website : www.ijacare.in e-ISSN No.: 2457-0443

INTERNATIONAL JOURNAL OF AYUSH CASE REPORTS

Effect of Multimodal Ayurvedic Treatment and J*alaukavacharana* (Leech Therapy) in Superficial Thrombophlebitis with Cellulitis: A Case Report

Anjana P[1*], Revathy Raveendran[1], Ancy S M[1], Anu P Sunder[2]

[1]PG Scholar, [2]Assistant Professor, Department of Shalyatantra, Government Ayurveda Medical College, Thiruvananthapuram, Kerala, India

ABSTRACT:

Cellulitis, commonly caused by *Streptococcus pyogenes*, affects nearly 200 per 100,000 population globally and may coexist with superficial venous thrombosis (SVT), an inflammatory-thrombotic disorder seen in 3–11% of the general population, particularly women. In chronic venous insufficiency, this coexistence perpetuates a cycle of venous congestion, oedema, inflammation, and recurrent infection that often responds poorly to conventional therapy. In this case, a 55-year-old female with a 23-year history of progressive bilateral lower-limb oedema and recurrent pruritic, oozing wounds around both ankles, accompanied by intermittent fever. She had received prior allopathic and homoeopathic treatment with only temporary relief. Clinical examination and laboratory findings confirmed active local inflammation with elevated inflammatory markers. She underwent a six-week multimodal Ayurvedic protocol comprising internal medications *Rasnaerandadi kashaya 90ml, Punarnavadi kashaya 90ml, and Manjishtadi Kashayam 60 ml; Kaishora Guggulu 2 bd; Punarnavasavam 25ml bd* and proprietary anti-inflammatory formulations, sequential external therapies (*Lepa and Kashaya Dhara*), and three sittings of *Jalaukavacharana* (medicinal leech therapy). Progressive improvement was observed after each sitting, with pain reducing from 8 to 2 on the Visual Analogue Scale, complete wound healing, resolution of itching and discharge, improved skin texture, and marked reduction in inflammatory markers, with no recurrence on follow-up. This case suggests that an integrated Ayurvedic approach incorporating *Jalaukavacharana* may offer sustained benefit in chronic cellulitis complicated by superficial thrombophlebitis and warrants further clinical investigation.

KEYWORDS: Ayurveda, Cellulitis, *Jalaukavacharana,* Leech therapy, *Raktamokshana*, Superficial thrombophlebitis.

Received: 29.08.2026	Accepted: 03.11.2026	Published: 15.11.2026

This work is licensed under a Creative Commons Attribution 4.0 International License

© 2026 International Journal of AYUSH Case Reports | Published by Tanaya Publication, Jamnagar.

QR Code

***Corresponding Author:**

Dr. Anjana P.

PG Scholar, Department of Shalyatantra, Government Ayurveda Medical College, Thiruvananthapuram, Kerala, India

Email: anjanasaikrishnan5515@gmail.com

INTRODUCTION:

Cellulitis is an acute, spreading bacterial infection of the skin and subcutaneous tissues, commonly caused by Streptococcus pyogenes. The global incidence is estimated at approximately 200 cases per 100,000 population, predominantly affecting middle-aged and older adults. It presents with erythema, warmth, tenderness, oedema, and pain and may lead to abscess formation, bacteraemia, or tissue necrosis if inadequately treated. Superficial thrombophlebitis, also known as superficial vein thrombosis (SVT), is an inflammatory-thrombotic disorder of superficial veins characterised by pain, erythema, tenderness, and palpable cord-like veins [1]. It affects approximately 3–11% of the general population and is more common in women, accounting for 50–70% of reported cases. This female predominance is largely explained by hormonally mediated changes in venous physiology.[2] Although often considered benign, SVT may be complicated by deep vein thrombosis, pulmonary embolism, recurrent cellulitis, and chronic venous insufficiency. [3]

The coexistence of cellulitis and SVT presents a therapeutic challenge, as persistent venous congestion, oedema, and inflammation may contribute to recurrent infection, delayed wound healing, chronic pain, and impaired mobility[4]. Conventional management includes antibiotics, anti-inflammatory agents, and compression therapy; however, underlying venous dysfunction may persist, contributing to recurrence.

From an Ayurvedic perspective, cellulitis can be correlated with *Vrana Shopha,* described by *Acharya Sushruta* as inflammatory swelling involving the skin and *Mamsa Dhatu* [5]. Superficial thrombophlebitis may be interpreted in the context of Sira Granthi or *Siragata Vata*, involving *Vata* and *Rakta* vitiation and manifestations of venous obstruction[6]. *Jalaukavacharana*, a form of *Raktamokshana*, was incorporated into the integrated Ayurvedic management, along with internal and external therapies, to address local inflammation and venous congestion. [7]

The present case describes the management of chronic recurrent cellulitis associated with superficial thrombophlebitis and longstanding chronic venous insufficiency in a patient who experienced only temporary relief with conventional treatment. The clinical improvement following an integrated Ayurvedic treatment protocol, including *Jalaukavacharana*, is presented to explore its potential role in managing this complex condition. Further controlled clinical studies are warranted to establish the efficacy and safety of this approach.

