rankings with same z & p value this suggests that the *Vrana Basti* is effective in management of smell [Table 6]. Due to very small sample size statistically non significant results were obtained. *Tuttha* and *Raktachandana* in



GJT are having *durgandhahara* and *poothihara* property. All patients in the study were having tenderness BT. After intervention 19 patients showed

improvement and one patient remained unchanged. At the end of 4th wk FU all 20 patients got improvement with highly significant z value [Table 7].

Table 7 Showing effect of GJT Vrana Bastion objective criteria

Objective criteria	Parameter	Negative Ranks			Positive Ranks			Ties	Total	Z value	P value	Interpretation
		N	MR	SR	N	MR	SR					
Tenderness	BT-AT	19	10.0	190.0	0	0.0	0.0	1	20	-3.96	0.000	HS
	BT-4 th wk FU	20	10.5	210.0	0	0.0	0.0	0	20	-4.00	0.000	HS
Discharge	BT-AT	15	8.0	120.0	0	0.0	0.0	5	20	-3.87	0.000	HS
	BT- 4 th wk FU	18	9.5	171.0	0	0.0	0.0	2	20	-3.87	0.000	HS
Floor of the ulcer	BT-AT	20	10.5	210.0	0	0.0	0.0	0	20	-4.01	0.000	HS
	BT- 4 th wk FU	20	10.5	210.0	0	0.0	0.0	0	20	-4.01	0.000	HS
Discoloration around ulcer	BT-AT	15	8.0	120.0	0	0.0	0.0	5	20	-3.62	0.000	HS
	BT- 4 th wk FU	19	10.0	190.0	0	0.0	0.0	1	20	-3.94	0.000	HS

Most of the ingredients in *GJT* are having *Vrana Shodhana* & *Shothahara* property. Retention of oil might have helped in better absorption of drugs and thus it might act on improvement in tenderness. Discharge is characteristic feature of *Dushta Vrana*. In present study all 20 patients presented with discharge BT. After intervention it is observed that 15 patients got reduction in discharge and 5 remained unchanged. After 4th wk of FU discharge reduced completely in all 20 patients this is statistically highly significant [Table 7]. The *Panchavalkala* in *GJT* is mainly having *Sthambana* property. Most of the drugs in *GJT* are *Vrana Shodhaka*. As *Vrana Shodhana* starts discharge will reduce. Retention of oil for 10 minutes does not affect the increase in

discharge because 10 minutes will not become *Atisnigdhatta* thus it will not cause *Kledata* and increase in discharge. 20 subjects in the study were having slough and no granulation tissue in the floor BT [Figure 1 & 5].



Figure 1 Before treatment



Figure 5 Before treatment
After *Vrana Basti* all 20 cases attained healthy granulation tissue at floor [Table 7] [Figure 4&8].



Figure 4 After 4th week of FU



Figure 8 After 4th week of FU

Out of 20 patients 3 patients (subject 4, 9 & 10) attained epithelization and healthy scar during 2nd and 3rd week of follow up. This is due to *Vrana Shodhana* and *Ropana* action of drugs like *Jaati*, *Yastimadhu*, *Katuki*, *Tuttha*, *Madhuchista*, etc of *GJT*. *Tuttha* is having action on VEGF thus it helps in neoangiogenesis & proliferation of healthy granulation at floor of ulcer. Out of 20 patients who were having Skin discoloration around ulcer BT, 15 got improvement and 5 remained unchanged after *Vrana Basti*. After 4th wk of FU 19 patients got improvements and 1 remained unchanged with statistically highly significant z value [Table 7]. This might be due to *Kustagna*, *Raktashodhaka*, *Varnya* and Skintonic action of *Gorasarshapa*, *Manjista* and *Tuttha* in *GJT*. In *Vrana Basti* while constructing wall around ulcer along with ulcer floor, surrounding area was also covered.

Discussion on Probable mode of action of *Vrana Basti* with *Gouradhyajatikadi Taila*:



After a detailed study on the *Vrana*, *Sushruta* observed that deranged *Doshas* cannot be treated with a single drug all the times. Therefore numbers of drugs of different properties are described as *Vrana Shodhaka* and *Vrana Ropaka* in the management of *Vrana*. The delay in inflammatory and proliferative phase of wound healing is due to contamination, infection, discharge, slough and reduced local immunity.

