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"EVALUATION OF EFFECT OF LOCAL APPLICATION OF *DURVATAIL* IN THE MANAGEMENT OF *SADYOVRANA*"

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ABSTRACT

According to *Sushruta*, the *Vrana* may be classified as *Nija* and *Agantujavrana*. The skin externally covers the body which protects it from all exogenous microbes. Any discontinuity in the skin due to the exogenous factors is called as *Agantujavrana*. The *shuddhaawastha* of the *Agantujavrana* is called as *Sadyovrana* with a correlation to traumatic wound are of six types and are free from *tridosha*involvement, which may be converted into *Dushtavrana*, if not treated properly. Such *dushtavrana* is supposed to be *dushchikitsya*, which means difficult to treat. So it is necessary to treat the wound earlier for proper healing with intention. Among these type *Ghrushta vrana* is one of them. The present study was done to evaluate the effect of local application of *durvatail* in the management of *sadyovrana* (*ghrushta vrana*) ; to find out whether this drug reduce the size of *ghrushtavrana* by promoting the healing. *Durvatail* is prepared from of *Durva*, *Daruharidra* and *TilaTaila* which are easily available and preparation of *Durvatail* is a simple procedure and cost effective. Total 60 patients were selected and randomly divided into Trial and Control group. The trial group patients were treated with durva tail dressing and control grouppatients treated with dry dressing. The treatment was given for 7 days. The subjective criteria Pain, discharge, and granulation and objective criteria size of wound were observe at each follow up in both groups. Finally the clinical assessment was carried out on overall result. In trial group out of 30 patients 14 (46.67%) patients were completely cure, 16 patients are (53.33%) were improved and in control group out 30 patients 4 (13.33%) patients were completely cure , and 26 (86.67%) were improved. So it can be concluded that the *durvatail* is effective in management of *ghrushtavrana*.

KEYWORDS: *Nija*, *Agantujavrana*, *Durva*, *Daruharidra* and *TilaTaila*.

INTRODUCTION

Main aim of *Ayurveda* is to cure the disease and maintain health state; *Ayurveda* is divided into 8 branches. *Shalyatantra* is specialized branch which deals with surgical problems which afflict mankind. *Vrana* and *Shalyatantra* seem to be inseparable.

According to *Sushruta* the *vrana* may be classified as *Nija* and *Agantuj vrana*.[1] The *shuddha awastha* of the a*gantujvrana* is called as *Sadyovrana*and are free from *tridosha*involvement, which may be converted into *Dushtavrana*, if not treated properly.

Wound healing is a natural restorative response to tissue injury. Healing is the interaction of a complex cascade of cellular event that generates resurfacing, reconstitution and restoration of the tensile strength of injured skin. Healing is a systematic process, traditionally explained in terms of three classic phases' viz. Haemostasis and inflammation, proliferation, and maturation.[2] The major aspect of the management of the fresh wound is prevention of the infection and speedy healing. Reducing pain, discharge and less discoloration after healing are the other important factors. *Sushruta*, as we know, is the Father of Surgery. In his text "*Shashti Upakramas*" are described for the treatment of the wound[3] (*Vrana*).These are the 60 different regimes for the purpose of the wound healing. They cover all the aspect of the wound healing viz. rate, discoloration, scar formation etc. These all 60 are effective. *Charaka*, the great physician of ancient Indian medical science has also described the surgery related portion in brief. He has described 36 types of management of *Vrana*. In these 36 *upkramas*, he has mentioned *Durvatail* as one of the healing agents.[4]

There are so many compound drugs given in our texts which areneeded to be evaluated and re-established with scientific manner. The present work is a further step in the field of *Shalya Tantra* entitled "Evaluation of Effect of Local Application of *Durvatail* in The Management of *Sadyovrana*"

AIMS AND OBJECTIVES

Aims: "To study the efficacy of *Durvatail* In the management of *Sadyovrana*"

Objectives

To study the *vranropan* properties of *Durvatail.*

MATERIAL AND METHODS

The study is randomized controlled trial. Well diagnosed and randomly selected 60 patients were equally divided into Trial and control group after subjecting to inclusion criteria.

Institutional Ethics Committee Approval

Before the initiation of study, the study protocol and related documents were reviewed and approved by institutional ethics committee reff No GAC/IEC/218/2015 on 12 April 2015 at Govt. Ayurved College Nanded.

Inclusive criteria

1. Patients were taken irrespective of sex.
2. Age group-18-45 Years.
3. Traumatic wound with history of < 6 hours.
4. Only abrasion wound (*Ghrushta vrana*) taken.