CASE REPORT:

Patient Information

A 55-year-old female patient, with no known history of diabetes mellitus or hypertension, gradually developed progressive swelling of both lower limbs over the past 23 years. Later, around 10 years ago, she developed aching pain in both legs, which was aggravated by prolonged standing.

Around 5 years before, she noticed discolouration of the skin with an itchy wound around both ankles, associated with episodes of fever. She took allopathic as well as homoeopathic treatment, which provided only temporary symptomatic relief [Details mentioned in Table 2. There was no known relevant medical, family, or psychosocial history. Clinical findings are shown in the table -1. Clinical photograph during admission shown in Figure- 3.

Diagnosis

Based on the history, PE, LE and Doppler studies [Figure-1], the case was diagnosed as superficial thrombophlebitis associated with cellulitis.

THERAPEUTIC INTERVENTION:

The prescribed medicines and procedure is mentioned in the Table-4 and Table-5.

Medicinal leeches were procured from authorised hospital source for therapeutic purpose. Collected leeches were maintained in a clean container with dechlorinated water with adequate space for movement. The water was changed every 3 days and the storage container was replaced every 7 days to maintain hygienic condition and preserve the viability of leeches.

Clinical photographs were taken after obtaining prior permission from the patient. [Figures3-6]

Follow up and outcome:

The patient was followed up regularly throughout the six-week treatment period and reassessed clinically after each sitting of *Jalaukavacharana*. Progressive improvement was observed in both subjective symptoms and objective clinical findings. [Figure 5]

Following the first sitting, pain decreased from 8 to 5 on the Visual Analogue Scale (VAS), accompanied by noticeable reduction in itching and local tenderness. After the second sitting, itching and wound discharge resolved completely, with marked reduction in erythema and oedema. The skin gradually regained a near-normal texture with disappearance of scaling. Following the third sitting, the VAS score further decreased to 2, and the patient reported significant relief from heaviness and discomfort in both lower limbs. [Figure- 6]

Serial laboratory investigations demonstrated progressive resolution of inflammation. The erythrocyte sedimentation rate (ESR) decreased from 86 mm/hr at baseline to 57 mm/hr and subsequently to 48 mm/hr, while C-reactive protein (CRP) declined from 4.9 mg/dL to 0.5 mg/dL, indicating marked reduction in systemic inflammation shown in Table 3.

Repeat venous Doppler ultrasonography performed after completion of treatment demonstrated improvement in venous function [Figure-2]. The previously documented saphenofemoral junction (SFJ) incompetence, initially graded as Grade II in one limb and Grade I in the other, improved to mild SFJ incompetence bilaterally. These radiological findings correlated with the clinical improvement in pain, oedema, and inflammatory signs.

By the end of treatment, the wounds had healed completely with no residual

discharge or evidence of active cellulitis. Brawny induration and lower-limb oedema had markedly reduced, the skin regained near-normal texture, and the patient was able to perform routine daily activities without pain or functional limitation.

The patient was advised to continue supportive internal medications, maintain limb hygiene, avoid prolonged standing, practice regular limb elevation, and attend periodic follow-up. At the two-month follow-up, there was no recurrence of cellulitis, wound discharge, or superficial thrombophlebitis. Clinical improvement was sustained, and follow-up Doppler findings remained stable, indicating a favourable short-term outcome. The patient was reviewed again in the outpatient department (OPD) six months after completion of treatment and remained symptomatically stable, with no recurrence of cellulitis, wound discharge, superficial thrombophlebitis, or worsening of lower-limb oedema, suggesting sustained therapeutic benefit.

Table- 1: Clinical findings

	Left	**Right**
Inspection	• Reddish discolouration below calf region • Blackish discolouration around the wound • Wound with flaky, weepy skin over dorsal forefoot • Swelling ++ • Mild oozing from wound	• Blackish discolouration around the wound • Wound with flaky skin over dorsal forefoot • Swelling + • No oozing from wound
Palpation	• Warmth present, grade 2 tenderness • Brawny induration	• No warmth, tenderness • Brawny induration present

Table- 2: Time line of events

Date	**Events**
05/08/25	Consulted an allopathic physician and took antibiotic treatment for 2 weeks. Did not get considerable relief
19/08/25	Consulted a homoeopathic physician and took internal medication for one week; no considerable relief
03/09/25	Consulted GAVC TVPM and internal medications started
09/09/25	Got admitted in GAVC TVPM for IP management
12/10/25	Got discharged

