

Study on the efficacy of *Palandu Ghrita* in the Management of Sutured Clean Lacerated Wound w.s.r. To Hypertrophic scar

Case Report

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Abstract

Ayurveda is a science of life and is believed to exist as long as the origin of life on this nature as it mentioned in *Charak Samhita*. Ever since, the life originated, human being has been susceptible to injury which is made him to think about healing.

Hypertrophic scar is a type of scar characterized by hypertrophy or proliferation of mature fibroblast or fibrous tissue without proliferation of blood vessels. It is caused due to tissue formation during healing process. *Acharya Sushruta* has mentioned *Palandu (Allium Cepa)* as *Sthirdhatukarta* and *Krumighna*. *Palandu* is one of the oldest cultivated vegetables in Indian history. *Palandu* contains vitamin A, C and proteins which are essential factors for wound healing, with keeping these factors in mind, present study was planned as a local application of *Palandu Ghrita* to prevent hypertrophic scar because prevention is better than cure.

For this research study we designed 2 groups viz. experimental group (Group A) i.e. application of *Palandu Ghrita* and control group (Group B) i.e. application of plain gauze piece. In this, we observed 30 patients from each group according to age, occupation, family history, *sharir prakruti* etc. and made result on the basis of assessment criteria like pain, scar colour, pliability, tenderness etc. By taking all observations into consideration we made result by using Wilcoxon signed rank test and Mann Whitney's U test and came on the conclusion that *Palandu Ghrita* application prevents hypertrophic scar with economical and easy acceptability.

Keywords: Hypertrophic scar, *palandu ghrita*, lacerated wound.

Introduction

The history of medical sciences starts with the art and skill of wound healing. Treatment of wound is probably the first medical problem faced by human beings. The frequency of injuries is more common than any other disease.

While explaining the scope of *Shalya Tantra*, *Sushruta* has mentioned *Vrana* as a major part of surgery. As per *Svabhavoparamvaad* (1) stated that healing of any pathology happens naturally. Therefore, healing of *Vrana* is also a natural process of the body but *Vrana* should be protected from *Dosha-Dushti* and from various micro-organisms, which may afflict the *Vrana* and affected the normal healing process. From the ancient period, after the discontinuity of skin causes the wound (2) called *Vrana* which heals and forms *Vranavastu* (3) that means scar. This scar never disappears for the rest of life. *Acharya Sushruta* has minute observation about this *Vranavastu* (Scar) that it looks very ugly.

Surgery is an art and suturing is a fine art. The people in the present era are too much conscious about their cosmetic look. In case of repair of external skin

injury and after undergoing surgical procedure, everybody demands that there should be no scar or minimum scar formation. People are even under go cosmetic surgery to get rid of their ugly scars. Keeping this fact in view, in the field of surgical practice, lot of emphasis has been given for search of scar less preventive treatment.

Hypertrophic scar (4) is a type of scar characterized by hypertrophy or proliferation of mature fibroblast or fibrous tissue without proliferation of blood vessels. It is caused due to tissue formation during healing process. Hypertrophic scars are indurate, elevated, poorly extensible and also characterized by hypervascularity thereby providing their erythematous appearances. In modern science there are treatments (5) to cure hypertrophic scar such as topical medical applications, cryotherapy, use of silicone gel sheets, injection of steroids, radiotherapy, surgical excision, dermabrasion, pressure therapy, pulse dye and carbon dioxide laser ablations. But these techniques are unreliable, unpredictable, expensive, long hospitalization and causes chemical irritations. Due to steroid therapy skin looks reddish and thinnest which can cause rodent ulcers or basal cell carcinoma (6) commonly over face.

Acharya Sushruta has mentioned *Palandu (Allium Cepa)* as *Sthirdhatukarta* (7) and *Krumighna*. *Palandu* is one of the oldest cultivated vegetables in history. This contains a readily and highly researched bioflavonoids (8) with antihistamine and antiproliferative effects on both normal and malignant cells. These properties could

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theoretically prove beneficial in reversing the inflammatory and proliferative responses. *Palandu* contains vitamin A, C and proteins which are essential factors for wound healing (9). *Palandu* contains 80% of moisture which prevents *Kshaya of Rasa Dhatu*. It is *Madhur Rasatmak Dravya* (10) which helps in *Sandhan Karma of Vrana*. we were taking this study as a local application of *Palandu Ghrita* to prevent hypertrophic scar because prevention is better than cure.

