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Management Of Chronic Varicose Ulcer With Siddha Leech Therapy: A Case Report

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ABSTRACT

Varicose veins are twisted and enlarged veins that are commonly found in the legs. When veins become varicose, the valves stop working properly, allowing blood to flow backwards and the veins to engorge. Chronic wound develops on the skin due to poor circulation, often associated with varicose veins where impaired blood flow leads to persistent ulceration. A case of 45-year-old male affected with chronic non-healing ulcer precisely at the medial aspect of the left lower limb with deep vein thrombosis. He was brought with a foul-smelling ulcer with purulent discharge which was not healed despite using the allopathic treatment for months. Even with treatment, it got worsened so the fear of surgical necessity enforced him to take Siddha consultation at our clinical facility in Siddha Clinical Research Institute, Thiruvananthapuram. After leech application along with Siddha medicines for two months the wound got healed. There are no adverse effects reported during the leech application. It is concluded that leech therapy with Siddha medicines may be an effective management for chronic varicose ulcers.

Keywords: Siddha external therapy, Venous insufficiency, Hirudotherapy, *Nalavibatha punn*, *Attaividal*, *Kuruthivangal*

Introduction

Varicose veins are enlarged, twisted, and swollen veins that commonly occur in the legs. The valves in leg saphenous veins, which help prevent blood from flowing backward, may become weakened or damaged, leading to blood pooling in the veins. Varicose ulcers are formed due to chronic venous insufficiency, resulting in increased venous pressure, damaged valves, and impaired blood flow, which leads to the development of ulcers in the lower extremities. The Prevalence of varicose veins varies geographically. Currently, it is reported that globally about 2%-73% of the population is affected by varicose veins. (Aslam et al., 2022) An epidemiological survey carried out way back in 1972 on Indian railroad workers determined the prevalence of varicose veins to be 25% in southern and 6.8% in northern India. (Malhotra, 1972) *Attaividal* (Leech therapy) has been mentioned in Siddha classical literatures that it is being used for treatment for various conditions such as chronic ulcer, diabetic wounds, gangrene, trauma swelling, tumors, sprains, skin conditions, headaches, hemorrhoids, splenomegaly, amenorrhea-induced headaches, arthritis, ulcers, and other eye conditions. (KS Uthamaroyan, 1968)

In Siddha terminology, *Naalavibatham*, *Naalaviruvu* or *Naalasaruttu* are refer the clinical features of

venous dilation in lower limbs.(KS Uthamaroyan, 1968) Varicose leg ulcers are often correlated with *Naalavibatha punn* in traditional Siddha literature.(C.B.S. et al., 2023) This condition involves the obstruction of blood flow and the formation of distorted and enlarged veins in the lower extremities, hindering proper circulation.(Raffetto et al., 2020) Pain, swelling, heaviness, and tingling of the lower limbs are the most common sign and symptoms caused by varicose veins while in some individuals it is asymptomatic.

Patient information

A case of 45-year-old male patient who is a driver came with a history of venous dilation for more than 13 years to our health facility at Siddha Regional Research Institute, Poojapura, Thiruvananthapuram, Kerala. He developed deep vein thrombosis which causes worse episodic pain in the affected part of limb over 8 years. Moreover, he was suffering from a non-healing, non-necrotizing ulcer on the medial aspect of his left lower limb encircling the ankle joint with Purulent discharge for past three years. Despite undergoing conservative treatment for many years he had no significant progress in his wound status. The history of the patient did not show the presence of diabetes, hypertension, asthma, tuberculosis, heart disease and major illnesses, whereas there was no history of previous surgery in the past. A baseline assessment for pain, colour of wound, surrounding areas, discharge, burning sensation and diameter of ulcer inflammation was done. The patient was explained about the procedure and he has given consent.

Clinical feature

The wound measured 5.5 x 3.5 cm surrounded by hyper-pigmented, indurated thick skin and was warmer. The border of ulcer was established, weak, and detached. Thickened skin and hyperkeratinization was noted around the ulcer site. He was in the worst pain and unable to do his driving job. He has no lymphadenopathy, Trauma or Injury in the left lower limb. Popliteal artery and anterior and posterior tibial artery pulses were intact and devoid of any obstruction. The pretreatment blood investigation includes Complete blood count, Clotting time, bleeding time, Prothrombin time, PT-INR value, Blood glucose, HIV I & II, VDRL, HBsAg and Anti HCV. Scoring with a Visual Analog Scale (VAS) has been recorded throughout the visits. Before treatment, the VAS score were 8/10. Siddha examination of patient revealed that he was a *Vali* body constitution. *Ennvagai thervu* diagnostic tool referred the affection of disease in *Sparisam* (Skin contour) and *Niram* (Color). *Senneer* (blood), *Oon* (muscle) and *Kozhuppu* (fat) were the (*Udar kattuka*) affected physiological parts. Bates-Jensen wound assessment(Bates-Jensen et al., 2019) was used to assess the prognosis. After evaluating his eligibility and blood parameters, four consecutive leech treatments and post follow-ups were carried out on October & November 2023.