Table- 3: Laboratory Investigations

Investigations	10/09/25	29/09/25	13/10/25
ESR	86 mm/hr	57 mm/hr	48 mm/hr
CRP	4.9 mg/dL	0.5 mg/dL	0.5 mg/dL

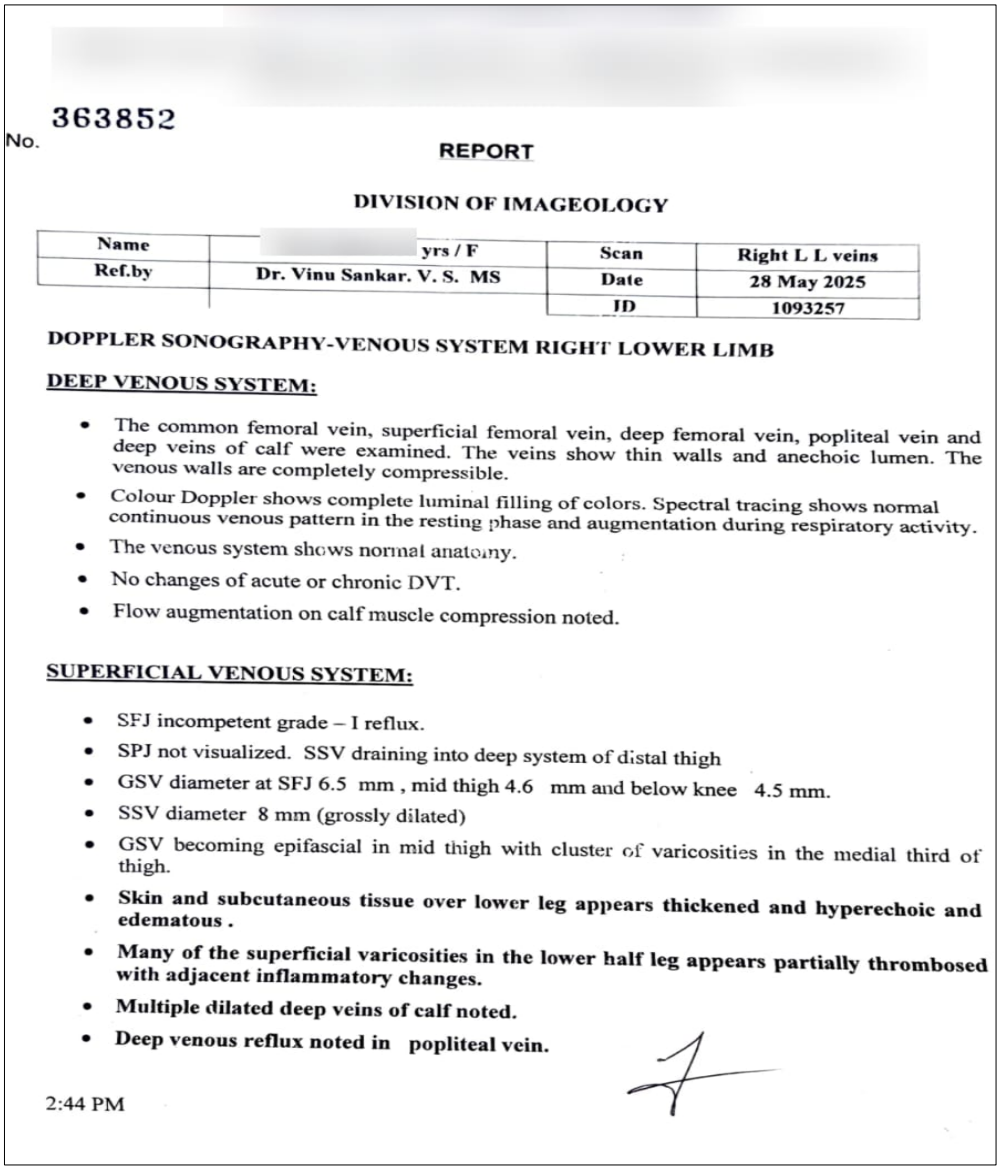
Table 4: Therapeutic intervention

Date	Internal medicine	Ext procedure	Assessment
09/09/25 to 16/09/25	1. *Rasnaerandadi ks*-90 ml at 6 am, 6 pm before food 2.*Punarnavadi ks*-90ml 11am,8pm 3.T *Kaisoraguggulu* 2-0-2 with 1 4.T septilin 2-2-2afterfood	*Jadamayadi lepam*-below knee for both legs except wound area-4days	After 4 days, swelling and redness increased; a burning sensation was also noted. *Lepam* stopped after 4 days

