



**THE EFFICACY OF PANCHVALKAL KWATHA AND TIKTADYA GHRITA IN THE
MANGEMENT OF VRANA W.S.R. TO WOUND**

Dr. Uttam Kumar Nirmalkar^{*1}, Dr. B. B. Khuntia² and Dr. Balendra Singh³

¹Lecturer, Shalya Tantra, Govt. Ayurved College Raipur (C.G.).

²Professor and HOD, Kriya Shareer, Govt. Ayurved College Puri (Odisha).

³Reader and HOD, Shalya Tantra, Govt. Ayurved College Raipur (C.G.).

***Corresponding Author: Dr. Uttam Kumar Nirmalkar**
Lecturer, Shalya Tantra, Govt. Ayurved College Raipur (C.G.).
Email id: druk01508@gmail.com

Article Received on 27/05/2019

Article Revised on 18/06/2019

Article Accepted on 09/07/2019

ABSTRACT

Vrana is one of the problems which have been managed by human being from beginning of civilization. The science of "Vrana Ropana" seems to be a serious matter of concern to the ancient healers. This fact can be very well understood while going through the surgical text - Sushruta Samhita where a good number of chapters deal with the science of Vrana alone. Vrana literally means a discontinuation of tissues. It is seen as debilitating and scaring disorder usually seen affecting the human being at any age. There are so many factors responsible to make healing process delayed. Though a variety of chemical substances have been evaluated and patented as wound healing agents, their inability to become successful drugs is due to the fact that these are able to act only at a particular step of the healing cascade. It is likely that more effective wound healing agent would be developed from natural products. The same thing is also being tried by Ayurvedic experts; present work is also a further step in this path under herbal preparations named "Panchvalkal kwath mentioned in Bhavprakash and Tiktadya ghrita", which is mentioned in Chakradutta in Vranashotha Roga Adhikara for the treatment of Vrana. In this research study total 30 patients were registered and treated in one group, The clinical study was treated with Panchvalkalkwath (Prakshalana) and local application of TiktadyaGhritha. Encouraging results were observed in the clinical trial. Study emerges that Panchvalkal kwath and Tiktadya ghritha possess better wound cleansing and wound healing properties.

KEYWORDS: Vrana, Panchvalkal Kwath, Tiktadya Ghritha, Wound Healing.

INTRODUCTION

Sushruta the father of Indian surgery in 1000 BC has elaborated the concept of Vrana. Sushruta has elaborately explained sixty types of procedures for the management of wounds to achieve good approximation, early healing, without complication and acceptable scar. He advocated numerous herbal drugs for local application as well as systemic use. His techniques are broadly classified as Vrana Shodhana (wound cleaning) and Vrana Ropana (wound healing). The concepts and principles of Vrana such as causes, classification, examination, treatment, bandaging, complications etc. mentioned in Ayurved classic Sushruta Samhita by Acharya Sushruta remained unchanged even in this 21st century.^[1] Sushruta mentioned as leprotic wound, diabetic wound, tubercular wound are nonhealing in this advance era.^[2] Wounds are physical injuries that result in opening or break of the skin. Proper healing of wounds is essential for the restoration of disrupted anatomical continuity and disturbed functional status of the skin. Wound healing is complex phenomenon and is differing from patient to patient. The wounds are said to be non-

healing when does not improve after four weeks or does not heal within eight weeks. The causes of delay healing are many that is local causes and systemic diseases but the root causes are reduced tissue regeneration, angiogenesis and neurological problem.^[3] Sushruta has mentioned the importance of multi disciplinary management for *Vrana* since time immemorial. Procedure which are effective causing minimal discomfort to the patient and provide early recovery are in high demand. *Acharya Sushruta* has mentioned 60 *upkramas*.^[4] In Ayurveda many research works have been carried out for the management of chronic and non-healing wounds. Many experimental studies were carried out on the single and compound herbal and herbo-mineral formulations for wound healing.

