WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
Coden USA: WJPRAP Impact Factor 8.63
Volume 15, Issue 22, 564-573. Case Study ISSN 2277–7105

A CLINICAL STUDY ON SPLIT THICKNESS SKIN GRAFT (STSG) WITH JALAUKAVACHARANA AND YASHTIMADHU KWATHA PRAKSHALANA AS PRE-TREATMENT IN THE MANAGEMENT OF DUSHTA VRANA(CHRONIC NON HEALING ULCER)- A SINGLE CASE STUDY.

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Article Received on 13 Oct. 2026,
Article Revised on 03 Nov. 2026,
Article Published on 16 Nov. 2026,

https://doi.org/10.5281/zenodo.24278260

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How to cite this Article: [*1]Dr. Mayuriben K. Goswami, [2]Dr. Harshit S. Shah, [3]Dr. Hetvi A. Prajapati, [4]Dr. Pragati S. Sutariya (2026). A Clinical Study On Split Thickness Skin Graft (Stsg) With Jalaukavacharana And Yashtimadhu Kwatha Prakshalana As Pre-Treatment In The Management Of Dushta Vrana(Chronic Non Healing Ulcer)- A Single Case Study.. World Journal of Pharmaceutical Research, 15(22), 564–573
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ABSTRACT

Managing chronic, non-healing ulcers (*Dushta Vrana*) remains difficult due to persistent infection, tissue compromise, and high recurrence rates, prompting interest in integrative Ayurvedic-surgical protocols. This clinical report highlights a 46-year-old male presenting with a post-traumatic Non healing ulcer at Posterior aspect of on the lower right leg following a previously unsuccessful graft. The therapeutic regimen consisted of three sequential phases: primary surgical debridement (*Lekhana Karma*), five daily sessions of medicinal leech application (*Jalaukavacharana*) coupled with wound irrigation using *Yashtimadhu Kwatha*, and definitive split-thickness skin grafting (STSG) performed on the seventh day. Monitored over a 60-day postoperative period, the patient demonstrated robust graft adherence, accelerated re-epithelialization, marked reduction in exudate, and full resolution of pain within the Treatment. These findings demonstrate that preoperative wound bed preparation using

Jalaukavacharana and *Yashtimadhu Kwatha* significantly optimizes tissue receptivity and enhances the success rate of subsequent skin grafting in recalcitrant ulcers.

KEYWORDS: STSG, Split thickness, Skin graft, Yashtimadhu, Jalauka, Leech therapy, Dushta vrana, Non healing ulcer.

INTRODUCTION

Dushta Vrana, the classical Ayurvedic term for chronic non-healing ulcers, denotes recalcitrant lesions marked by persistent exudate, malodor, abnormal pigmentation, tissue devitalization, and arrested healing dynamics. Commonly secondary to physical trauma, vascular insufficiency, metabolic dysregulation like diabetes, or chronic infection, these wounds severely compromise physical function and quality of life.While modern surgical practice routinely utilizes **split-thickness skin grafting (STSG)** to resurface such defects and expedite closure[1],optimal graft uptake relies heavily on adequate microvascular perfusion, rigorous bioburden control, and healthy granulation of the recipient bed—clinical parameters that classical Ayurvedic wound-care modalities are specifically designed to optimize.[2]

Jalaukavacharana, or medicinal leech therapy, is a gentle bloodletting modality (*Raktamokshana*) detailed by Acharya Sushruta, recommended particularly for individuals with low pain thresholds or fragile constitutions.[3] This intervention promotes localized detoxification, enhances microvascular perfusion, attenuates inflammatory responses, and stimulates the rapid proliferation of healthy granulation tissue via the potent bioactive enzymes and peptides secreted in leech saliva.[4]

Classical Ayurvedic texts—including the *Brihattrayi*, *Laghuttrayi*, *Sharangadhara Samhita*, and *Bhavaprakasha*—extensively detail *Vrana Chikitsa* (wound management), documenting 18 formulations where ***Yashtimadhu*** (Licorice) serves as a key wound-cleansing (*Shodhana*) and healing (*Ropana*) agent. Beyond wound care, literature highlights its multifaceted benefits, including *Chakshushya* (vision enhancement), *Balakrit* (strength), and *Vishaghna* (detoxification). Pharmacologically, active constituents like glycyrrhizin, glabridin, isoliquiritigenin, and licochalcone A drive its potent anti-inflammatory, antioxidant, anti-ulcer, and immunomodulatory activities.[5,6,7,8]