Table 5: Therapeutic intervention

17/09/25 to 3/10/25	1. *Manjishtadi ks*-60 ml 6 am, 6 pm before food 2.*Punarnavadi ks*-90ml 11am,8pm 3.T *Kaisoraguggulu* 2-0-2 with 1 4. *Punarnavasavam* 25 ml-0-25 ml after food 5.T septillin 1-1-1afterfood 6.T *shadharanam* 2-0-2 after food	Local *Dhanyamla dhara* Below both knees-10 days	Swelling and itching reduced considerably
27/09/25		*Jalaukavacharana* - 1st sitting with 2 large leeches (Hirudinaria bpling) [shown in figure 4]	
		Panchathikta Kashaya dhara + kottamchukkadi lepam -7 days	Itching and pain reduced from VAS 8 to 5
4/10/25		*Jalaukavacharana* - 2nd sitting with 3 large leeches	

		Aragwadadi Kashaya dhara+aragwadadi lepam -7days	Itching and oozing from the wound stopped completely Skin texture returning to normal, flaky appearance absent
12/10/25		*Jalaukavacharana* - 3rd sitting with 4 leeches	VAS scale reduced from 5 to 2



No. 363852

REPORT

DIVISION OF IMAGEOLOGY

Name	yrs / F	**Scan**	**Right L L veins**
Ref.by	**Dr. Vinu Sankar. V. S. MS**	**Date**	**28 May 2025**
		ID	**1093257**

DOPPLER SONOGRAPHY-VENOUS SYSTEM RIGHT LOWER LIMB

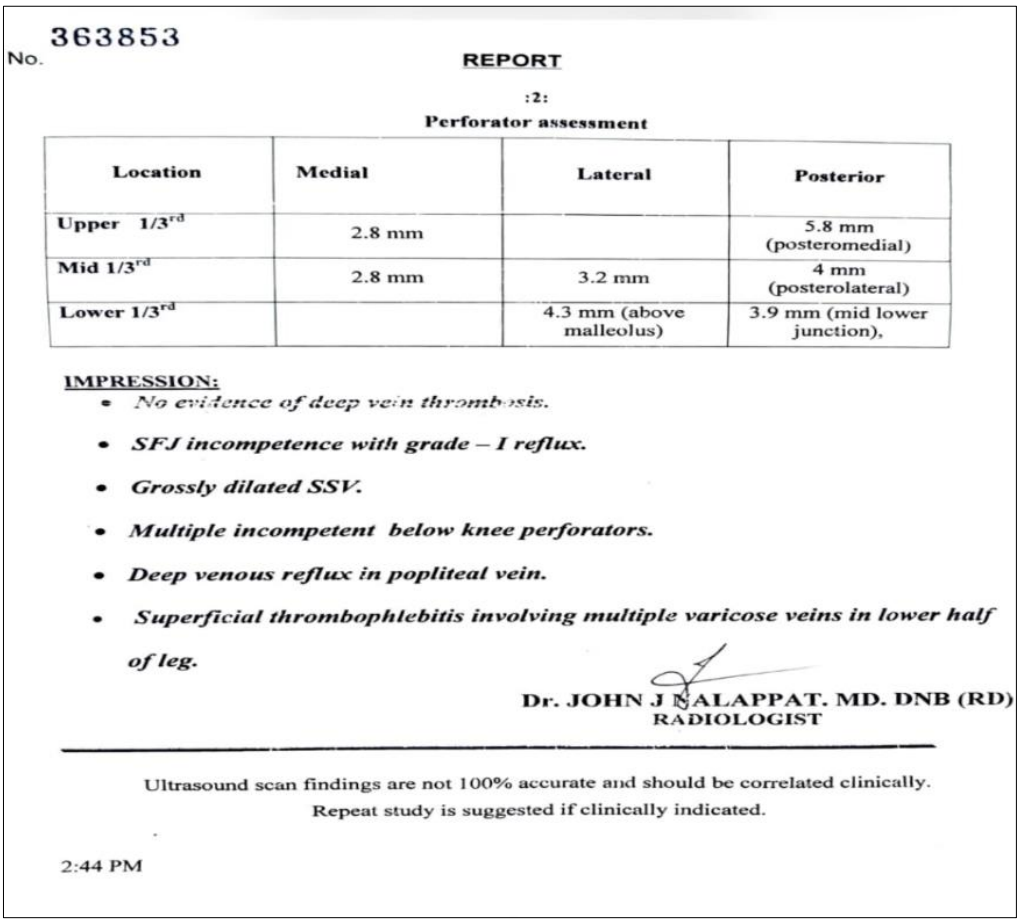
DEEP VENOUS SYSTEM:

- The common femoral vein, superficial femoral vein, deep femoral vein, popliteal vein and deep veins of calf were examined. The veins show thin walls and anechoic lumen. The venous walls are completely compressible.
- Colour Doppler shows complete luminal filling of colors. Spectral tracing shows normal continuous venous pattern in the resting phase and augmentation during respiratory activity.
- The venous system shows normal anatomy.
- No changes of acute or chronic DVT.
- Flow augmentation on calf muscle compression noted.

