

Case Study Of Leech Application In Varicose Ulcer

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Abstract: Varicose ulcers are wounds that are thought to occur due to improper functioning of venous valves, usually of the legs. They are the major occurrence of chronic wounds, occurring in 70% to 90% of leg ulcer cases. In Sushrut Samhita, where get the most scientific description of wound and its management. Similarly, Sushrut has given the almost importance to Bloodletting therapy and considered leech as the most unique and effective method of bloodletting even in infected wounds and abscesses. Aforesaid description let us to try leech therapy in venous ulcer was advised to continue weekly application of leech around the ulcer which was followed by dressing with Seethodaka oil and Dashanga lepa. This leech therapy proved very effective and the ulcer healed completely within 30 days. However further evaluation is required to be done by taking a large samples size to prove its significant in treating Venous ulcer.

Index Terms: Venous Ulcer, Jalawka, Leech Therapy

1 INTRODUCTION

About Varicose ulcers:

Occur due to increased venous hydrostatic pressure. Generally manifests on the medial side of lower one third of the leg, (Long saphenous varicosity) and also occasionally on the lateral aspect of lower leg region (short saphenous varicosity). It is generally shallow and superficial, edge is sloping, Never penetrates deep fascia, floor is covered by pale granulation. Usually painless, unless effected by secondary infections or penetrates deep causing peridontitis tibia. Shows features of healing. Generally associated with varicosity of vein. The neighboring area of the ulcer is hyper pigmented (owing to stasis of blood), indurated and tender. Women are effected more often. Occurs secondary to may years of venous disease. Discomfort, pigmentation, eczema and tenderness of skin exists for months/years prior to ulceration.

About Leech Therapy:

It is considered most unique and most effective method of bloodletting. It can be tried in all mankind including females, children, old and patients having poor threshold to pain. It drains impure blood useful in Pitta dushit Rakta diseases, various skin disorders and all types of inflammatory conditions.

References of indication of Leech Therapy in wounds:

In Sushrut Samhita Chikitsa Sthan, chapter 12 and 16, Sushrut has advocated that bloodletting by means of Leech can be practiced in all inflammatory, suppurative and painful conditions to relieve pain and inhibit suppuration including that of venous ulcerative lesions.

Table 1: Components of medicinal leech (*Hirudo medicinalis*) saliva

Hirudin	Inhibits blood coagulation by binding to thrombin
Calin	Inhibits blood coagulation by blocking the binding of von will brand factor to collagen, inhibits collagen mediated platelets aggregation
Destabilase	Monomerizing activity, Dissolve fibrin, Thrombolytic effects
Hirustatin	Inhibits Kallikrein, trypsin, chymotrypsin, neutropholic cathepsin G
Hyaluronidase	Increase interstitial viscosity, Antibiotic
Tryptase inhibitor	Inhibits proteolytic enzymes of host mast cells
Eglins	Anti inflammatory, Inhibits the activity of alpha- chymotrypsin, chymase, subatilisin, elastase, cathepsin G
Factor Xa inhibitor	Inhibits the activity of coagulation factor X a by forming equimolar complexes
Complement inhibitors	May possibly replace natural complement inhibitors if they are deficient
Carboxypeptidase A inhibitors	Increase the inflow of blood at the bite side
Histamine like subatances	Vasodilator, Increase the inflow of blood at the bite side
Acetylcholine	Vaso dilators
Anesthetic substances	Anesthetic

Aim and objective of Case Study:

- To evaluate clinical efficacy of 'Leech Therapy' in the patient with varicose ulcer.
- Refining Clinical Technique (Leech Therapy)
- Type of Study:** Observational Single Case Design without control group
- Study Centre:** Gampaha Wickramarachchi Ayurveda Hospital, Yakkala
- Study Details:** (C.R.F. Protocol in brief)
- Name of the patient:** ABC
- Registration No:** 1442
- Date of Admission:** 2016-Jan- 04

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- **Age:** 54 years,
- **Gender:** Male,
- **Religion:** Buddhist
- **Occupation:** Business
- **Diet:** Veg. and Non Veg.
- **Chief Complaints and Duration:** Pain and swelling over left lower leg, Infected wound on lateral aspect of left lower leg, Skin discoloration, Serous discharge from the wound since 2 years.

Brief history (including onset and progress):

Patient has been suffering from above symptoms since last 2 years. He took treatment for the same at private clinic but wound got infected and was not healing in spite of treatment for around 2 years. Hence he came to Gampaha Wickramarachchi Ayurveda hospital for further management. Patients' brief history did not revealed evidence of Diabetes, Hypertension, Asthma, Tuberculosis, Heart Disease or any other major illness. Similarly, there was no history of previous surgery in past.