Leech treatment Procedure

The patient was instructed to be well hydrated and eat moderately on the day of leech procedure. After the vitals were checked he was asked to lie down in the bed which was maintained as an aseptic environment. Analysing the size and severity of the wound, it was decided to apply 5 – 6 leeches at a time. The bite sites of leech surrounding the ulcer was decided and marking was done to avoid confusion. The site was cleaned with gauze soaked with sterile water before starting the procedure. A fine prick was made with a sterile lancet for the leeches to attach in the desired wound site. Each leech was allowed to suck for 20 to 30 minutes. The leeches were covered by water soaked cotton gauze to aid the leech for better sucking. After the desired time, the leeches were made to detach from the skin by pouring turmeric powder at the mouth of the leech. At times, the leeches were fall

out spontaneously. The bite sites were properly observed for the stoppage of blood oozing. After, the bleeding stopped the vitals were checked and the wound dressing was done with Thiripala chooranam(M et al., 2018), Turmeric(Thiyagarajan R, 2016) and Mathan Thailam.(Arunadevi et al., 2020; Saraswathy et al., 1999; Senthilnathan et al., 2023) Post treatment the used leeches were made to spit the sucked blood by sprinkling the turmeric powder on the head of the leech. After that it was stored in water containers.

Treatment plan and Drug regimen

Bates–Jensen wound assessment was recorded. At a gap of 7–9 days, 4 sittings of leech application have been carried out. Elathy chooranam and Sangu Parpam combination and Gandhaga Rasayanam as per text, Bid with milk was given orally for 2 months. Further he was made to wash the wound regularly with Thiripala chooranam and Matthan thailam application twice in a day. The timeline of this case was outlined in Figure 1.

Results

Before treatment, there was significant blood loss, necrotic tissue surrounding the wound, pus discharge, blackish skin, peripheral edema, wound tissue induration, and a lack of granulation and epithelialization. No significant changes were observed in blood investigations before and after the treatment which was also evidenced by Visual analogy pain scale (VAS) measurements shown in Table 1.

Table 1: Visual analog pain scale

Initial visit	Leech Therapy Sitting –1	8
Follow-ups	Leech Therapy Sitting –2	6
	Leech Therapy Sitting –3	3
	Leech Therapy Sitting –4	0

A post–treatment assessment was completed one week after the fourth leech therapy session and was shown in Table 2. Following the treatment, the patient experienced no pain or tenderness except under strong pressure, and the skin color started to normalize. There were no discharges or burning sensations, and the wound diameter reduced from 19.25 Sq. cm (i.e. 5.5 x 0.5 x 3.5 cm) to nearly less than 1.4 sq cm. The Bates Jensen (BJ) Wound Assessment scale shows the score 16 after the four sitting of medicinal leech therapy. Though the patient was clinically stable, the severity of wound status was reduced and marked prognosis of healing was observed during each visit and shown in figure 2.

Table 2: Assessment and scoring of wound based on Bates Jensen (BJ) Wound Assessment Scale

Site of ulcer	Before Treatment assessment		Post Treatment assessment	
	Medial aspect of left lower limb	BJ Score	Healed ulcer of Medial aspect of left lower limb	BJ Score
Size	5.5X0.5X3.5 cm (19.25 Sq.cm)	3	2X 0.7 cm <1.4 sq cm	1
Depth	Full thickness skin loss involving damaging	3	Non–blanchable erythema on intact skin	1
Edges	Distinct, outline clearly visible, attached, even with wound base	2	Indistinct, diffuse, none clearly visible	2
Undermining	None present	1	None present	

Necrotic tissue type	None visible	1	None visible	1
Necrotic tissue amount (%)	Non visible	1	None visible	1
Exudate type	Serous: thin, watery, clear	4	None	1
Exudate amount	Moderate	4	None, dry wound	1
Skin color surrounding wound	Black and hyper pigmented	5	Black and hyper pigmented	5
Peripheral tissue edema & induration	Induration > 4cm in any area round wound	5	None present	1
Granulation tissue	Pink, &/or dull, dusky red &/or fills < 25% of wound	4	Skin intact	1
Epithelialization	25% to < 50% wound covered	4	100% wound covered, surface intact	1
Severity scoring	Before treatment score	37	Post treatment score	16*

*The Bates Jensen score after the 4 sittings of leech application was significantly reduced >50%.