SUPERFICIAL VENOUS SYSTEM:

- SFJ incompetent grade – I reflux.
- SPJ not visualized. SSV draining into deep system of distal thigh
- GSV diameter at SFJ 6.5 mm , mid thigh 4.6 mm and below knee 4.5 mm.
- SSV diameter 8 mm (grossly dilated)
- GSV becoming epifascial in mid thigh with cluster of varicosities in the medial third of thigh.
- **Skin and subcutaneous tissue over lower leg appears thickened and hyperechoic and edematous .**
- **Many of the superficial varicosities in the lower half leg appears partially thrombosed with adjacent inflammatory changes.**
- **Multiple dilated deep veins of calf noted.**
- **Deep venous reflux noted in popliteal vein.**

2:44 PM



No. 363853

REPORT

:2:

Perforator assessment

Location	Medial	Lateral	Posterior
Upper 1/3rd	2.8 mm		5.8 mm (posteromedial)
Mid 1/3rd	2.8 mm	3.2 mm	4 mm (posterolateral)
Lower 1/3rd		4.3 mm (above malleolus)	3.9 mm (mid lower junction),

IMPRESSION:

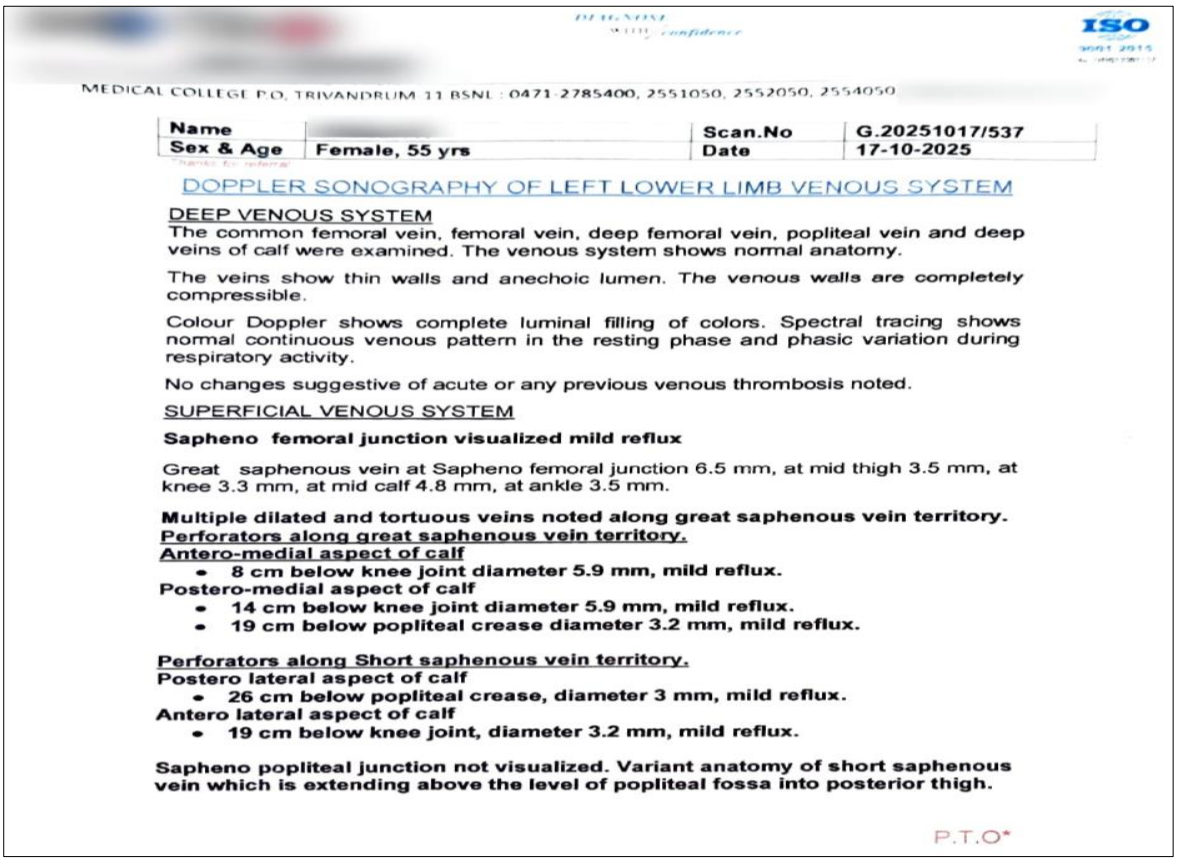
- *No evidence of deep vein thrombosis.*
- ***SFJ incompetence with grade – I reflux.***
- ***Grossly dilated SSV.***
- ***Multiple incompetent below knee perforators.***
- ***Deep venous reflux in popliteal vein.***
- ***Superficial thrombophlebitis involving multiple varicose veins in lower half of leg.***

Dr. JOHN J NALAPPAT. MD. DNB (RD)
RADIOLOGIST

Ultrasound scan findings are not 100% accurate and should be correlated clinically.
Repeat study is suggested if clinically indicated.