Vranachikitsa each modality has got its own prime importance in which *Vranaprakshalana* and local application in *Vrana* has got *shodhak* and *ropak* in action which is a cost effective and earliest method. In this clinical research PanchvalkalKwatha^[5] for Prakshalana

and Tiktadya Ghrita^[6] for local application have taken as trial drug.

PLAN OF STUDY

A. AIMS AND OBJECTIVES

To study the efficacy of Panchvankal Kwatha & Tiktadya Ghrita in the management of Vrana w.s.r. to Wound.

B. MATERIALS AND METHODS

➤ **Source of Data:** Cases of Vrana were selected for open trial from out door patient and in door patient of P.G.Department of ShalyaTantra, Govt. Ayurvedic College and Hospital Raipur C.G.

➤ **Method of collection of Data:** Patients were examined in detailed and treated after taken written consent and during treatment observation mentioned in research proforma as prepared for the study.

➤ **Diagnostic Criteria:** Diagnosis were made on basis of Lakshanas of Vrana like.

- Pooti
- Pooya
- AteevaVedana
- Daha
- Kandu
- Shopha
- Shonitasrava

Inclusion Criteria

1. Either sex – Male and Female.
2. Age – 18 yr to 70 yr.
3. Prakriti – All type of Prakriti.
4. Measurement of wound – < 10x10 cm² of diameter.
5. Diabetes Mellitus under control.

Exclusion Criteria

1. Patient with disorder like uncontrolled Diabetes Mellitus, Tuberculosis, Leprosy, Extensive Burns, Osteomyelitis were excluded.
2. Closed traumatic wound like contusion and hematoma were excluded.
3. Venous arterial vascular disorder direct affecting designated area.
4. Patient having Auto immune disease, Syphylitic wound, Malignant ulcer were not included.
5. Patient who were not willing to participate in trial were excluded.

➤ Examination of patient

1. History.

2. Physical Examination

- General Examination.
- Local Examination- By Inspection and Palpation.
- Systemic examination

Pathological Investigation

1. Blood investigation

- Haemoglobin %

- Total leucocyte count
- Differentiate leucocyte count
- Erythrocyte sedimentation rate
- Fasting blood sugar / postprandial blood sugar
- H.I.V.
- HbsAg

2. Urine investigation

- Urine Routine and Microscopic
- Fasting urine sugar / random urine sugar

3. Other investigations

- Culture and sensitivity test of wound discharge (If necessary)
- Histopathological Examination (If necessary).
- Sputum test/P.C.R./IgM or IgG for Tuberculosis.

➤ **Grouping:** The clinical study was treated with Panchvankalkwath (Prakshalana) and local application of TiktadyaGhrita in single group patient.

➤ **Procedure:** Prakshalana of Panchvankal Kwatha and Local application of Tiktadya Ghrita.

- **Poorva karma**
- **Pradhan Karma**
- **Pashchat karma**

Poorva karma

1. Examination of patient and assessment of clinical feature of wound according to research proforma as prepared for study.

2. Taken written consent of patient after given detailed about treatment procedure.

3. Dressing material arranged as per required.

4. The patient is made to sit or lie down in a comfortable position. So that the procedure can be done without interruption causing no discomfort to the patient.

5. Wound was exposed properly.

Pradhan Karma

1. Debridement: Excision of dead and devitalised tissue by Surgical debridement.

2. Prakshalana: Wound clean with Prakshalana of Panchvankal Kwatha.

3. Local application: After surgical debridement and Prakshalana, Tiktadyaghrita applied on wound with gauze and wicks of TiktadyaGhrita used for removing pootimamsa or dead tissue deeply embedded in the muscles and where the wound has a very small opening.

Pashchat karma

1. Bandaging: After Pradhan karma cover the wound by cotton pad and bandaging performed according to climate and doshik involvement of Vrana.
2. Advised for Pathya-Apathya and follow up according to assessment criteria.
3. Maintain analysis and progress report of each patient during treatment.

➤ **Duration of treatment:** Duration of treatment was till wound heals or up to four weeks whichever was earlier.

➤ **Assessment Criteria:** The patient were assessed on the basis of subjective and objective parameters before and after treatment.