Aims and Objectives

Aim

To study the efficacy of *Palandu Ghrita* in the management of sutured clean lacerated wound to prevent hypertrophic scar.

Objectives

To study properties of *Palandu Ghrita* like *Krumighna, Sthirdhatukarta, Sukharopaniya*.

Material and Methods

Palandu Ghrita

- 1) *Palandu*
- 2) *Goghrita*

Table no. 1 Description of *Palandu* and *Goghrita*

	<i>Palandu</i>	<i>Goghrita</i>
1.Family	Liliaceae	-
2.Latin Name	<i>Allium cepa</i> linn	-
3.English Name	Onion	Butter
4.Rasa	<i>Madhur, Katu</i>	<i>Madhur</i>
5.Guna	<i>Guru, Tikshna, Snigdha</i>	<i>Guru, Mridu, Snigdha</i>
6.Virya	<i>Ishat Ushna</i>	<i>Sheeta</i>
7.Vipak	<i>Madhur</i>	<i>Madhur</i>
8.Karma	<i>Sthirdhatukarta, Krumighna, Shulaghna, Hridaya, Balya, Vatakaphahara</i>	<i>Vata-Pittaghna, Rakshoghna, Vranaropan</i>
9.Chemical Composition	Vit. A, C, B, protein, Carbohydrate, Water, Calcium, Iron, Sulphur, Quercetin	Vit. A, D,E,K, Linoleic acid, Fatty Acid, Beta carotene
10. Mode of action according to modern.	Antibacterial, Antidiabetic, Antioxidant, Antifungal	Antioxidant, Good for Eyes & skin

Table no. 2 Chemical composition *Palandu*

Water	89.6
Protein	1.2
Fat	0.1
Carbohydrates	11.1
Fiber	0.6
Minerals	0.4g/100g
Calcium	47.0
Phosphorus	50.0
Iron	0.7
Thiamine	0.08
Vitamin C	11.0mg/kg

Method of preparation for *Palandu Ghrita*

As per given in *Sharangdhar Samhita*, we made *Palandu Ghrita* by *Snehapak Siddhi Kalpana*(11) as follows-

- All equipment should be clean, dried and sterilized.
- All ingredients should be weighed properly.
- A clean vessel with wide mouth should be taken.
- Put 4 parts of *Goghrita*, heat on *Mandagni* till foam appears.
- Now add 1 part of *Palandu Kalka* and 16 part of *Jala* to it.
- Frequent stirring is required to avoid carbonization.
- Heating should be continued till the appearance of *Sneha Siddhi Lakshnas* for *Khara Pak* as mentioned above.
- After *Lakshnas* are obtained, filter the *Sneha* through cloth.
- Store the *Sneha* in the air tight container to use for present study.

How to use

- It is for external use only.
- Clean affected area.
- Apply small amount topically to affected area 1-3 times daily.
- May cover with sterile bandage.

Mechanism of action

When applied locally it produces nascent oxygen which creates plane of cleavage between lining tissue and slough and removal of slough mechanically due to release of catalase.

It produces effervescence on application which removes the bacteria. Its foaming action washes out the bacteria. It has short duration of action and mechanically causes removal of tissue debris. It creates heat when applied locally, causing coagulation of proteins and also provides hemostasis.

Inclusion criteria

1. Age- 16 to 70 yrs.
2. Sex- Female.
3. Patients of Clean lacerated wound or tidy wound was selected.

4. Site-Face.
5. Wound size- 2.5x2.5x01 cm.
6. Duration of wound- less than 6hrs.
7. Clean lacerated wound related to *twaka* and *mansa* only.
8. Wound shape – Edges parallel to each other.

Exclusion criteria

1. Wound duration more than 6 hrs.
2. Hemoglobin <10gm%.
3. Patients having abnormal bleeding disorders (Increased BT & CT).
4. Keloid, PBC (Post Burn Contracture).
5. Site- other than face.
6. Clean lacerated wound with other complications like fractures, head injury, *marmaghat* etc.
7. Patients having medico legal problems.
8. Sutured wound after 7th day.
9. Patients who are not willing to participate in trial.
10. Patients suffering from systemic diseases such as AIDS, Tuberculosis, Diabetes mellitus, Hepatitis-B, Malignancy, Varicose ulcer, Deep vein thrombosis, Arterial ulcer, neurogenic ulcer, Leprosy, Pregnancy etc.