2:44 PM

Fig 1: MRI Report taken on 28 May 2025



MEDICAL COLLEGE P.O, TRIVANDRUM 11 BSNL : 0471-2785400, 2551050, 2552050, 2554050

Name		**Scan.No**	**G.20251017/537**
Sex & Age	**Female, 55 yrs**	**Date**	**17-10-2025**

DOPPLER SONOGRAPHY OF LEFT LOWER LIMB VENOUS SYSTEM

DEEP VENOUS SYSTEM

The common femoral vein, femoral vein, deep femoral vein, popliteal vein and deep veins of calf were examined. The venous system shows normal anatomy.

The veins show thin walls and anechoic lumen. The venous walls are completely compressible.

Colour Doppler shows complete luminal filling of colors. Spectral tracing shows normal continuous venous pattern in the resting phase and phasic variation during respiratory activity.

No changes suggestive of acute or any previous venous thrombosis noted.

SUPERFICIAL VENOUS SYSTEM

Sapheno femoral junction visualized mild reflux

Great saphenous vein at Sapheno femoral junction 6.5 mm, at mid thigh 3.5 mm, at knee 3.3 mm, at mid calf 4.8 mm, at ankle 3.5 mm.

Multiple dilated and tortuous veins noted along great saphenous vein territory.

Perforators along great saphenous vein territory.

Antero-medial aspect of calf

- **8 cm below knee joint diameter 5.9 mm, mild reflux.**

Postero-medial aspect of calf

- **14 cm below knee joint diameter 5.9 mm, mild reflux.**
- **19 cm below popliteal crease diameter 3.2 mm, mild reflux.**

Perforators along Short saphenous vein territory.

Postero lateral aspect of calf

- **26 cm below popliteal crease, diameter 3 mm, mild reflux.**

Antero lateral aspect of calf

- **19 cm below knee joint, diameter 3.2 mm, mild reflux.**

Sapheno popliteal junction not visualized. Variant anatomy of short saphenous vein which is extending above the level of popliteal fossa into posterior thigh.

P.T.O*

- 2 -

No evidence of thrombosis in the superficial veins.

Few enlarged superficial inguinal lymph nodes noted with preserved hilum and shape largest in left 20 mm in SAD with cortical thickness 3.6 mm

IMPRESSION

- No evidence of thrombosis in the deep or superficial veins of the left lower limb.
- Mild Sapheno femoral junction incompetence.
- Multiple dilated and tortuous veins in great saphenous vein and short saphenous vein territory with their incompetent perforators as described.
- Diffuse subcutaneous edema in left lower limb.

****

DR.AMRITHA MDRD
(Consultant Radiologist)

(Note: This modality is having its limitations and the report should be correlated with clinical and other relevant patient data)
(IMAGES OVERLEAF)

Fig 2: MRI Report taken on 17 Oct 2025



Figure-3: Date of admission



Figure-4 During Leech application



Figure-5 Day of Discharge



Figure-6 – During follow up

DISCUSSION:

This patient's 23-year history of progressive bilateral pedal oedema, discolouration, itchy non-healing wounds, and recurrent febrile episodes suggests chronic venous compromise complicated by recurrent cellulitis. Chronic oedema impairs lymphaticovenous drainage and increases susceptibility to recurrent infection.[8] Superficial venous thrombosis (SVT) adds an inflammatory component that may aggravate the local condition. In Ayurvedic terms, the presentation correlates with *Kapha-Vata* predominant *Dushta Vrana* with associated *Rakta-Pitta Dushti*, manifested as oedema, discolouration, pain, and stiffness, providing a rationale for considering *Raktamokshana [9]*.

Jalaukavacharana is traditionally preferred for delicate, inflamed, or tender tissues unsuitable for sharp bloodletting instruments.[10] Leech therapy may promote local decongestion through blood removal and salivary bioactive substances, including hirudin, anticoagulant factors, and anti-inflammatory peptides, which may influence local circulation and inflammation.[11] In this patient, VAS scores decreased from 8 to 2, with cessation of oozing and improvement in skin changes following successive sittings.