- Pain
- Discharge
- Granulation tissue
- Discoloration
- Size of Wound

Gradation of Pain

Symptoms	Score
Absence of pain	0
Mild pain that can be easily ignored	1
Moderate pain that can't be ignored and needs treatment	2
Severe pain which need constant attention	3

Gradation of Discharge

Symptom	Score
Absence of discharge	0
Mild if discharge wets one pad of 4x4cm ² of gauze	1
Moderate if discharge wets more than one pads of 4x4cm ² of gauze	2
Severe if discharge wets more than two pads of 4x4 cm ² of gauze	3

Gradation of Granulation Tissue

Symptom	Score
Healthy granulation tissue.	0
Smooth less and irregular granulation base covered with slight discharge which need alternate dressing	1
More unhealthy granulation tissue and discharge which needs daily dressing	2
Unhealthy granulation tissue with profuse discharge and needs frequent and two times dressing in a day	3

Gradation of Discolouration

Symptom	Score
Normal skin colour	0
Slight red	1
Reddish black	2
Pale yellow/Blackish	3

Gradation of Size of Wound

Symptom	Score
No discontinuity previous area of wound left	0
¼ th of the previous area of wound left	1
½ of the previous area of wound left	2
>½ of the previous area of wound left	3

➤ STATISTICAL ANALYSIS

For the purpose of statistical analysis, the Mean and Standard Deviation of each sign and symptoms before treatment were compared with the Mean and Standard deviation after treatment.

The significance is discussed on the basis of Mean, S.D., S.E., P-value applying paired T- test.

OBSERVATIONS AND RESULTS

Table No. 1: Percentage of relief of main sign and symptoms of 30 patients of Vrana.

Sign and Symptoms	Percentage of relief				
	3 rd day	7 th day	14 th day	21 st day	28 th day
Pain	8.62%	17.24%	32.75%	63.16%	79.31%
Discharge	6.78%	15.25%	33.90%	54.38%	83.05%
Granulation tissue	8.20%	16.39%	32.78%	58.33%	81.96%
Discoloration	3.03%	9.09%	21.21%	51.61%	60.60%
Size of Wound	2.22%	24.44%	33.33%	58.89%	68.88%

Table No. 2: Statistical analysis showing the effect of therapy on various signs and symptoms in 30 patients of Vrana.

S. No.	Sign and Symptoms	Mean		% of Relief	S. D.	S. E.	t-value	p-value	Remarks
		BT	AT						
1	Pain	1.93	0.4	79.31%	0.68	0.12	12.32	≤0.01	H.S.
2	Discharge	1.97	0.33	83.05%	0.76	0.14	11.70	≤0.01	H.S.
3	Granulation Tissue	2.03	0.37	81.96%	0.84	0.15	10.81	≤0.01	H.S.
4	Discolouration	2.2	0.87	60.60%	0.80	0.15	9.1	≤0.01	H.S.
5	Size of wound	3.00	0.93	68.88%	0.69	0.13	16.37	≤0.01	H.S.

Table No. 3: Overall result of therapy.

Result classification	No. of patients	Percentage of patient
Maximum improvement (more than 75%)	19	63.33%
Moderate improvement (50-75%)	07	23.33%
Mild improvement(25-50%)	02	06.67%
Uncured (Less than 25%)	02	06.67%
Total	30	100%

DISCUSSION**Discussion on Demographic Data**

All the patients in this study were categories into 5 age groups. The observation made in this aspect lead to the conclusion. Maximum no. of patients (33.33%) were observed in the age group of 18-30 year. 23.33% were from the 40-50 year of age and 16.67% from 30-40 year age group. It shows this age group indulges in more hard work and external exposure. Perhaps this may be the reason which frequently affected to Vrana.

Here age group of 50-60year (13.33%), 60-70year (13.33%) observed. They are more sensitive to any injury due to low resistance power of the body. Vrana may be caused by certain systemic disorders occurring as a complication like the Diabetic wound and Varicose Ulcer etc.

