

Clinical Case Study

Localized Cutaneous Hypersensitivity Following *Jalaukavacharana* in a Patient with Autoimmune Thyroiditis: A Case Report

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ABSTRACT

Background: *Jalaukavacharana* (leech therapy) is an Ayurvedic para-surgical procedure generally used in the management of inflammatory and vascular conditions of the skin and underlying soft tissues. Adverse cutaneous reactions following leech application, although infrequently reported in the literature, represent an important clinical consideration. We report the case of a 34-year-old female with autoimmune thyroiditis, who developed a localized cutaneous hypersensitivity reaction manifesting as pruritus, erythema, and raised purpuric papules at the leech bite sites following leech therapy over the anterior neck region for thyroid swelling. The reaction was classified as *savisha jalauka damsa* per Sushruta. The condition was relieved by topical application of Vilwadi Gulika, as mentioned by Vagbhata in *Visha Chikitsa*, within five days, without systemic complications. This case provides valuable insight into dermatological complications of leech therapy and underscores the potential of *Visha Chikitsa* in its management.

Keywords: *Jalaukavacharana*, leech therapy, hypersensitivity, *Hirudinaria manillensis*, *savisha jalauka damsa*, Ayurveda

INTRODUCTION

Jalaukavacharana, the therapeutic application of medicinal leeches, is one of the *Raktamokshana* (bloodletting) procedures described in Ayurveda. Sushruta mentions *Jalaukavacharana* as the safest and most suitable method of *Raktamokshana* for sensitive individuals, including women, children, and the elderly[1]. It is classically indicated in conditions involving *Raktadushti*, inflammatory swellings, and localized Pitta predominant disorders.

From a biomedical perspective, leech saliva contains a complex array of pharmacologically active compounds, including hirudin, hyaluronidase, destabilase, and calin, which confer anticoagulant, anti-inflammatory, and vasodilatory properties[3]. These salivary antigens are also recognized potential allergens capable of provoking local or systemic hypersensitivity responses, particularly in patients with pre-existing immune dysregulation[4].

Adverse reactions to leech therapy, including local urticaria, contact dermatitis, and anaphylaxis, are documented in the contemporary literature. However, their classical Ayurvedic analogue — *savisha jalauka damsa* — and its management through traditional formulations remain underreported in indexed clinical literature. This report presents a case in which such a

reaction occurred in an immunologically vulnerable patient and was successfully managed using the classical formulation *Vilwadi Gulika*, thereby offering a documented integrative precedent for clinical practice.

CASE DESCRIPTION

Patient Background and Clinical Presentation

A 34-year-old female presented to the outpatient department with a chief complaint of diffuse anterior neck swelling of gradual onset. She had a confirmed diagnosis of hypothyroidism for the past 10 years and was on regular levothyroxine replacement therapy. Her thyroid-stimulating hormone (TSH) levels were consistently within the laboratory reference range (0.4–4.0 mIU/L) under pharmacological management. However, anti-thyroid peroxidase (anti-TPO) antibody titres remained persistently elevated at 500–1000 IU/mL (reference range: <35 IU/mL) across serial assessments, consistent with underlying autoimmune thyroiditis (Hashimoto's thyroiditis).

On physical examination, a diffuse, non-tender swelling was palpable in the anterior neck corresponding to the anatomical extent of the thyroid gland. The swelling was soft in consistency, moved with deglutition, and had no associated lymphadenopathy or overlying skin changes. Ultrasonography of

the thyroid gland revealed diffuse enlargement with heterogeneous echotexture and increased parenchymal echogenicity bilaterally, with no discrete nodular lesion or malignant features identified. Vascularity was mildly increased on Doppler assessment, consistent with chronic autoimmune thyroiditis. Fine needle aspiration cytology (FNAC) was not performed, as the clinical and sonographic profile was consistent with benign goitre in the setting of autoimmune thyroiditis.

As per Ayurveda, the thyroid swelling could be correlated with the condition of *Galaganda*. Along with internal medications, incorporating *Jalaukavacharana* as an adjunct para-surgical procedure to address local *Raktadushti* and reduce the thyroid swelling[5], consistent with its classical indication in *Galaganda*[6].