Internal medications-probable mode of action

Rasnaerandadi Kashayam (Rasna, Eranda, Bala, Sahachara, Guduchi, Devadaru, Ativisha, Shunthi, etc.) is traditionally indicated in *Vata-Kapha* disorders associated with pain, stiffness, and swelling. Its constituent herbs have reported anti-inflammatory and analgesic potential, with *Guduchi* contributing possible immunomodulatory effects.[12]

Punarnavadi Kashayam / Punarnavasavam, containing *Punarnava* (*Boerhavia diffusa*), is traditionally used for *Shotha* (oedema). *Punarnava* has reported diuretic and anti-inflammatory activities that may support its use in oedematous conditions.[13]

Kaishora Guggulu, traditionally indicated in *Vatarakta* and *Margavarana*, was included to address the associated *Rakta-Kapha* pathology. A comparative clinical study in *Utthana Vatarakta* reported symptomatic improvement, providing a rationale for its use in this case.[14]

Septilin, a polyherbal formulation containing ingredients such as *Guggulu, Yashtimadhu*, and *Guduchi,* has reported immunomodulatory and anti-inflammatory activities, including effects on inflammatory mediators. It was used as an adjunct in view of the patient's elevated ESR and CRP.[15]

Manjishtadi Kashayam, based on *Manjishta* (*Rubia cordifolia*), is traditionally indicated in *Rakta-Pitta* disorders and skin conditions such as *Pama* and *Raktamandala*. *Manjishta* has reported anti-inflammatory, antioxidant, antimicrobial, and wound-healing properties that may be relevant to the patient's discoloured and oozing skin lesions.[16,17]

Shaddharanam Tablet and *Punarnavasavam* were used as adjuncts, traditionally supporting *Deepana-Pachana* and the management of *Rakta Dushti*, respectively. These formulations were intended to support *Agni* and

address the associated *Ama* and *Kapha-Rakta* pathology.[18]

External therapies

Jadamayadi Lepam, a *Kapha-Vata-hara* formulation, was initially applied but discontinued after four days because swelling, redness, and burning worsened. This highlights the importance of monitoring local responses and modifying external treatment when irritation or deterioration occurs.

Dhanyamla Dhara, a fermented cereal-liquid therapy classified under *Parisheka Sweda*, is traditionally used in *Kapha-Vata* conditions associated with oedema and inflammation. Its use following discontinuation of the lepa was associated with reduced swelling and itching during days 17–27.[19]

Panchatikta Kashaya Dhara with Kottamchukkadi Lepam, administered after the first leech-therapy session, was intended to address residual inflammation and itching while supporting skin recovery through their traditionally described *Pitta-Kapha-hara* and *Vata-Kapha-hara* properties.

Aragwadadi Kashaya Dhara with Aragwadadi Lepam, administered after the second leech-therapy session, was selected for its traditional use in skin disorders, chronic wounds, and pruritus. The subsequent cessation of oozing and itching, along with improved skin texture, was consistent with a favourable clinical response.[20]

The temporal association between the combined treatment regimen and clinical improvement was reflected in the reduction of VAS scores from 8 to 2, ESR from 86 to 48 mm/hr, and CRP from 4.9 to 0.5 mg/dL. The findings suggest a favourable outcome following *Jalaukavacharana*, internal medications, and sequential external therapies. However, as this is a single case report involving multiple concurrent interventions, the independent contribution of each treatment cannot be established.

Patient perspective:

"I had been living with swelling in both my legs for more than twenty years. Over time it got worse — the skin turned dark, then wounds appeared around my ankles that would itch, ooze, and sometimes get feverish. I tried both allopathic and homeopathic treatments over the years, but the relief was always temporary, and the swelling and discoloration kept coming back. When I started this Ayurvedic treatment, I was initially anxious, especially about the leech therapy, as I had never experienced anything like it before. But after the very first sitting, I noticed the heaviness and tightness in my legs reduce considerably. With each further sitting, the itching, pain, and oozing kept reducing, and by the third sitting, the burning sensation and discharge from the wound had stopped completely. My pain, which I would rate as almost unbearable (8 out of 10) at the start, came down to barely noticeable (2 out of 10) by the end of treatment. The internal medicines and the local applications also helped — though one of the initial pastes actually increased my swelling and irritation for a few days, and I was glad the doctors changed it quickly once they saw it wasn't suiting me. The stream-pouring treatments

(*Dhara*) were soothing and helped calm the burning and itching.

Overall, I am satisfied with this line of treatment. For the first time in many years, my skin looks and feels almost normal, the wound has healed, and I feel confident that this improvement will last. I would recommend this approach to others suffering from similar long-standing leg problems."

Informed consent of patient:

Written informed consent was obtained from the patient for publication of this case report and any accompanying images/clinical details. The patient was informed that her identity would remain anonymised and that her name, contact details, and any identifying photographs would not be disclosed.

Limitation of Study:

This study is limited by its single-patient design and the absence of a control group, which restrict the generalisability of the findings. The use of multiple Ayurvedic interventions limits the ability to attribute the observed clinical improvement specifically to Jalaukavacharana. Further controlled clinical studies involving larger patient populations and long-term follow-up are required to establish the efficacy of this treatment.