Observation made on the sex, shows maximum no. of patient 83.33% were male compared to 16.67% of female. This variation in ratio is due to the nature of work and the location of the hospital where the study was done.

Maximum number of patients (93.33%) was Hindu. There is no direct relation with wound but the area where study has been carried out persist higher number of Hindus.

Maximum number 33.33% of patients were Labour, while 23.33% patients were Farmer. This is because of trauma in working area. Continuous work, ignorance about health and abnormal intake of food causes nutritional deficiency these delays wound healing. 23.33% patients were Serviceman because of continuous work, stress and habit like smoking and alcohol was found and 13.33% patients are student followed by 3.33% patients were businessman and house wife.

Maximum number 83.33% Patients were married and remaining 16.67% were unmarried. There is no direct relation with wound.

Most of the patients were observed with education up to primary level (Illiterate 26.67%, Primary 23.33%, Higher Secondary 20%), indicative of ignorance towards disease condition and 30% of the patients were Graduate.

Maximum no. 40% of patients were from lower-middle class and 36.67% were lower class. This is because of unhygienic condition, malnutrition, not taking treatment

in proper time. 13.33% patients were from upper middle class and 10% patients were from high class.

Maximum numbers of patients 53.33% were from urban area and 46.67% patients were from rural area, this may be due to the location of the hospital where the study was performed and case reported.

Maximum no.80% of patients were taking mix diet and remaining 20% patients were vegetarian.

Diet plays an important role in providing micro and macro nutrients for wound healing. Proteins are essential for platelet function, fibroblast proliferation and collagen synthesis and wound remodeling. Carbohydrate act as an energy sources for the fibroblast and leukocytes. Vitamin C is important for collagen synthesis and increase defense to infection. Vitamin A is essential for epithelialization and collagen synthesis. But maximum patients belongs to lower middle class and lower class and they can't effort proper nutritious and mix diet daily. 60% patients have disturbed sleep may be due to the pain.

Maximum patients 63.33% were found with irregular bowel and 36.67% were regular.

Maximum No. of patients i.e. 40 % had Vishamagni followed by 33.33% who had Samagni, 13.33% had mandagni and 13.33% had Tikshnagni. This indicates the vitiation of vata and kaphadosha, which is the chief causative factor behind the pathogenesis of disease.

Maximum 43.33% of patients had Madhyambala, 30% of patients have Prvarabala, 26.67 % of patients have Avarabala for Vyayama.

In the present study 26.67% of the patients were addicted to tobacco followed by 23.33% were addicted to smoking and 16.67% were alcoholic. Tobacco is nicotine and nicotine is a vasoconstrictor that reduces nutritional blood flow to the skin, resulting in tissue ischemia and reduced proliferation of red blood cells, fibroblast and macrophages and impaired healing of injured tissue. In addiction of smoking, smoke contains nicotine, carbon mono oxide and hydrogen cyanide. Carbon mono oxide diminished oxygen transport and metabolism. Hydrogen cyanide inhibits the enzymes system necessary for oxidative metabolism and oxygen transport at cellular level. Excessive Alcohol consumption is detrimental to wound healing. It significantly increases the risk of wound infection by diminishing the body's resistance to

bacteria and other harmful element. According to N.I.H. avoiding alcohol is not only beneficial to wound healing but it can help avoid injuries altogether.

Most of the patients (70%) had infected wound in lower extremities. This is probably due to the fact that legs are more prone to get trauma often and repeatedly. Also stasis of blood in the legs for comparatively longer time in comparison to upper extremities. 20% patients had in upper limbs and each 3.33% patient had wound in thoracic region, scrotal and gluteal region.

Maximum patients (96.67%) were found with traumatic onset as well as spontaneous 3.33%. It indicates that majority of patients were having Agantuja Vrana due to physical trauma.

As according to condition of Vrana 100% patient had Dushta Vrana due to negligency.

As according to chronicity chart there was no patient of 0-7 days chronicity, maximum number of patient 50% had 8-15 days chronicity, 26.67% had 16-30 days chronicity, 23.33% of patients had more than 30 days chronicity.