Sandhana Karma denotes the Ayurvedic paradigm of wound approximation and tissue union, encompassing an integrated continuum of cleansing (*Shodhana*), healthy granulation

(*Ropana*), and precise margin coaptation to achieve stable scar formation. This holistic approach integrates diverse surgical (*Shastra Karma*) and parasurgical (*Anushastra Karma*) modalities designed to restore structural continuity and drive tissue regeneration.[1]

Split-thickness skin grafting (STSG) is a standard surgical reconstructive technique wherein a partial-thickness epidermal-dermal graft is harvested and transferred onto a prepared defect to achieve biological closure. The ultimate viability and incorporation of the graft depend largely on a sterile, well-vascularized, and viable recipient substrate.[2] Incorporating Ayurvedic preparatory interventions—specifically *Jalaukavacharana* (hirudotherapy) and wound irrigation with *Yashtimadhu Kwatha*—augments the biological receptivity of the wound bed, thereby improving graft uptake rates and promoting durable tissue restoration.[5 6 7]Accordingly, this clinical investigation evaluates the therapeutic efficacy of pairing Ayurvedic pre-conditioning protocols with STSG in recalcitrant ulcers, establishing an integrative paradigm that bridges ancient Ayurvedic principles with contemporary surgical wound care.

CASE REPORT

A 46-year-old male (OPD No. 5504, IPD No.253) was admitted to the Department of Shalya Tantra at Government Akhandanand Ayurveda College and Hospital, Ahmedabad, presenting with a chronic non-healing wound.

History of Present Illness

The patient reported sustaining trauma to the posterior aspect of his right lower leg in a road traffic accident (RTA) two months prior. He was initially managed at Civil Hospital, where a split-thickness skin graft (STSG) was attempted for wound resurfacing. Following primary graft failure and persistent ulceration, he presented to GAAH, Ahmedabad, seeking comprehensive evaluation and advanced management of the recalcitrant defect.

There is k/c/o of Hypothyrodism & drug history of tab.Thyronom once a day.

Clinical Findings - On Examination: BP – 134/94mmHg, P.R - 80 bpm, R.R – 16 /min

General Examination- Built: Moderate, Nourishment: Moderate, Temp: Afebrile. No evidence of Pallor / Icterus / Cyanosis / Clubbing / Oedema / Koilonychia / Lymphadenopathy.

Systemic Examination - CNS: Conscious, well oriented to time, place and person, CVS: auscultation- S1 S2 heard, no added sounds, RS: auscultation- B/L AE+, B/L Air entry equal and clear, P/A: Soft and Non-distended,

Blood Investigation

HB: 14.8 Gm%, Total R.B.C: 5.15 mill./c.mm, Polymorphs: 64 %, Lymphocytes: 28 %, Eosinophils: 02 %, Monocytes: 06 %, Basophils: 00 %, Platelet Count: 2,41,000 /c.mm, ESR After 1hr: 12 mm, Blood Sugar (R): 107.8 mg/dl, Urine Sugar (R): Nil, Bleeding Time: 2 Min 15 Sec., Clotting Time: 05 min 00 sec., HIV (Elisa): NON REACTIVE., HBsAG (Elisa): NON REACTIVE., Blood Group: B+, SGPT: 21.3 U/L.

LOCAL EXAMINATION

Inspection

Site: posterior aspect of his right lower leg

Size:length: 5cm

width: 4cm

Shape: Regular Number:1

Edge: Sloping

Floor: Healthy granulation tissue present

Slough: Present Bone exposure: No

Discharge:Pus

Surrounding area: Red oedematous,hair present

Excematous: No

Xerosis: Absent

Palpation

Tenderness: Yes

Bleed On Touch: No

Base: Hard

Peripheral Pulsation: Present

Vericosity: Absent

Regional Lymph Nodes: Not palpable

MATERIALS AND METHODS

- Procedure of Debridement (Lekhankarma) (Day 1)
- Procedure of Jalaukavcharana with Yashtimadhu Kwatha Prakshlana (Up to Dustav rana convert into sudhdha vrana)
- Procedure of STSG (Split Thickness Skin Graft Surgery) (day 7)

Procedure of Debridement (Lekhankarma) (Day 1)

Written informed Consent taken.

- Painting, draping & other preoperative protocol followed.
- Type of anesthesia: Local anesthesia given.
- Debridement of recipient area done.
- Receipient area packed with sterile gauze and roller bandage.
- Procedure of Jalaukavcharana with Yashtimadhu Kwatha Prakshlana (Up to Dustav rana convert into sudhdha vrana).