Conflict of interest: The author declares that there is no conflict of interest.

Guarantor*:* The corresponding author is the guarantor of this article and its contents.

Source of support: None

How to cite this article:

Anjana P, Revathy Raveendran, Ancy S M, Anu P Sunder. Effect of Multimodal Ayurvedic Treatment and J*alaukavacharana* (Leech Therapy) in Superficial Thrombophlebitis with Cellulitis: A Case Report. Int. J. AYUSH Case Reports. 2026; 10(4-A): 1-13

REFERENCES:

1. McNamara DR, Tleyjeh IM, Berbari EF, Lahr BD, Martinez J, Mirzoyev SA, et al. A predictive model of recurrent lower extremity cellulitis in a population-based cohort. Arch Intern Med. 2007;167(7):709-15.
2. Mangiafico M, Costanzo L. Superficial venous thrombosis: a comprehensive review. Healthcare (Basel). 2024;12(4):500.
3. McNamara DR, Tleyjeh IM, Berbari EF, Lahr BD, Martinez J, Mirzoyev SA, et al. A predictive model of recurrent lower extremity cellulitis in a population-based cohort. Arch Intern Med. 2007;167(7):709-15
4. Leon L, Giannoukas AD, Dodd D, Chan P, Labropoulos N. Clinical significance of superficial vein thrombosis. Eur J Vasc Endovasc Surg. 2005;29(1):10-7.
5. Javali J, Anusha K. Ayurvedic management of Vranashopha w.r.t. cellulitis: a single case study. J Ayurveda Integr Med Sci. 2024;9(9):287-93.
6. Sawarkar P, Sawarkar G, Gandhi M. Management of Siraj Granthi (varicose vein) through Ayurveda. Int J Innov Res Growth. 2021;3:131-41.
7. Ganguly P, Dutta S, Debnath N, Jana K. Concept of medicinal leech

therapy or hirudotherapy in Ayurvedic and modern aspects. Int Ayurvedic Med J. 2025;13(2):450-9.
8. Singh SK, Rajoria K. Medical leech therapy in Ayurveda and biomedicine: a review. J Ayurveda Integr Med. 2020;11(4):554-64..
9. Shastri AD, Sushruta Samhita. Sutra Sthana, Jalaukavacharaniya Adhyaya, Chapter 13. 14th ed. Chaukhambha Sanskrit Sansthan, Varanasi. 2020; p-78
10. Singh SK, Rajoria K. Medical leech therapy in Ayurveda and biomedicine: a review. J Ayurveda Integr Med. 2020;11(4):554-64.
11. Sig AK, Guney M, Uskudar Guclu A, Ozmen E. Medicinal leech therapy—an overall perspective. Integr Med Res. 2017;6(4):337-43.
12. Narayanan M. Sahasrayoga. Kashaya Prakarana. Kannur: Ashoka Pharmaceuticals; p. 82.
13. Laxmi Priya M, Tejaswini K, Sravanthi R, Simha Gayatri Y, Mahalakshmi M, Raziya Begum SD, et al. A review on medicinal properties of Punarnava. J Popul Ther Clin Pharmacol. 2026;33(1):997-1009.
14. Ramachandran AP, Prasad SM, Prasad UN, Jonah S. A comparative study of Kaishora Guggulu and Amrita Guggulu in the management of Utthana Vatarakta. AYU. 2010;31(4):410-6.
15. Nandakumar KS. Anti-inflammatory properties of Septilin in lipopolysaccharide-activated monocytes and macrophages. Immunopharmacol Immunotoxicol. 2011;33(1):55-63.
16. Narayanan M. Sahasrayoga. Kashaya Prakarana. Kannur: Ashoka Pharmaceuticals; p. 83.
17. Meena AK, Yadav AK, Niranjan US, Singh B, Nagariya AK, Rao MM. Rubia cordifolia: a review on pharmacognostical and pharmacological properties. Drug Invent Today. 2010;2(5):244-6.
18. Government of India, Ministry of Health and Family Welfare, Department of Indian Systems of Medicine and Homoeopathy. The Ayurvedic formulary of India. Part I. 2nd rev ed. New Delhi: Government of India; 2003. p. 197-201.
19. Patil VC, Rajeshwari NM, editors. Sushruta Samhita with English translation of text and Dalhana's commentary with critical notes. Vol. 1. Varanasi: Chaukhambha Publications; p. 494. Sutrasthana 45/214–216.
20. Baidya A, Baraskar C. Conceptual study of Aragwadhadi Kashaya on skin disorder w.r.t. Viruddha Ahara Vihara. J Ayurveda Integr Med Sci. 2022;7(1):146-9.