The patient had no known history of drug allergies, atopic conditions, or prior hypersensitivity reactions. No prior exposure to leech therapy was reported. There was no personal or family history of anaphylaxis or autoimmune dermatological conditions beyond her documented thyroiditis. General skin examination prior to the procedure was unremarkable, with no active dermatitis, eczema, or lesions at the intended application site.

Pre-Procedural Assessment

Before scheduling *Jalaukavacharana*, a thorough pre-procedural assessment was conducted. Baseline vital parameters — including blood pressure (118/76 mmHg), pulse rate (78 bpm), respiratory rate (16 breaths/min), and temperature (98.4°F) — were recorded and found to be within normal limits. Complete blood count, coagulation profile (prothrombin time and activated partial thromboplastin time), and blood glucose were assessed to exclude contraindications. A dermatological examination of the anterior neck confirmed no active skin pathology at the planned application site.

Given the patient's background of autoimmune thyroiditis and persistently elevated anti-TPO titres — indicative of heightened immune reactivity — the elevated risk of hypersensitivity was noted and discussed with the patient. Informed written consent was obtained, explicitly including disclosure of the potential for local or systemic allergic reactions. The patient was counselled regarding signs of adverse reactions and emergency contact protocols.

The medicinal leeches used were of the species *Hirudinaria manillensis*, sourced from a certified Ayurvedic supply unit. Leeches were screened for vitality and absence of prior use, maintained in clean water changed every 48 hours, and kept at regulated temperature prior to application,

consistent with classical and contemporary guidelines for leech health maintenance.

Procedure: Jalaukavacharana

Jalaukavacharana was performed in accordance with standard Ayurvedic procedural guidelines and institutional aseptic protocols. The patient was positioned supine with the neck mildly extended. The anterior pre-tracheal region overlying the thyroid gland was cleansed with an antiseptic solution and dried. The application site — the anterior pre-tracheal region — was selected on the basis of proximity to the affected thyroid tissue and classical site-of-action principles.

Two leeches were applied topically to the skin surface. An initial bite and attachment phase of approximately 2–3 minutes was observed. The patient reported mild, transient pain at the moment of initial attachment, which subsided spontaneously within minutes without any intervention. The leeches were permitted to feed undisturbed for a total of 40 minutes, after which spontaneous detachment occurred. No forced removal was required.

Upon detachment, the bite sites were cleansed with normal saline. Haridra (*Curcuma longa*) powder was applied topically to the wound sites and secured with sterile pressure dressings. The patient was kept under observation for one-hour post-procedure and discharged with instructions



for wound care and clear guidance on signs of adverse reactions requiring immediate review. (Image 1)

Image1: Application of two Jalouka (medicinal leeches, *Hirudinaria manillensis*) over the anterior pre-tracheal region of the thyroid swelling.

Observations and Clinical Findings

Approximately six hours following the completion of Jalaukavacharana, the patient returned to the department reporting localized pruritus and visible skin changes at the leech application sites. On clinical examination, multiple raised erythematous papules and urticarial plaques were observed, confined to the areas of leech attachment. A subset of lesions demonstrated a non-blanching purpuric character, suggestive of minor dermal haemorrhage at bite sites in the context of anticoagulant salivary components, distinct from systemic purpura. The surrounding skin was diffusely erythematous. Pruritus was reported as moderate in intensity and was the predominant symptom at presentation.

There was no evidence of active haemorrhage, blister formation, wound breakdown, or signs of secondary infection such as warmth, purulent discharge, or induration beyond the immediate bite sites.



Systemic examination was unremarkable: temperature was 98.6°F, pulse 80 bpm, and blood pressure 120/78 mmHg. There was no fever, lymphadenopathy, urticaria at distal sites, bronchospasm, angioedema, or any other feature suggestive of systemic anaphylaxis. The reaction was therefore classified as a localized cutaneous hypersensitivity response. (**Image2**)

Figure 2: Palpable raised, non-blanching purpuric papules at leech bite sites, observed the day following the procedure.