Exclusive criteria

1. Infected/pus discharge wound.
2. Sutured wound.
3. Wound with systemic involvement and morbid changes.
4. Patient suffering from DM, Syphilis, TB, Leprosy etc.

Investigation

1. CBC
2. BSL-R
3. HIV I, II

Material

1. Patients

Patients suffering from Sadyovrana (abrasion).

2. Drug

a) Antiseptic solution
1) chloroxylenol 4.8%
2) Terpineol 9.0%
3) Isopropyl Alcohol 13.1%
b) Normal saline (N.S.)
c) *Durvadtail.*

3 Instrument

Autoclaved dressing material

A) Antiseptic solution

- chloroxylenol 4.8% w/v.
- IsopropilAlchohol 13.1%.
- Terpineol 9.0%.

Above ingredient present in market preparation with brand name "**** Antiseptic solution".It is used as antiseptic wound cleansing for abrasion, cuts, bites in diluted forms.

The dilution for Antiseptic purpose of above solution is as follow: Prepare a 1:20 dilution using 10 ml of Antiseptic solution in 200 ml of water.

Durvatail nirmanvidhi: 1 liter of *tilatail sneha* was taken in clean wide mouthed stainless steel vessel. The vessel was placed over mild fire and when fumes start appering in *sneha*, 4 liter*Durvaswaras* was added carefully to it. Soon 250 gm *Daruharidra kalka* was added to the vessel and boiled with frequent stirring until *Sneha siddhi lakshana* (fenodgam) appear in it.

Dose: As per size of wound for local application.

Analysis of Drug: Analysis of *Durvataila* was done in Central Government certified laboratory. The physio-chemical values of *Durvataila* are as follows-

Sr. No.	Testing Parameters	Results
1.	Refractive index	1.365
2.	Iodine value	97.80
3.	Saponification value	170.58
4.	Unsafonification matter	0.87%
5.	Acid value	1.30

Method: Trial group procedure –First wound was cleaned with diluted chloroxylenol 4.8%,Terpineol 9.0%, Isopropyl Alcohol 13.1% solution and N.S. then it was dried with sterile pad. Then *Durva* tail gauze was applied on wound and dressing done.

Control group procedure - First wound was cleaned with diluted Chloroxylenol 4.8% Terpineol 9.0%, Absolute Alcohol 13.1% solutionand N.S. then it was dried with sterile pad. Then dry gauze was applied on wound and dressing done.

Duration: Dressing once daily for 7day.

Follow up

0^{th} **,** 3^{rd} , 5^{th}, 7^{th} day

Overall Assessment Criteria

1. Size in cm^2 –Size of the wound were plotted on trace paper and that area was measured with the help of Xerox of graph paper on transparent overhead project sheet
2. Pain - VAS Scale was applied
3. Discharge – Present / Absent
4. Granulation
   Nil - If there were no granulation tissue in wound
   Good - when healthy red granulation is 1%-25%
   Better - When healthy red granulation is 26%-50%

Best - When healthy red granulation is 51%-t 75%
Excellent - When healthy red granulation is 76%-100%

Criteria forAssessmentof Result

Healed – Wound completely healed, scab removed.

1. Improved – Wound size reduced.
2. Not improved- No reduction in size or complication e.g. pus formation.

OBSERVATIONS

The present study was entitled to study the effect of durvatail application on sadyovrana. The study was controlled trial, the trial group was treated with dressing with durvatail and control group was treated with dry dressing. After screening, total 60 patients were selected and equally divided 30 patients in each group. The treatment was given for 7 days. All cases of both groups were analysed in relation to pain at the site of wound, discharge from wound, scab/granulation and size of wound.

Table no. 1: Observation no. of patient having Discharge in both groups at each follow up.

Follow up	0^{th}	3^{rd}	5^{th}	7^{th}
Trial	2(6.67%)	4(8%)	1(3.33%)	0
Control	3(10%)	15(50%)	8(26.7%)	6(10%)

Table no. 2: Observation of scab/granulation formation in both groups on 7^{th} day.

Degree of scab / granulation	Trial group 7^{th} day	Control group 7^{th} day
Nil	0 (0%)	0 (0%)
Good	0(0%)	02(6.67%)
Better	6(20%)	15(50%)
Best	7(23.33%)	09(30%)
Excellent	17(56.67%)	04(13.33%)
Total	30 (100%)	30 (100%)

Table no. 3: Significance of reduction in pain after each follow up in Trial group.