Jalaukavcharana & Yashtimadhu Kwatha prakshalan Sittings

Five continuous sittings without any gape carried out in five days.

Poorva Karma Of Jalaukavacharana	**Requirements**	*Jalaukas*(leeches), *Haridra churna* (Curcuma long Linn.), Yashtiamdhu *Kwatha* powder, water, Gauze roller, Sterilized gloves, Sterilized cotton, artery forceps, Scissors, fresh bowls, steel vessel, stove, fine sieve, and syringe.
	Preparation of Leeches	The *Jalaukas* (leech) was kept in bowl filled with *Haridra mixed* water for appropriate time to activate **(***Klamahara***)** them and then they was transferred to a bowl filled with clean water.
	Preparation of Yashtimadhu *Kwatha*	As per *Sharangdhara Samhita Madhyama Khand.* Appropriate amount of Yashtimadhu mool Yavakuta was taken. Then 16 time of water was added and boiled until 1/8 of decoction was remain then filter it with fine sieve.
	Preparation of Patient	The patient was asked to lie down on the table comfortably and later the area of *Dushta Vrana* will cleaned with dry gauze.
Pradhana Karma Of Jalaukavacharana	• The *Jalaukas* (leech) was placed at the site and allowed to suck the blood. If the *Jalaukas* (leech) won't fixed to the site, then one – two needle pricks was given. • After getting properly fixed to the site, wet gauze was placed over its body. • If the patient was complained of pain and itching (*Toda Evam Kandu*) in some cases, a pinch of *Haridra churna* was sprinkled at the site of bite and the leech was taken out.	

	• After then wound area was properly wash with fresh Yashtiamdhu *Kwatha*. After that the area of *Dushta Vrana* was cleaned with dry gauze.
Paschat Karma Of Jalaukavacharana	• A piece of gauze was placed over the site of bite to avoid further bleeding, later it was bandaging with adequate pressure. • *Jalauka Vamana* was carried out & stored in clean glass jar. • Procedure was stopped if any complication found during the procedure.

Procedure of STSG (Split Thickness Skin Graft Surgery)

Poorva Karma **(Pre-Operative Procedures)**	• NBM was explained. • Consent was taken • Donor area was shaved & washed with savlon solution & then packed with sterile gamzee. • Periphery of recipient area will also shave if needed. • Tetanus toxoid injection 0.5 ml I/M (intramuscular) was given. • Test dose of 2% Lignocaine 0.5 ml I/D (Intradermal). • Vitals was checked.
Pradhana Karma **(Operative Procedure)**	• Type of anesthesia: Local/spinal/general (suitable) (by anesthetics) was given. • Painting, draping & isolation of part was carried out. • If need debridement of recipient area was done. • Sterile gamzee was opened from donor area & jelly was applied on it. • Assistant surgeons was stretched donor area form both sides. • Appropriately sized graft was taken with suitable dermatome. • Jellonet was applied on the donor area. • Graft was mashed with stab knife. • Graft was placed on recipient area & fixed by stapler. • Jellonet was applied on the recipient area. • Packing was done with gauze pad, gamzee & roller bandage. • Cast of Plaster of Paris was applied for immobilization of the part.
Paschat Karma **(Post-Operative Procedures)**	• If needed analgesics and antibiotics was given as advised by anesthetics.



1. *LEKHANAKARMA*



2. JALAUKAVACHARANA



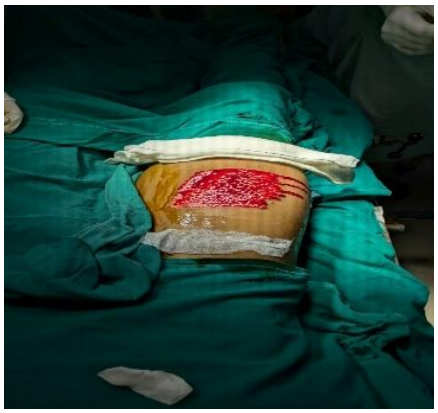
3.YASHTIMADHU KWATHA



4. YASHTIMADHU KWATHA PRAKSHALANA



5. AKING GRAFT WITH DERMATOME



6.DONOR SITE



7. P.O.D-04



8.P.O.D-60

ASSESSMENT CRITERIA

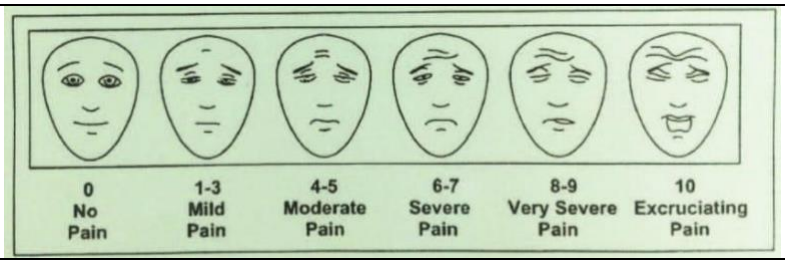
A.Objective Criteria: Acceptance of STSG was determined according to following criteria given below:

No.	Criteria name	Gradation
1.	Adherence of graft	Grade-0: Fully Adhere Grade-1: Half Adhere Grade-2: Partially Adhere (< Half) Grade-3: No Adhere
2.	STRAVA (Discharge)	Grade-0: No Discharge

		Grade-1: Serous Discharge Grade-2: Serosanguinous Grade-3: Pus Discharge
3.	VARNA (Color)*	Grade-0: same as normal skin colour Grade-1: +1 then normal skin colour Grade-2: +2 then normal skin colour Grade-3: +3 then normal skin colour Grade-4: +4 then normal skin colour Grade-5: >+4 then normal skin colour

*color grade was decided with von luschan chromatic scale.

B. Subjective Criteria

No.	Criteria Name	Gradation
1.	Pain	

CRITERIA	SCORE	GRADE
No Pain	0-0	0
Mild Pain	1-3	1
Moderate Pain	4-5	2
Severe Pain	6-7	3
Very Severe Pain	8-9	4
Excruciating Pain	10	5

OBSERVATION: During Treatment and Follow Up Period.

No.	Criteria name	After 4 days Of STSG	After 7 days Of STSG	After 15 days Of STSG	After 30 days Of STSG	After 60 days Of STSG
1.	Adherence of Graft	2	2	1	0	0
2.	Discharge	2	2	1	0	0
3.	Color	0	1	2	2	1
4.	Pain	1	2	1	1	0

RESULT

A 46-year-old male with a persistent, non-healing ulcer resulting from a previous graft failure received combined Ayurvedic and surgical management. The regimen began with *Lekhana Karma* (surgical debridement) followed by five consecutive days of *Jalaukavacharana* (leech therapy) paired with *Yashtimadhu Kwatha* wound irrigation, culminating in a Split-Thickness

Skin Graft (STSG) on day seven. Subsequent follow-up assessments demonstrated substantial progress across all wound healing metrics.

- Adherence of graft improved from grade 2 on day 4 to 0 by day 30, indicating complete graft take
- Discharge reduced to nil by the 30th postoperative day.
- Pain subsided completely by the 30th day.
- The color of the graft site is grade-1 by 60^{th} day.

No signs of infection, graft rejection, or hypertrophic changes were noted. The donor area healed uneventfully.

DISCUSSION

In chronic, non-healing ulcers (*Dushta Vrana*), healing is typically arrested by necrotic debris, slough, and microvascular stasis. Initial *Lekhana Karma* cleared this non-viable tissue, establishing a vascularized and receptive wound bed. Subsequent five-day leech therapy (*Jalaukavacharana*) promoted local tissue decongestion, boosted microcirculatory perfusion, and mitigated inflammation via the bioactive anticoagulant and anti-inflammatory properties of leech secretions. Concurrently, wound irrigation with *Yashtimadhu Kwatha* exerted targeted *Shothahara* (anti-inflammatory) and *Ropana* (wound-healing) effects. This integrative pre-treatment substantially bolstered graft take, neovascularization, and overall tissue incorporation prior to STSG. The rapid alleviation of pain and swift cessation of exudate underscore the synergistic value of these traditional modalities in wound-bed preparation, offering superior tissue preconditioning compared to standard surgical preparation alone.

CONCLUSION

- Preconditioning the wound bed with *Jalaukavacharana* (leech therapy) and *Yashtimadhu Kwatha* irrigation significantly enhances graft take in chronic, non-healing wounds.
- This combined strategy markedly reduces exudate, fosters superior graft adherence, and accelerates epithelial regeneration.
- Merging traditional Ayurvedic modalities with modern reconstructive techniques like STSG provides a safe, evidence-based, and effective clinical protocol for managing *Dushta Vrana*.
- Further large-scale, controlled clinical trials are warranted to validate these outcomes and delineate specific wound etiologies most responsive to this multimodal regimen.

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