Laboratory investigation

1. CBC
2. Erythrocyte sedimentation rate
3. B.T & C.T
4. Blood sugar level.
5. HIV (if necessary)
6. HBsAg (if necessary).
7. Urine Routine.
8. Urine microscopic examination.

Suture type: Simple interrupted suture

Dose: As per wound 2 times a day

Duration of treatment
Up to 45 days

Observation Parameters

1. *Vedana* (Pain)
2. *Sparshasahatva* (Tenderness)
3. *Strava* (Discharge)
4. Inflammation
5. Pliability
6. Consistency
7. Scar height
8. Scar color
9. Extension of scar

Group A Treated with *Palandu Ghrita* application comprised of 34 patients. Among them, 04 patients left the treatment against medical advice.

Group B Treated with Plane gauze piece application comprised of 32 patients. Among them 02 patients left the treatment against medical advice.

Table No. 3: Observation of 60 patients according to Age

Age (in Years)	No. of patients		Total	%
	Group A	Group B		
16 – 20	02	05	07	11.66
21 – 30	05	04	09	15
31 – 40	12	10	22	36.66
41 – 50	05	04	09	15
51 - 60	04	05	09	15
61 – 70	02	02	04	06.66

It was found that maximum number of patents i.e. 36.66% belonged to age group of 31 – 40 years, 15% patient belonged to 21 – 30 , 41-50, 51-60 years of age group each, while 11.66% patients belonged to 16 – 20 years and 06.66% of patients belonged to 61 – 70 years of age group.

Table no. 4: Observation Of 60 patients according to Built

Built	No. of patients		Total	%
	Group A	Group B		
Normal	08	09	17	28.33
Under weight	05	03	08	13.33
Obese	17	18	35	58.33

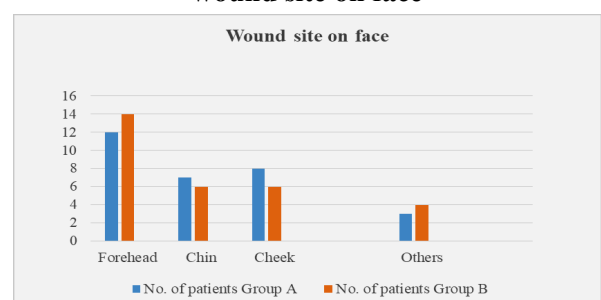
The table has shown that out of 60 patients studied, the maximum numbers of patients i.e. 58.33% have observed were obese whereas 28.33% were had normal built and 13.33% were underweight.

Table no. 5: Observation of 60 patients according to Scar colour

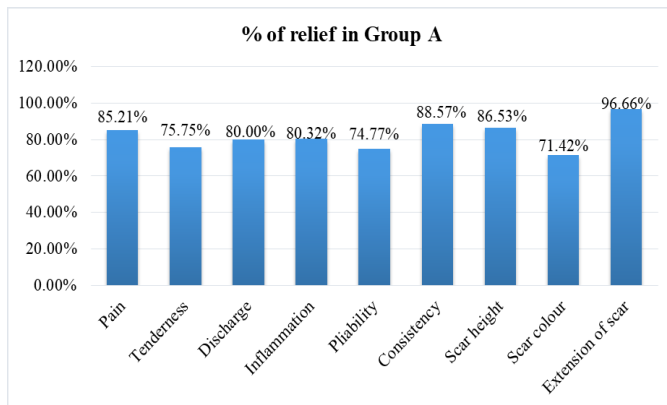
Scar colour	No. of patients		Total	%
	Group A	Group B		
Normal	19	14	33	55
Red	06	07	13	21.66
Black	05	09	14	23.33

The table has shown that out of 60 patients studied, the maximum numbers of patients have observed were normal scar colour 55% whereas 21.66% have red, 23.33% had black.

