

Role of Guggulu Avachurnana in Postoperative Infected Wound with Slough: A Case Report

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Abstract: *Background:* Postoperative wound infections continue to pose a significant challenge in surgical practice due to delayed healing, increased risk of complications, and associated morbidity. Although modern wound care employs antibiotics, antiseptics, and advanced dressings, limitations such as antimicrobial resistance, high cost, and limited accessibility—especially in resource-constrained settings—remain major concerns. Ayurveda describes a systematic approach to wound management through Vrana Shodhana (cleansing) and Vrana Ropana (healing). Guggulu (Commiphora mukul) is a well-documented medicinal resin possessing Shodhana, Ropana, Krimighna, and Shothahara properties. *Case Presentation:* A 45-year-old male patient presented with cellulitic changes over the right ankle following blunt trauma sustained 8 days prior. Clinical examination revealed swelling, tenderness, erythema, and necrotic tissue with minimal seropurulent discharge. Surgical debridement exposed an infected wound measuring approximately 4 × 4 × 1 cm, with around 80% slough covering the wound bed.

Intervention: The wound was managed with daily Vrana Prakshalana using sterile normal saline, followed by local application of Guggulu Churna in the form of Avachurnana. No additional topical antiseptic or antibiotic agents were used. Sterile dressing was applied after each procedure.

Outcome: By Day 5, a marked reduction in slough (from ~80% to ~30%) and discharge was observed, along with decreased pain. By Day 7, the wound demonstrated healthy granulation tissue formation with minimal residual slough (~5%) and significant reduction in wound dimensions. No adverse reactions were noted during the treatment period.

Conclusion: Guggulu Avachurnana demonstrated effective Vrana Shodhana and Vrana Ropana actions in the management of a postoperative infected wound. The intervention was safe, economical, and clinically effective, suggesting its potential as a supportive modality in wound care, particularly in settings with limited resources..

Keywords: Vrana Shodhana, Vrana Ropana, Guggulu, Avachurnana, infected wounds, Wound Healing, Debridement

I. INTRODUCTION

Postoperative wound infections remain a frequent and clinically significant complication in surgical practice, often resulting in delayed healing, increased patient morbidity, and prolonged healthcare utilization. Despite advances in antimicrobial therapy and modern wound care techniques—including the use of antiseptics and advanced dressings—several limitations persist. These include the emergence of antimicrobial resistance, local tissue irritation, increased treatment costs, and restricted accessibility in resource-limited or rural settings.

Traditional Ayurvedic literature describes a comprehensive approach to wound management under the concept of Vrana Chikitsa, wherein Vrana Shodhana (cleansing and debridement) and Vrana Ropana (promotion of healing) are emphasized as essential sequential processes.^{1–4} The primary objective of Shodhana is the removal of necrotic tissue, contaminants, and microbial load, thereby preparing a healthy wound bed. Subsequently, Ropana facilitates tissue regeneration, granulation, and epithelialization, ultimately restoring structural and functional integrity.



Guggulu (Commiphora mukul), an oleo-gum resin widely utilized in Ayurvedic therapeutics, has been described in classical texts for its diverse pharmacological properties. It is attributed with Krimighna (antimicrobial), Shothahara (anti-inflammatory), Lekhana (debriding/scraping), Shodhana, and Ropana actions.⁵⁻⁷ These properties suggest its potential utility in the management of infected wounds. Contemporary pharmacological studies have further substantiated these claims by demonstrating its antimicrobial and anti-inflammatory effects, thereby supporting its role in wound healing.^{14, 15}

Considering these classical and modern perspectives, the present case report aims to evaluate the clinical efficacy of Guggulu Avachurnana as a local therapeutic modality in the management of a postoperative infected wound following surgical debridement.

Case Presentation

A 45-year-old male patient presented to the surgical outpatient department with complaints of pain, swelling, and redness over the right ankle region. The patient reported a history of blunt trauma to the same site approximately 8 days prior to presentation. There was no history suggestive of systemic illness such as diabetes mellitus, hypertension, or immunocompromised state.

Clinical Examination

On local examination, the affected area showed features suggestive of cellulitis, including erythema, localized edema, and increased temperature. The patient complained of moderate to severe pain, with a Visual Analogue Scale (VAS) score of 7/10. Tenderness was present on palpation.