Follow up	$\bar{x}$	SD	SE	T	P
0^{th} - 3^{rd}	8.68	1.65	0.30	9.95	<0.05
	4.63	2.79	0.50		
3^{rd} - 5^{th}	4.63	2.79	0.50	10.60	<0.05
	1.33	0.20	0.37		
5^{th}-7^{th}	1.33	0.20	0.37	3.69	<0.05
	0.50	1.66	0.30		
0^{th} -7^{th}	8.68	1.65	0.30	21.45	<0.05
	0.50	1.66	0.30		

The above table shows that the difference in pain in wound was statistically significant in trial group.

Table no. 4: Significance of reduction of pain after each follow up in control group.

Follow up	$\bar{x}$	SD	SE	T	P
0^{th} - 3^{rd}	8.57	1.50	0.27	8.26	<0.05
	5.90	2.56	0.47		
3^{rd} - 5^{th}	5.90	5.56	0.47	8.97	<0.05
	3.40	2.40	0.44		
5^{th}-7^{th}	3.40	2.40	0.44	7.52	<0.05
	1.24	1.48	0.27		
0^{th} -7^{th}	8.57	1.50	0.274	27.77	<0.05
	1.24	1.48	0.269		

The above table shows that the difference in pain in wound was statistically significant in control group.

Table no. 5: Significance of reduction in Pain comparing both groups (Unpaired‘t’ test).

Follow Up	Trial group		Control group		t	P
	X1	SD1	X2	SD2		
0^{th} -3^{rd}	4.33	2.22	2.66	1.76	2.63	<0.05
3^{rd} -5^{th}	3.30	1.70	2.50	1.52	1.91	>0.05
5^{th} -7^{th}	0.833	1.23	2.16	1.57	3.64	<0.05
0^{th} -7^{th}	8.16	2.08	7.33	1.44	1.79	>0.05

Table no. 6: Significance of reduction in size of wound after each follow up of Trial group.

Follow up	$\bar{x}$	SD	SE	T	P
0^{th} - 3^{rd}	17.57	16.32	2.97	11.13	<0.05
	12.76	14.46	2.64		
3^{rd} - 5^{th}	12.76	14.46	2.64	8.93	<0.05
	7.131	12.22	2.23		
5^{th}-7^{th}	7.131	12.22	2.23	4.893	<0.05
	2.95	7.688	1.40		
0^{th} -7^{th}	17.57	16.32	2.97	8.533	<0.05
	2.95	7.68	1.40		

The above table shows that the difference in size of wound was statistically significant in trial group.

Table no. 20: Significance of reduction in size of wound after each follow up of control group.

Follow up	$\bar{x}$	SD	SE	T	P
0^{th} - 3^{rd}	14.59	6.64	1.21	15.87	<0.05
	11.60	5.96	1.08		
3^{rd} - 5^{th}	11.60	5.96	1.09	12.18	<0.05
	8.40	4.86	0.89		
5^{th}-7^{th}	8.40	4.86	0.89	13.05	<0.05
	4.73	4.14	0.76		
0^{th} -7^{th}	14.59	6.64	1.21	17.56	<0.05
	4.73	4.14	0.76		

The above table shows that the difference in size of wound was statistically significant in control group.

Table. 21: significance of reduction in size comparing both group (Unpaired't' test).

Follow Up	Trial group		Control group		T	P
	X1	SD1	X2	SD2		
0^{th} -3^{rd}	4.82	2.50	2.98	1.03	3.737	<0.05
3^{rd} -5^{th}	5.88	4.12	3.20	1.44	3.386	<0.05
5^{th} -7^{th}	4.18	4.68	3.66	1.53	0.471	<0.05
0^{th} -7^{th}	14.62	9.39	9.85	3.07	2.64	<0.05

Table No. 22: No. of patients Cured/Improved/Not cured after treatment (7^{th} days).

Result	No. of pts in Trial	%	No. of pts in Control	%
Cured	14	46.67	4	13.33
Improved	16	53.33	26	86.67
Not cured	0	0	0	0
Total	30	100	30	100

X^2 – 16.63 P – 0.034 (P<0.05)

DISCUSSION

Subjective criteria

Discharge: On 0^{th} day, out of 30 patients of trial group 2 patients were having discharge, and 28 patients were having no discharge. Out of 30 patients of control group 3 patients were having discharge and 27 were not having discharge.

On 3^{rd} day follow up, out of 30 patients of trial group 4 patients were having discharge, and 26 patients were having no discharge. Out of 30 patients of control group 15 patients were having discharge and 15 were not having discharge.

On 5^{th} day follow up, out of 30 patients of trial group 1 patient having discharge and 29 subjects were having no discharge. Out of 30 patients of control group 8 patients were having discharge and 22 were not having discharge.