Graph no. 1: Observation of 60 patients according to wound site on face

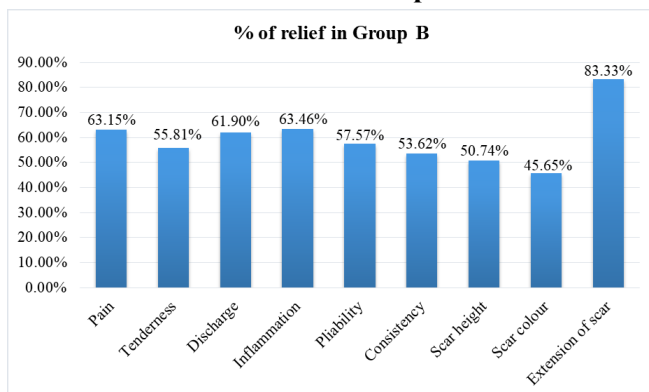


Graph no. 2: Overall effect of therapy on clinical features in Group A



In group A, % of relief was obtained among 30 patients of sutured clean lacerated wound – relief in pain was 85.21%, relief in tenderness was 75.75%, relief in discharge was 80%, relief in inflammation was 80.32%, relief in pliability i.e. elasticity of scar was 74.77%, relief in consistency of scar was 88.57%, relief in scar height was 86.53%, relief in scar color was 71.42%, relief in extension of scar was 96.66%.

Graph No. 3: Overall effect of therapy on clinical features in Group B



Probable mode of action

Among the ingredients of *Palandu Ghrita* drugs are having *Madhur Rasa*, *Guru*, *Snigdha Guna* and *Sheeta Veerya*, so these drugs are very effective to break the pathogenesis of *Sadyovrana* w.s.r. to hypertrophic scar as well by Virtue of these properties *Palandu Ghrita* simultaneously acts as a *Shodhan* and *Ropana*.

Acharya Sushruta has mentioned *Palandu* (*Allium Cepa*) as *Sthirhatukarta* and *Krumighna*. *Palandu* contains 80% of water which prevents *Kshaya of Rasa Dhatu* and also dryness of wound on other hand it provides moisture to wound. It is *Madhur Rasatmak Dravya* which helps in *Sandhan Karma of Vrana*.

Action on the basis of *Veerya*: Due to *Sheeta Veerya* of *ghrita* it has properties of *Ropan*, *mrudukarma*. It plays important role to soften the wound due to *sheeta virya*.

As per morphology, *Palandu* is made up of very thin layers just like human skin. So according to *Samanya Vishesh sidhant* ⁽⁸⁴⁾ we conclude that each

layer of *Palandu* acts on each layer (7 layers) of human skin for wound healing.

This contain a readily and highly researched bioflavonoids with antihistamine and antiproliferative effects on both normal and malignant cells. These properties could theoretically prove beneficial in reversing the inflammatory and proliferative responses. *Palandu* contains vitamin A, C and proteins which are essential factors for wound healing.

At the time of presentation, the patient had pain, discharge, tenderness etc., with predominating *Vata Dosha*. After application of *Palandu ghrita*, *Madhura Rasa* of the *Palandu* as well as *Goghrita* reduced the vitiated *Vata Dosha*, leading to reduced pain and enhanced healing.

Onion bulb mainly contains 1.2% protein, 11.6% carbohydrate, calcium, iron, vitamin A, B and C. Onion bulb contain a good number of phytochemicals most of which are hydrocarbons and their derivatives. These includes-

Dipropyl disulphide (which is used as flavor compound), Allicin (which has antidiabetic, antibiotic and antithrombotic properties.), Diathyl sulphide (which has insecticidal property).

Onion contain Sulphur compounds which acts as anti-inflammatory.

Goghrita also contains Vitamin A, D, E and K. Vitamins A and E are anti-oxidant and are helpful in preventing oxidative injury to the body.

Conclusion

Depending on the observations obtained and detailed discussion on this observation, following conclusion can be drawn.

Hypertrophic scar formation is commonly seen in obese female who has *Rasakshayata* and of *Vata-pitta prakruti*.

To prevent hypertrophic scar is an important factor for the healing of wound. Hypertrophic scar control was obtained in patients by external application of *Palandu ghrita*.

Palandu contains 80% of moisture which prevents *rasa dhatu kshya*; the *dhatu* mainly important in wound healing.

Palandu acts as anti-microbial, anti-inflammatory, anti-proliferative and anti-fungal agent hence helps in early wound healing & early healing prevents scar formation.

Palandu ghrita has shown *Krumighna*, *Sukharopaniya*, *Sthirhatukarta* and *Varnya* properties in the management of *Sadyovrana* and prevents hypertrophic scar.

Palandu is *madhur rasatmak* which helps in *sandhan karma of vrana*.

Method of application is easy, simple and cost effective.

As per morphology, *Palandu* is made up of very thin layers just like human skin. So according to *Samanya Vishesh sidhant* we conclude that each layer of *Palandu* acts on each layer (7 layers) of human skin for wound healing.

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