Inspection of the wound revealed:

- Irregular wound margins
- Presence of necrotic skin patches
- Slough covering a major portion of the wound bed (~80%)
- Minimal seropurulent discharge
- Surrounding skin showing inflammatory changes

Post-Debridement Findings

Surgical debridement was performed under local anesthesia to remove necrotic and non-viable tissue. Following debridement, the wound was reassessed and documented.

- Wound size: Approximately 4 × 4 × 1 cm
- Wound bed: Predominantly covered with yellowish slough (~80%)
- Discharge: Minimal seropurulent
- Pain score (VAS): 7/10
- Periwound skin: Erythematous with mild edema

The clinical presentation was consistent with a postoperative infected wound with significant slough formation following debridement.

Clinical Timeline

Day| Clinical Event

Day 0| Blunt trauma to right ankle

Day 8| Presentation with cellulitis and infected wound

Day 8| Surgical debridement performed

Day 9| Initiation of Guggulu Avachurnana therapy



Day 13| Noticeable reduction in slough and discharge
Day 15| Formation of healthy granulation tissue

Drug Description

Guggulu (Commiphora mukul)

गुग्गुलोः सल्लकीनांचसर्जस्यतिनिशस्यच ।

निर्यासारोपणाः प्रोक्ताःसमस्ताःपृथगेववा ॥

भे. सं. चि. 27/19

गुग्गुलुविंशदस्तिकतोवीर्योष्णः पित्तलःसरः ।

कषायःकटुकःपाकेकटुरुतोलघुः परः ॥

भन्नसन्धानकृद्दृष्यः सूचमःस्वर्योरसायनः ।

दीपनःपिच्छिलोबल्यः कफवातव्रणापचीः ॥

भा. प्र. नि. कर्पूरादी वर्ग 38,39

Rasa (Taste): Tikta (bitter), Katu (pungent)

Guna (Qualities): Laghu (light), Ruksha (dry), Tikshna (sharp)

Virya (Potency): Ushna (hot)

Vipaka (Post-digestive effect): Katu (pungent)

Karma (Actions): Shothahara (anti-inflammatory), Krimighna (antimicrobial), Lekhana (scraping), Shodhana (cleansing), Ropana (healing).

Modern Pharmacological Actions-

Antimicrobial: Inhibits growth of bacteria and fungi.

Anti-inflammatory: Suppresses inflammatory mediators, reducing swelling and pain.

Intervention

Following surgical debridement, a standardized local wound management protocol based on Ayurvedic principles of Vrana Shodhana and Vrana Ropana was initiated.

Treatment Protocol

The intervention consisted of daily wound care procedures performed under aseptic precautions, as outlined below:

1. Vrana Prakshalana (Wound Cleansing)

The wound was gently irrigated once daily using sterile normal saline. This step aimed to remove surface contaminants, residual necrotic debris, and exudate, thereby facilitating mechanical cleansing of the wound bed without causing tissue irritation.

2. Guggulu Avachurnana (Topical Application)

After adequate cleansing and drying of the wound, Guggulu Churna (fine powder of Commiphora mukul) was uniformly applied over the entire wound surface in sufficient quantity to cover the wound bed.

The application was performed in a dusting manner (Avachurnana), ensuring direct contact of the drug with slough and underlying tissue. This facilitated local action of the drug, particularly its Lekhana (scraping), Krimighna (antimicrobial), and Shothahara (anti-inflammatory) properties.



3. Dressing Technique

Following application, the wound was covered with sterile gauze and secured with appropriate bandaging. Dressing was changed daily after repeating the above procedure.

Treatment Characteristics

- Frequency: Once daily
- Route: Local (topical)
- Duration: 7 days (continuous observation period)

Outcome

Progressive clinical improvement was observed following the initiation of Guggulu Avachurnana. The wound demonstrated sequential reduction in slough, decrease in discharge, reduction in pain, and progressive formation of healthy granulation tissue.

Clinical Progress

By Day 5 of treatment, there was a noticeable reduction in local inflammatory signs, with partial separation of slough from the underlying tissue. The wound appeared cleaner with decreased seropurulent discharge. Pain intensity also showed a significant decline.

By Day 7, the wound bed exhibited well-formed, healthy granulation tissue with minimal residual slough. The surrounding skin showed reduced erythema and edema. The patient reported substantial symptomatic relief, and no adverse reactions were observed throughout the treatment period.