In Ayurvedic clinical interpretation, the presenting features of *kandu* (pruritus) and *svayathu* (local swelling/oedema) at the bite sites, arising in the post-procedural period, are consistent with the classical description of *savisha jalauka damsa* — a bite reaction attributed to a *visha swabhava* (~toxic quality) in the leech's saliva.

Based on the temporal correlation between leech application and the onset of symptoms, the characteristic distribution of lesions confined exclusively to the bite sites, and the absence of any other precipitating factor, a diagnosis of localized cutaneous hypersensitivity reaction to leech therapy was established.

In classical Ayurvedic nosology, the presenting features of *kandu* (pruritus) and *svayathu* (swelling) at the bite sites were correlated with *savisha jalauka damsa*, as described by Sushruta, denoting a toxic or hypersensitivity reaction to leech bite[7].

This classical correlation provides a framework for both diagnosis and therapeutic selection within the Ayurvedic system.

Management and Results

Based on the classical diagnosis of *savisha jalauka damsa*, the Ayurvedic formulation Vilwadi Gulika, as referenced in the *Sarpa Visha Pratishedha* chapter of the Ashtanga Hridayam Uttara Tantra, was selected for

topical application. Vilwadi Gulika comprises *Vilwa* (*Aegle marmelos*), *Surasa* (*Ocimum sanctum*), *Karanja* (*Pongamia glabra*), among other constituents detailed in **Table 1**, and is indicated for the treatment of toxicity resulting from snakes, spiders, scorpions, and similar sources [8]. The formulation was prepared as an aqueous paste using a pestle and mortar with minimal water and applied to the affected bite sites twice daily.

Table 1: Ingredients of Vilwadi Gulika.

Drug Name	Botanical / Zoological Name	Part Used
Vilwa	<i>Aegle marmelos</i> Corr.	Root
Surasā	<i>Ocimum sanctum</i> Linn.	Seeds, Flower
Karanja	<i>Pongamia glabra</i> Pierre.	Fruit
Tagara	<i>Valeriana wallichii</i> DC.	Root
Surahwa	<i>Cedrus deodara</i> Roxb.	Heartwood
Āmalakī	<i>Emblia officinalis</i> Gaertn.	Fruit
Harītakī	<i>Terminalia chebula</i> Retz.	Fruit
Vibhītakī	<i>Terminalia belerica</i> Roxb.	Fruit
Śuṇṭī	<i>Zingiber officinale</i> Rosc.	Rhizome
Marica	<i>Piper nigrum</i> Linn.	Fruit
Pippalī	<i>Piper longum</i> Linn.	Fruit
Haridrā	<i>Curcuma longa</i> Linn.	Rhizome
Dāruharidrā	<i>Cocinium fenestratum</i> Gaertn. & Colber.	Heartwood
Goat's urine	<i>Capra aegagrus</i> Gmelin.	Urine

Clinical response was prompt and progressive. Within an hour of initiating topical Vilwadi Gulika (by 23-03-2025), the patient reported marked reduction in pruritus. Erythema was

visibly reduced. The purpuric papules remained present but showed no new formation or peripheral spread. By day five of application (27-03-2025), complete remission

of pruritus was achieved, erythema had fully resolved, and residual discolouration at the bite sites had normalized to skin tone. Skin texture at the application sites was restored to baseline. No secondary complications were

observed at any stage of the follow-up period.(Table 2, Figure 3)

Figure 3: Complete remission of discoloration on the 4th day.

Table 2: Clinical Timeline



Date	Observations	Management
22-03-2025	<i>Jalaukavacharana</i> performed over anterior pre-tracheal region for Galaganda (thyroid swelling). Approximately 6 hours post-procedure: localized pruritus and urticarial lesions with erythematous papules noted at bite sites. Patient afebrile; no systemic symptoms.	Topical application of Vilwadi Gulika initiated. Patient advised to avoid scratching and to monitor for systemic symptoms.
23-03-2025	Significant reduction in pruritus reported by patient. Erythema mildly reduced. Purpuric papules persist but show no progression. No systemic involvement or new lesions noted.	Continued topical application of <i>Vilwadi Gulika</i> .
27-03-2025	Full resolution of erythema and discolouration at bite sites. Skin texture restored to baseline. No residual lesions, scarring, or complications noted. Patient expressed satisfaction with outcome.	Vilwadi Gulika application discontinued. Follow-up scheduled.