After the overall analysis of the drug *Gouradhyajatikadi Taila Vrana Basti* it is inferred that the drug has: *Jatamamsi*, *Abhaya*, *Sareeva* and *Jatipatra* are *Tridoshahara* all the other drugs acts on *Kaphapitta dosha*. *Haridra*, *Jatamamsi*, *Manjista*, *Nimba*, *Patola*, *Yastimadhu* are *Vedanasthapaka* drugs. *Karanja*, *Nimba* are *Krimighna*, *Tuttha* & *Raktachandana* are *puti* and *durgandhahara*. *Tuttha*, *Katuki* & *Vetasa* are *Lekhana*. *Sareeva* and *Raktachandana* are *Daahaprashamaka*. *Gourasarshapa*, *Tuttha*, *Mahamedha* & *Murchita Tila Taila* are *Kandugna*, *Kustaghna*, *Balya* & *Jeevaniya*. *Panchavalkala* which are *Kashaya Pradhana* mainly acts as *Sthambana*. All the drugs in *GJT* are *Vrana Shodhaka*, *Shothahara* & *Vrana Ropaka*. These drugs directly acting on *Dushta Vrana* in all the way and resulted in *Shodhana* of *Dushta Vrana*.

A Phytochemical study of drug *Panchavalkala* made *in vitro* and *in vivo* by various research centers has been found to be rich in, Tannis & flavonoids. Tannins acts as anti microbial & anti-inflammatory and result in wound healing by capillary formation & wound contraction. Flavonoids are antioxidants as oxidation process delays wound healing, which helps in preventing initial phase of wound healing¹⁰. *Murchita tila Taila* contains Sesamol-7-rocopheril which is antioxidant and provides better result in tissue damage. It acts as a vehicle for drug absorption in wound area. *Murchita Tila Taila* is having less acid value and more saponification value which means presence of higher concentration of low molecular weight fatty acids results in fast absorption in more percentage¹¹. CuSO_4 present in *Tuttha* ($\text{CuSO}_4 \cdot 7\text{H}_2\text{O}$), stimulates Vascular Endothelial Growth Factors (VEGF)¹² which results in angiogenesis thus stimulates the proliferation and migration of granulation tissue at wound bed. Salicylic acid present in *Jaati* is antibacterial, antifungal, antiviral and anti-inflammatory¹³ etc. Nimbine Margosin¹⁴ present in *Nimb* is antiinflammatory, antibacterial, analgesic etc. Glycyrrhizi of *Madhuk* is rich of Vit A & Vit C which helps in collagen synthesis & wound healing¹⁵. Curcumin is present in *Haridra*¹⁴



and it is also antiinflammatory, antiseptic, antibacterial and antimicrobial etc.

An Analytical study of Drug GJT showed an Acid value of 1.79 & Saponification value of 186.67, which suggests a low acid value and high saponification value and indicates a high concentration of low molecular weight free fatty acids. Thus the absorption of the drug will be faster and more effective. *Triphala Guggulu* contains *Triphala* along with *Guggulu* which acts as *Vedana Shamaka*. *Gandhaka Rasayana* By its *Madhura Vipaka* & *Prabhava* it acts on wound healing.

On Vrana Basti:

When such a potent Herbo-mineral drug i.e. GJT made to retain over the ulcer for stipulated period of time i.e. 10 minutes, statistically highly significant result was noticed in terms of reduction in size & floor of ulcer, itching, burning, discharge & tenderness. Retention of oil media which is *Anushnasheeta*, by its potent *Srotoshodhaka* & *Vranashodhaka* properly through *Murchita Tila Taila* acted on local inflammatory products and deep systemic action by absorption. Clinically encouraging result was observed without any allergic reactions.

In this way all the drugs which were used for the clinical trials are contributing for the cleansing of wound. This may be the reason that *Gouradhyajatikadi Taila Vrana Basti*

has shown significant cleansing effect in the patients with *Dushta Vrana*, which was a significant finding.

CONCLUSION

The present research study was targeted to achieve the *Shodhana* effect of *Gouradhyajatikadi Taila* and standardize the method of *Vrana Basti*. As per the incidence of ulcers, legs are more affected than other parts; in present study 19 patients out of 20 were having lower limb ulceration. To overcome the adverse effects & cost effectiveness of present dressing methods, an attempt was made with an *Ayurvedic* formulation in the form of *Taila* which is explained in *Dushta Vrana chikitsa* sutra and is one among *seven Vrana Shodhana Upakrama*. *Gouradhyajatikadi Taila (GJT)* was selected for the present study in the form of modified *Vrana Basti*. All 20 patients attained *shuddha Vrana lakshana* in terms of reduction in pain, discharge, burning sensation, itching, depth of ulcer during intervention and length & breath during follow up period with statistically highly significant value, which suggests wound healing effect of *GJT Vrana Basti*. With duration of 10 minutes of *Vrana Basti* with *Anushnasheeta Taila* wound healing was achieved without any adverse effects even in a single patient.



Tridoshahara, Putigandhahara, Daahaprashamana, Krimighna, Vrana Shodhana, Ropana, Vedana Sthapana and Shothahara properties of Drugs in *Gouradhyajatikadi Taila* were absorbed through *Vrana Basti* and resulted in *Vrana Shodhana* and *Ropana* of *Dushta Vrana*. *Vrana Basti* with *GJT* along with internal medication was found effective in attaining *Shodhana & Ropana* effect in *Dushta Vrana*.



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