Wound Healing Progression

Parameters	DAY 1 (Post-debridement)	DAY 5	DAY 7
Wound size	4 × 4 × 1 cm	3.5 × 3.5 × 0.8 cm	3 × 3 × 0.5 cm
Slough coverage	~80%	~30%	~5%
Granulation tissue	Absent	Moderate	Healthy well formed
Discharge	Minimal seropurulent	Reduced	Absent
Pain	7/10	4/10	2/10

Summary of Outcome

- Significant reduction in slough within 5 days
- Rapid formation of healthy granulation tissue by Day 7
- Decrease in wound size and depth
- Marked reduction in pain and discharge
- No local or systemic adverse effects observed

These findings indicate a favorable wound healing response associated with the use of Guggulu Avachurnana as a local therapeutic modality.





Post debridement

DAY 5

DAY 7

Discussion

Wound healing is a complex and dynamic biological process involving a sequence of overlapping phases, including inflammation, debridement, proliferation, and remodeling. Effective management of infected wounds requires timely removal of necrotic tissue, control of microbial load, reduction of inflammation, and promotion of granulation tissue formation. In contemporary surgical practice, this is commonly achieved using antiseptics, antibiotics, and advanced wound dressings. However, these approaches may be associated with limitations such as local tissue toxicity, delayed epithelialization, increasing antimicrobial resistance, and economic burden, particularly in resource-constrained settings.

In Ayurvedic literature, wound management is systematically described under Vrana Chikitsa, wherein Vrana Shodhana and Vrana Ropana are considered fundamental therapeutic principles.¹⁻⁴ Shodhana facilitates cleansing of the wound by removing necrotic tissue, exudate, and microbial contaminants, thereby preparing a suitable wound bed. Ropana promotes tissue regeneration, angiogenesis, and epithelialization, leading to restoration of structural integrity.

In the present case, Guggulu Avachurnana demonstrated significant clinical efficacy in achieving both Shodhana and Ropana effects. The progressive reduction in slough from approximately 80% to minimal levels within 7 days indicates effective debridement and cleansing action. This can be correlated with the Lekhana property of Guggulu, which facilitates separation and removal of devitalized tissue.

The observed reduction in discharge and local inflammatory signs suggests its Krimighna (antimicrobial) and Shothahara (anti-inflammatory) actions. These effects are supported by contemporary pharmacological studies, which have demonstrated that Guggulu (*Commiphora mukul*) exhibits inhibitory activity against various microbial organisms and modulates inflammatory pathways.^{14, 15}

Furthermore, the early appearance of healthy granulation tissue by Day 7 reflects its Ropana property, indicating enhanced tissue regeneration and wound healing. The reduction in pain scores observed in this case may also be attributed to decreased inflammation and improved local tissue environment.

Compared to conventional wound management modalities such as povidone-iodine dressings, hydrogen peroxide irrigation, or advanced dressings, Guggulu Avachurnana offers certain practical advantages. It is simple to apply, does not require specialized equipment, and is relatively economical. Additionally, the absence of chemical irritants may contribute to a more favorable healing environment, minimizing tissue damage and promoting physiological repair.

The findings of this case highlight the potential role of Guggulu Avachurnana as an effective local therapeutic modality in postoperative infected wounds. Its dual action in wound cleansing and healing aligns with both classical Ayurvedic principles and modern wound care objectives. Moreover, its applicability in low-resource settings makes it a clinically relevant and accessible intervention.

However, as this is a single case observation, the results should be interpreted with caution. Further studies involving larger sample sizes and controlled comparative designs are required to validate these findings and establish standardized treatment protocols.



II. CONCLUSION

The present case demonstrates that Guggulu Avachurnana is an effective local therapeutic modality in the management of postoperative infected wounds with slough. The intervention facilitated efficient Vrana Shodhana through progressive removal of necrotic tissue and reduction of microbial load, followed by Vrana Ropana as evidenced by early formation of healthy granulation tissue and reduction in wound size.

Clinically, the treatment was associated with decreased pain, minimal discharge, and absence of adverse effects, indicating good tolerability and safety. The simplicity of application, cost-effectiveness, and minimal requirement for additional resources make it a practical option, particularly in resource-limited settings.

These findings suggest that Guggulu Avachurnana may serve as a valuable adjunct in wound care, complementing existing surgical practices. However, further well-designed clinical studies with larger sample sizes are required to substantiate these observations and to standardize treatment protocols.

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