Discussion

Complications following leech therapy are generally considered rare, and according to Sushruta, these complications are attributed to the use of poisonous leeches and those collected from contaminated waters. The most

documented and widely acknowledged complication of leech therapy in contemporary literature is infection. Other complications, such as prolonged bleeding and allergy, are less frequently documented. This case presents a relatively underreported

complication of medicinal leech therapy. The patient developed erythematous papules and localized pruritus approximately 6 hours after leech therapy, indicative of allergic reactions. Leech saliva contains several bioactive substances, including histamine-like compounds, known to cause allergic reactions[4]. When these substances enter the bloodstream, they may release endogenous histamine from host mast cells and basophils [9]. The bioactive substances with anaesthetic and anti-inflammatory properties may initially mask local pruritus, but as the proteins in leech saliva trigger IgE antibodies to bind to receptors on the mast cell surface, progressive mast cell degranulation occurs, resulting in the formation of papules[10]. The 6-to-12-hour delay in symptom onset suggests a late-phase Type I reaction, where IgE-mediated mast cell degranulation leads to the observed pruritus and urticarial papules. Additionally elevated anti-TPO antibodies (500–1000 IU/mL) indicate a chronically active immune system, which might have contributed to the exaggerated hypersensitivity response.

The symptoms observed in this patient, align with those of *Savisha Jalauka Damsa* as described by Acharya Sushruta. The leeches used in this study belonged to the species *Hirudinaria manillensis*, a medicinal leech species predominantly used in India. These leeches exhibit all the characteristics of medicinal leeches described by Acharya

Sushruta. However, Sushruta also mentions that leeches collected from contaminated water are of a poisonous variety[11]. Since these particular leeches were kept in stagnant water for an extended period, this may have contributed to the adverse reactions observed in this case. The use of Vilwadi Gulika proved effective in managing the symptoms, suggesting a potential role for Visha Chikitsa in addressing such complications.

This case underscores two clinically significant considerations in the practice of *Jalaukavacharana*. Firstly, it highlights the risk of localized hypersensitivity induced by active constituents in leech saliva. Secondly, it provides clinical evidence for the efficacy of the classical Ayurvedic formulation Vilwadi Gulika in managing post-procedural cutaneous hypersensitivity, consistent with its Visha Chikitsa indication. Pre-procedural immunological screening, including documentation of IgE levels and a directed allergy history, might be considered standard practice before *Jalaukavacharana* in patients with known autoimmune disorders. The integration of a formal skin sensitivity screening protocol, analogous to patch testing for contact allergens, may further stratify risk and guide procedural decision-making. Practitioners should also be equipped with immediate management protocols for adverse reactions. The successful use of Vilwadi Gulika as a sole topical agent in achieving

complete resolution warrants further pharmacological investigation.

Conclusion

This case highlights a significant, yet underreported, dermatological complication of *Jalaukavacharana*. The development of localized purpuric papules and pruritus underscores that leech therapy, though safe, can trigger adverse hypersensitivity reactions, particularly in individuals with pre-existing immune dysregulation.

The effective management of these symptoms through the topical application of Vilwadi Gulika substantiates the clinical applicability of Visha Chikitsa principles in addressing procedural complications. Further research is necessary to elucidate the precise mechanisms by which Vilwadi Gulika mitigates hypersensitivity reactions. This case indicates that the *Savisha* quality of a leech bite may not solely be an intrinsic property of the leech but could also be influenced by the host's immunological hyper-reactivity.

Ultimately, documenting such adverse events and their successful traditional management is essential for the evolution of a standardized, safe, and evidence-based practice of Shalya Tantra in the global medical landscape.

Patient Consent Statement

Written informed consent was obtained from the patient for clinical management, procedural documentation, and publication of this case report, including consent for use of

clinical photographs (Figures 1, 2 and 3). Patient identifying information has been withheld to protect confidentiality.

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Conflict of Interest

The authors declare no competing financial interests.

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