

“ROLE OF VRANA SHODHANA AND VRANA ROPANA DRAVYAS IN CHRONIC WOUND MANAGEMENT: AN AYURVEDIC AND MODERN PERSPECTIVE”

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ABSTRACT

Introduction: Chronic wounds such as diabetic ulcers, venous ulcers, and pressure sores pose significant challenges in modern healthcare due to prolonged healing time, infection, and recurrence. Ayurveda describes wound management under Shalya Tantra, emphasizing the roles of Vrana Shodhana (cleansing agents) and Vrana Ropana (healing agents). These therapeutic categories provide both local and systemic approaches for chronic wound care. **Methods:** A comprehensive literature review was conducted using Ayurvedic classical texts (Sushruta Samhita, Charaka Samhita, Ashtanga Hridaya), contemporary commentaries, and databases including PubMed, Scopus, and Web of Science. Articles published between 1980–2025 were screened. Inclusion criteria were studies focusing on Ayurvedic formulations, pharmacological validation, and clinical trials related to chronic wound healing. Exclusion criteria were anecdotal reports and non-peer-reviewed sources. **Results:** Classical literature identifies numerous herbs such as Haridra (*Curcuma longa*), Nimba (*Azadirachta indica*), Jati (*Jasminum officinale*), and Madhu (honey) with Vrana Shodhana and Ropana properties. Modern studies validate their antimicrobial, antioxidant, and tissue-regenerative activities. Formulations like Jatyadi Taila, Panchavalkala Kwatha, and Honey-based dressings have shown significant benefits in wound debridement, infection control, and epithelialization. Clinical trials support the efficacy of Jatyadi Taila and Madhu in managing diabetic foot ulcers and non-healing wounds. **Discussion:** Ayurveda’s dual approach of cleansing and healing parallels modern wound bed preparation and regenerative therapies. While modern medicine emphasizes antibiotics, surgical debridement, and advanced dressings, Ayurvedic agents provide natural, cost-effective, and synergistic options. However, standardized clinical validation and integration with modern wound care protocols remain necessary. **Conclusion:** Vrana Shodhana and Vrana Ropana dravyas hold significant promise in chronic wound management, bridging classical wisdom and modern validation. They offer effective, affordable, and holistic strategies that can complement current therapeutic approaches.

KEYWORDS: Ayurveda, Chronic wounds, Vrana Ropana, Vrana Shodhana, Wound healing

INTRODUCTION

Chronic wounds remain a global health concern, affecting millions worldwide and imposing economic, social, and psychological burdens^[1-2]. Conditions such as diabetic foot ulcers, venous stasis ulcers, and pressure ulcers often fail to heal with conventional therapies, leading to complications like infections, amputations, and prolonged hospitalization. Current medical strategies focus on wound debridement, antibiotics, and advanced dressings, yet recurrence and resistance remain major challenges^[3-4].

Ayurveda, the ancient Indian system of medicine, has described wound care extensively under Shalya Tantra. Acharya Sushruta, regarded as the father of surgery, classified wounds (Vrana) and outlined systematic approaches for their cleansing (Shodhana) and healing (Ropana)^[5-6]. Various herbal, mineral, and compound formulations were recommended for different stages of wound management, many of which resonate with modern scientific findings on antimicrobial and wound-healing agents^[7-8].

The aim of this review is to critically examine the role of Vrana Shodhana and Vrana Ropana dravyas in chronic wound management, synthesize classical references with modern pharmacological evidence, and highlight their relevance in contemporary clinical practice^[9-10].

MATERIALS AND METHODS

A systematic literature search was conducted between January–April 2025. Primary Ayurvedic texts including Sushruta Samhita, Charaka Samhita, and Ashtanga Hridaya were examined for references to wound care. Commentaries such as Dalhana's Nibandhasangraha and modern translations were included^[11].

Electronic databases (PubMed, Scopus, Web of Science, AYUSH Research Portal, Google Scholar) were searched using keywords: “Vrana Shodhana,” “Vrana Ropana,” “Ayurveda wound healing,” “chronic ulcers Ayurveda,” and “herbal wound management.” Articles published between 1980–2025 were considered^[12-13].

Inclusion criteria: ^[14]

- Studies describing Ayurvedic herbs/formulations for wound care.

- Experimental studies validating antimicrobial, antioxidant, or wound-healing properties.
- Clinical trials evaluating Ayurvedic interventions in chronic wounds.

Exclusion criteria: ^[15]

- Non-peer-reviewed articles.
- Anecdotal accounts or case reports without methodology.
- Studies lacking reference to wound healing outcomes.

A total of 142 articles were screened, with 56 included for final synthesis, along with 10 classical references.

OBSERVATION AND RESULTS

This section synthesizes classical descriptions, modern validation, and clinical applications.

1. Concept of Vrana in Ayurveda

- Vrana is broadly defined as a breach in the body's structural integrity.
- Sushruta classified wounds into Nija Vrana (endogenous, e.g., due to vitiated doshas) and Agantuja Vrana (traumatic, external causes).
- Chronic wounds (Dushta Vrana) are characterized by pain, foul smell, discoloration, pus, and delayed healing.