Discussion

The diagnosis of *Nalavibatha punn* was based on its clinical presentation, and appropriate therapy methods, including internal therapy and leech therapy. The administration of leech therapy enhances the circulation of blood towards the injured site and modifies skin pigmentation further soothing venous valvular malfunction. (Koeppen et al., 2019) Medicinal leech therapy facilitates the wound healing process through mechanisms such as venous decongestion and improvement in blood and lymph flow.(Koeppen et al., 2019) Several research studies on skin reconstruction surgical care in animal models has shown high efficacy and provides resistance against ischemia–reperfusion injury, (Darestani et al., 2014; Moosavian et al., 2014)likewise, the leech application in the present case has marked skin changes reverting to its original colour.

The wound healing process is carried out as leeches secrete hirudin, at the time of the bite. It has a potential anti-inflammatory effect by provoking the B cells (NF-κB) pathway and multiple pro-inflammatory cytokines.(Junren et al., 2021) It is also evidenced that the bioactive substances released during the leech bite have anti-inflammatory, anticoagulant, and antioxidant properties, which help with easier healing.(Sig et al., 2017; Ying-Xin et al., 2012)

Antistasin, released by medicinal leeches, is a serine protease inhibitor (SPI) that regulates proteolytic activity. It ultimately breaks down the proteins that cause inflammatory reactions, enhances cell signaling functions, and promotes wound healing.(Tang et al., 2018) The Bates Jensen score after the 4 sittings of leech application was significantly reduced more than 50%, which supports the leech treatment has substantial role in wound healing process. The positive prognosis observed in the pre- and post-treatment assessments suggests that medicinal leech therapy can be effectively used in the management of chronic venous ulcers.

Attai maruthuvam is suggested in Siddha classical books for trauma swelling, tumours, sprains, skin conditions, headaches, hemorrhoids, splenomegaly, amenorrhea–induced headaches, arthritis, ulcers, and other eye conditions.(KS Uthamaroyan, 1968) As a consequence, it disrupts the cellular cause of "varicosity" and encourages wound healing. The use of *Attaividal*, also known as "leech therapy," is particularly helpful in the initial treatment of ulcerative wounds because it is readily

available and practically simple and effective in eliminating the disease at its source. It is noteworthy to mention that Leeches need to be prescribed and care must be made to ensure the patient has no bleed disorders during the course of treatment.

Informed Consent

The patient was thoroughly informed about the leech therapy procedures, benefits, and potential adverse events. Subsequently, he voluntarily consented to undergo the treatment and agreed to allow the data to be used for publication without revealing his identity.

Conclusion

Through this case report, leech therapy combined with internal and external Siddha regimens is recommended as a successful Siddha therapy for the treatment of chronic, non-healing venous ulcers. To support these findings, large-scale, standardized clinical studies and randomized trials are warranted. Integrating Siddha therapeutic principles into these studies could further validate and optimize the use of medicinal leech therapy for widespread clinical application.

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Author Contributions

We declare that this study was conducted by the authors named in this article: KNS have designed the study and carried out the work. CB critically analyzed the data and writing of the manuscript. MS collaborated in the data analysis while KNS and CB revised and corrected the manuscript. KA helped to supervise the work and all authors read and approved the final manuscript.

Conflicts of interest:

Authors declared that there is no conflict of interest.

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Figure. 1 Timeline information for the case study

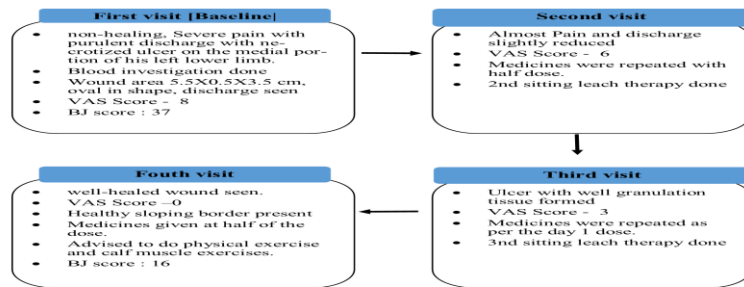


Figure-2. Prognosis of varicose ulcer on Leech therapy (1-4th Sittings after 7-10 days each)

a) On day -1 of medicinal leech therapy



b) Leech therapy second sitting.



c) Leech therapy third sitting



d) Leech therapy fourth sitting.