Discussion on Therapeutic Data [Effect of Therapies on Various Sign and Symptoms of The Disease]

1) Effect on Pain: Pain reduced 8.62% in 3rd day, 17.24% in 7th day, 32.75% in 14th day, 63.16% in 21th day and upto 79.31% in 28th day. Before treatment, severities of Vedana mean score was 1.93, and after the treatment mean score was reduced to 0.4, which is highly significant in reducing the pain, due to shodhana property of Panchvalkal Kwatha and snigdha guna and krimighana property of Tiktadya Ghrita.

2) Effect on Discharge: Discharge reduced 6.78% in 3rd day, 15.25% in 7th day, 33.90% in 14th day, 54.38% in 21th day and 83.05% in 28th day. Before treatment severity of Srava mean score was 1.97, and after the treatment mean score was reduced to 0.33, which is considerable highly significant in reducing the discharge, due to kashaya rasa, stambhana property of Panchvalkal Kwatha and shodhana and ropana property of Tiktadya Ghrita.

3) Effect on Granulation Tissue: Improvement of healthy granulation tissue 6.56% in 3rd day, 16.39% in 7th day, 32.78% in 14th day, 58.33% in 21th day and 81.96% are noted on 28th day. Before treatment severity of Granulation mean score was 2.03 and after treatment mean score was reduced to 0.37, which is considerable highly significant in increasing the Granulation. Granulation tissue become healthy due to shodhana property of Panchvalkal Kwatha and local application of Tiktadya Ghrita encouraging granulation tissue formation due to its ropana property.

4) Effect on Discoloration: Color changed 3.03% in 3rd day, 9.09% color changed in 7th day, 21.21% in 14th day, 51.61% in 21th day and considerably to normal 60.60% in 28th day. Before treatment severity of Varna mean score was 2.2, and after the treatment mean score was reduced to 0.87, which is considerable highly significant in reducing the Varna due to varnya property of Tiktadya Ghrita.

5) Effect on Size of the wound: 2.22% improvement in size on 3rd day, 23.33% improvement on 7th day, 33.33% in 14th day, 58.89% in 21th day and 68.88% size of a wound has been reduced to considerable normal in 28th day. Before treatment the severity of size of wound mean score was 3.0, and after the treatment mean score was reduced to 0.93, considered to be highly significant in reducing the wound Size due to Prakshalana of Panchvalkal Kwatha and local application of Tiktadya Ghrita encouraging formation of healthy granulation tissue and granulation tissues promotes wound healing and size of wound decreased.

Discussion Over All Effect of Therapy

The data shows the Statistical Analysis of different clinical sign and symptoms in 30 number of patients.

The calculated t-value of symptoms like – Pain, Discharge, Granulation tissue, Discoloration and size of wound are 12.32, 11.70, 10.81, 9.1 and 16.37 respectively and their P-value is <0.01 respectively which is statistically highly significant. Thus the effect of Panchvalkal Kwatha and Tiktadya Ghrita is statistically highly significant.

Patients of Vrana in after completion of treatment maximum improvement (75% and above) has been noted in only 19 (63.33%) patients. Moderate improvement (50-75%) in 07 (23.33%) patients, mild improvement (25-50%) in 02 (06.67%) patients and 02 (06.67%) patients are uncured (less than 25%).

Probable Mode of Action of Panchvalkal Kwatha

According to Guna Karma Nyugrodhra have properties of Varnya, Visharpaghna, Vyanga naashnam, Raktapittavinashanam. Udumber have properties of Vranashodhana, Ropana, Raktapittaghna. Ashvattha Possess properties of Varnya, Raktadoshahara. In classical terms, it can be explained that Katu, Tikta, Kashaya Rasa, Laghu, Ruksha, Tikshna Guna, Ushna Veerya, Katu vipaka and Kaphapittaghna properties of drugs are responsible to break the Samprapti of disease. Desloughing was done by Vrana shodhana property of Panchvalkal Kwatha which ultimately reduced microbial load and thus enhance the wound healing. As compared with modern view, Panchvalkal kwatha is phytochemically dominant in phenolic group components like tannins, flavonoids which are mainly responsible for its excellent activities like antiseptic, anti-inflammatory, immunomodulatory, antioxidant, antibacterial, antimicrobial, astringent and wound purifying as well as

healing properties.^[7] Panchvalkal Kashaya dhawan reduces pain, discharge, slough, redness, swelling, surface area and depth of the wound.