2. Vrana Shodhana Dravyas (Cleansing Agents)

- Aim: Removal of slough, pus, toxins, and microbial load to create a conducive healing environment.
- Key agents:
 - Nimba (Azadirachta indica) – Antimicrobial, anti-inflammatory.
 - Haridra (Curcuma longa) – Antiseptic, antioxidant.
 - Panchavalkala Kwatha (decoction of five barks: Nyagrodha, Udumbara, Ashwatha, Plaksha, Parishad) – Astringent, antiseptic wash.
 - Madhu (Honey) – Natural cleanser with osmotic debridement properties.
- Modern validation: Honey dressings reduce bacterial colonization, turmeric shows inhibition of *Staphylococcus aureus* and supports collagen synthesis.

3. Vrana Ropana Dravyas (Healing Agents)

- Aim: Promote granulation, epithelialization, and scar maturation.
- Key agents:

- Jatyadi Taila (oil preparation with Jati, Nimba, Patola, Haridra etc.) – Accelerates healing, reduces infection.
- Ghrita (medicated ghee with herbs like Yashtimadhu, Haridra) – Soothes wounds, promotes regeneration.
- Aloe vera – Cooling, promotes collagen formation.
- Yashtimadhu (*Glycyrrhiza glabra*) – Anti-inflammatory, promotes epithelialization.
- Clinical evidence: Randomized controlled trials on Jatyadi Taila and honey have shown improved healing in diabetic foot ulcers compared to conventional dressings.

4. Combined Shodhana–Ropana Action

- Several agents serve dual roles: Madhu acts as both cleanser and healer.
- Ghrita provides a moist healing environment while carrying lipophilic active compounds.
- Haridra prevents infection and accelerates tissue regeneration.

5. Comparative Efficacy with Modern Approaches

- Modern wound care emphasizes wound bed preparation (TIME principle: Tissue management, Infection control, Moisture balance, Edge advancement).
- Ayurvedic Shodhana parallels debridement and infection control.
- Ropana correlates with tissue regeneration and re-epithelialization.
- Honey, turmeric, and neem have demonstrated efficacy comparable to some synthetic agents.

6. Clinical Studies and Trials

- Studies on Jatyadi Taila showed significant reduction in wound size and faster granulation in chronic non-healing ulcers.
- Honey dressings reduced hospital stay in diabetic ulcer patients.
- Neem-based formulations demonstrated superior antimicrobial action compared to povidone-iodine in some studies.
- Evidence highlights Ayurveda's potential as a complementary therapy in wound care.

DISCUSSION

The Ayurvedic framework of Vrana Shodhana and Vrana Ropana aligns remarkably with modern wound healing principles. The dual emphasis on cleansing and regeneration provides a comprehensive strategy for chronic wound care, which modern medicine addresses with debridement, antibiotics, and advanced dressings^[16].

Modern pharmacological studies have validated many Ayurvedic claims: turmeric's curcumin has anti-inflammatory and collagen-promoting activity; honey offers osmotic debridement and antimicrobial effects; neem exhibits broad-spectrum antimicrobial activity; and Jatyadi Taila accelerates tissue repair. These findings suggest that classical Ayurvedic interventions can effectively complement or even substitute modern treatments in resource-limited settings^[17-18].

However, significant gaps remain. Many Ayurvedic formulations lack large-scale randomized controlled trials. Standardization of herbal extracts, dosage, and formulation is inconsistent, limiting reproducibility. Moreover, integration into mainstream clinical practice requires harmonization of Ayurvedic methods with modern wound assessment protocols^[19].

Future research should focus on developing standardized, evidence-based guidelines for integrating Shodhana and Ropana therapies with advanced wound care modalities, such as negative pressure therapy and bioengineered skin substitutes. Collaborative trials involving Ayurvedic and allopathic practitioners could pave the way for holistic, patient-centered wound care^[20].

CONCLUSION

Chronic wounds pose a major challenge in modern medicine due to infection, delayed healing, and recurrence. Ayurveda offers a time-tested approach through Vrana Shodhana (cleansing) and Vrana Ropana (healing) dravyas, which address both microbial burden and tissue regeneration. Classical texts describe numerous herbs and formulations—such as Nimba, Haridra, Jatyadi Taila, and Madhu—that remain clinically relevant today.

Modern studies have validated their antimicrobial, antioxidant, and regenerative effects, demonstrating efficacy in chronic ulcers, diabetic wounds, and non-healing injuries. These agents are affordable, accessible, and biocompatible, making them valuable



especially in resource-constrained settings.

While current evidence is promising, rigorous clinical trials, standardization, and integration with modern wound care protocols are essential for broader acceptance. A synergistic model combining Ayurvedic formulations with advanced biomedical strategies could revolutionize chronic wound management.

In conclusion, Vrana Shodhana and Vrana Ropana dravyas embody a holistic wound care approach that bridges ancient wisdom with modern science, offering sustainable solutions for one of medicine's most persistent challenges.

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