In 7^{th} day follow up, out of 30 patients of trial group 0 patient having discharge, and 30 subjects were having no discharge. Out of 30 patients of control group 6 patients were having discharge and 24 were not having discharge. From above information it clear that *Durvatail* is effective in reducing the discharge from wound. By the virtue of '*Stambhana*', '*Raktashodhana*' and '*Kaphapittashaman*' property of *Durva* and *Daruharidra* the discharge may ceased.[5]

Granulation: Early granulation/scab formation was observed in trial group than control group. Complete healing was observed in 14 patients of trial group and 4 patients of control within 7 days.

On 7^{th} day of follow up in trial group 17 (56.67%) patients were having excellent granulation/scab formation, 7 (23.33%) patients were having best

granulation/scab formation, 6 (20%) patients were having better granulation/scab formation. In control group 4 (13.33%) patients were having excellent granulation/scab formation, 9 (30%) patients were having best granulation/scab formation, 15 (50%) patients were having better granulation/scab formation and 2 (6.67%) patients were having good granulation/scab formation.

Almost 26 out of 30 patients wound in control group took more than 7 days to heal completely which indicates relatively delayed healing in control group. No wound was infected in the study in both groups. The factor responsible for delay healing was not infection. The wounds which showed delayed healing actually showed deficient granulation/scab which could be observed clinically.

Ropankarma of *durva*[6] after proper *shodhana* via the properties of *daruharidra* and *tilataila* is evident from the excellent scab/granulation formation

Pain: Pain is calculated by VAS scale and observed at each follow up and it was found that there was significant reduction in pain in both groups. Hence unpaired t test was applied on each follow up. We observed that on 3rd day of follow up there was significant reduction of pain in trial group than control group.

Durva and *Daruharidra* having *dahprashaman* and *vedanastapan* property[7] respectively because of this trial group drug is more effective in reduction of pain.

Objective criteria

Size of wound: Size was calculated at each follow up and analysed by applying pair 't' test it was found that there was significant reduction in size in both groups hence unpaired 't' test was applied. It was observed that in the trial group reduction in size of wound was earlier than that in control group. Reduction of wound size may be due to enhanced fibroblast-mediated collagen tissue formation (*Dhatuutpatti*) which can be attributed to *brihankarma* and *sthairyakarma* of *durvatail*. *Taila* itself is *balya* and *sthairyakara* and on combination with *kashayras* and *sheetaguna* of *Durva* brings about *vransankocha* that ultimately leads augmentation in the physiological process of wound contracture. Also as mentioned above, *Durva* is having *Kashaya* and *MadhuraRasa* as well as *MadhuraVipaka*. Therefore it provides *DhatuPoshana* (Nutrition) to skin and all *Dhatu*.

Probable mode of action of drug: *TilaTaila* is mentioned in four *Snehas* i.e. *Ghrita, Taila,Vasa* and *Majja*. It is used for various purposes as edible and external use also. It is effective by its own properties as well as properties of medicines by which it has been processed i.e. *snehasiddhi*. Hence it provides good medium for those substance which have medicinal properties.

Durva is having *Kashaya* and *MadhuraRasa* as well as *MadhuraVipaka*.[8] Therefore it provides *DhatuPoshana* (Nutrition) to skin and all *Dhatu*. It has been shown *VranaRopana* and *Vishaghna* properties also. Therefore it helps to protect tissues from toxins of microbes and helps in healing of wounds. It has the property of *Dahaprashamana* hence it reduces burning sensation. It is *Stambhana* and *Raktashodhaka* therefore it checks bleeding and discharge from wounds and shows haemostatic action very well.

Daruharidra is a well known and a drug of choice for infection and inflammation. It is having *Tikta*, *KashayaRasa* and *UshnaVirya*.[9] It has been proved that *Daruharidra* has *Shothahara*, *Raktashodhaka*and *RaktaStambhana*properties. Therefore it reduces inflammation and makes the blood free from various impurites. It has a property of a *VedanaSthapana* hence it provides better relief in pain and tenderness. It is *Varnya* therefore it helps normlizing natural colour of the skin and scars created by healing of wounds.

CONCLUSION

Sadyovrana is a common presentation in any shalyatantra OPD. Treatment for it aims at alleviating the pain and hastening the healing process with minimal disfigurtment.

Durvatail owing to its properties like shrotoshodhana, amapachana, ropana and varnya helps to achieve the goals for treatment of sadyovrana. Pain at the site of injury, discharge (srava), and healthy scab formation were all significantly improved in the trial group when compared to the control group. Thus it can be concluded that durvaditaila local application is an effective treatment option for sadyovrana (Ghrushtavrana).

Abbreviation

SE	Standard error
X	Mean
χ^2	Chi square
>	More than
<	Less than

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