Probable Mode of Action of Tiktadya Ghrita

Ingredient of Tiktadya Ghrita are Katuka, Haridra, Yashtimadhu, Karanja, Patol, Jati, Nimba and Ghrita.

Tiktadya Ghrita having *Tikta*, *Madhura Rasa*, *Snigdha*, *Laghu Guna* and *Sheeta Veerya*. *Tikta Rasa* has *Pittakaphahara*, *Krimighna*, *Kandughna*, and *vrnashodhaka* property. *Madhura rasahas Vata Pitta Shamaka*, *Dhatu Vardhaka*, *Varnya*, *Dahaprashamana* and *Sandhanakaraproperty* which promote wound healing. *SnigdhaGuna* will provide smoothness, moisture, *Laghuguna* provide *Shrotoshodhana* and *Lekhana* effect on the wound. *Sheetaveerya* provide *Stambhana*, *Raktaprasadana*, *Varnya*, *Vranaropaka* properties and promote wound healing process. According to modern pharmacology, ingredients of Tiktadya Ghrita have antiseptic, anti-inflammation, immunomodulatory, antioxidant, antibacterial, antimicrobial, astringent and wound purifying as well as healing properties.^[8]

CONCLUSION

The significant reduction in pain ($p < 0.01$), discharge ($p < 0.01$), granulation tissue ($p < 0.01$), discoloration ($p < 0.01$) and size of wound ($p < 0.01$) was noticed during the present study.

The hypothesis behind the clinical trial was found to be appropriate according to present clinical study, it can be concluded that Panchvalkal Kwatha Prakshalana and local application of Tiktadya Ghrita more effective in the management of Vrana as per data collected which is highly significant. Therefore, these prepared medicines are beneficial for rapid and good qualities for wound healing.

REFERENCES

1. Sushruta, Sushruta Samhita, Ayurved tatvasandipika, edited by kaviraj Dr. Ambikadatta shastri: Published by Varanasi, Choukambha Surbharati Prakashan Chikitsa Sthana, 2007; 1(57-58): 10.
2. Sushruta, Sushruta Samhita, Ayurved tatvasandipika, edited by kaviraj Dr. Ambikadatta shastri: Published by Varanasi, Choukambha Surbharati Prakashan Sutra Sthana, 2007; 23(7): 130.
3. Menke NB, Ward Kr, Witten Tm, Bonchev Dg, Diegelmann Rf. Impaired Wound Healing. Clin. Dermatol, 2007; 25: 19-25.
4. Sushruta, Sushruta Samhita, Ayurved tatvasandipika, edited by kaviraj Dr. Ambikadatta shastri: Published by Varanasi, Choukambha Surbharati Prakashan Chikitsa Sthana, 2007; 1(57-58): 10.
5. Bhavprakash Nighantu-Vatadivarg Dr. K. C. Chuneekar, Edited by-Dr. G. S. Pandey, Reprint-2002, P-519.
6. Chakradutta Vranashotha chikitsa 85 Dr. Indradev Tripathi, Edited by-Prof. Ramnath dwedi, Reprint-2002; 265.
7. Vd. V. M. Gogte, Properties of Panchvalkal Dravyas as a wound healing (Vranaropak), Anti-inflammation (Vranashothahar), Analgesic (Vednahar), Ayurvedic Pharmacology & Therapeutic Uses of Medicinal plants (Dravyagunavigyan). Page no.318,536,659,661,715, Chaukhamba Publication, New Delhi 2009.
8. Dr. Dinesh Gupta et al. Antimicrobial potential of polyherbal formulation Tiktadya Ghritam –A review. IJRR, October 2017; 4(10).