General Examination (On the Day -1) all the vital parameters were within normal limits. Patient was hemodynamically stable.

Hb - 12.5mg/ dl
 WBC - 8000/ cu mm of blood
 RBSL - 120mg/dl
 ESR - 12mm/ hour
 Viral Markers - Negative
 Coagulation profile - Normal
 Arterial and venous color Doppler -

Multiple incompetent perforators seen in the lower limb. Competent SF and FP valves. No evidence of DVT or ischemia.

Local Examination (On the day -1)

Site of Ulcer - Lateral aspect of left lower limb
 Size of Ulcer - 4x3x0.5 cm
 Shape - Oval
 Smell - foul smell +
 Discharge - ++
 Hyperpigmentation - +++
 Epithelization - +
 Granulation tissue - +
 Edges - fibrosed, sloping
 Ankle Flare - Positive
 Local Temperature - Normal
 Arterial Pulsation - Dorsalis Pedis and Post tibial pulses are normal
 Diagnosis - None Healing Varicose Ulcer

Treatment Plan:

After the assessment wound was washed with normal saline. There after Leech was applied around the lesion. When Leech left the site by his own (after sucking blood for approx. 30 min) wound was cleaned with decoction of 'Tripala'. This was followed by dressing with gauze piece soaked in Seethodaka Oil and Dashangalepa. Finally, roll bandage was wrapped around. Dressing was done on alternate day, where as "Leech Therapy" was repeated weekly for 4 sittings. Total duration for

treatment was 30 days. & during the treatment assessment was done on Day-01, day-07, Day-14, Day-21, Day-30. Changes occurred within the treatment period has been noted on criteria of assessment.

Observation

Parameters of observations included Ankle flare, Peripheral hyperpigmentation, Size of ulcer, granulation tissues and relief in pain. Patient was observed on above parameters on every week for five weeks.

Table 01: Parameters of Observations

Parameters	Grade			
	Base line 100%	3=75%	2=50%	1=25%
Ankle flare	Base line 100%	3=75%	2=50%	1=25%
Peripheral Hyper pigmentation	Base line 100%	3=75%	2=50%	1=25%
Size of Ulcer (cm)	Base line 100%	3=75%	2=50%	1=25%
Granulation Tissue	Base line 0%	1=25%	2=50%	3=75%
Pain	Base line 100%	3=75%	2=50%	1=25%

Table 02: Progressive Report

Parameters	1 st week	2 nd week	3 rd week	4 th week	5 th week
Ankle flare	Base line 100%	50%	25%	0%	0%
Peripheral Hyper pigmentation	Base line 100%	75%	50%	50%	25%
Size of Ulcer (cm)	Base line 100%	75%	50%	5%	0%
Granulation Tissue	Base line 0%	25%	50%	5%	0%
Pain	Base line 100%	75%	25%	25%	0%

Results

With Leech Therapy and adjuvant management, the wound completely healed within 30 days. i.e. patient was cured from none healing ulcer. The images during and after treatment supports the statement mentioned.



Figure 1: Prognosis on Day 7



Figure 2: Prognosis on Day 14



Figure 3: Prognosis in Day 21 **Figure 4:** Prognosis on Day 28

Probable mechanism of action of leech therapy

1. Leech application corrects venous hypertension, reduces vascular congestion due to presence of Carboxypeptidase A inhibitors, Histamine like substances & Acetylcholine, thus it venous valve dysfunction and extra vascular fluid perfusion. This prevents leakage of proteins and isolation of extra cellular matrix molecule and growth factors, thus helps to heal the wound.
2. Leech application has peripheral vasodilator effects due to presence of vasodilator constituent in the saliva which improves blood circulation and corrects "ischemia" around the wound, thus promotes wound healing.
3. Leech application has Anti-inflammatory action on nerves due to presence of substance like Bdelins & Eglins in the saliva which prevents leukocyte accumulation in the surrounding vessels, thus inhibits release of inflammatory factors which causes chronic wound formation.

Probable mechanism of action (Ayurvedic Perspective)

Vrana shodana and Ropana effect:

- 1) After Leech application expulsion of impure blood takes place, due to which local vitiated doshas (toxins & unwanted metabolites) are removed. Similarly, it facilitates fresh blood supply & promotes wound healing by formation of "Healthy Newer Tissues". Due to improved blood circulation, skin discoloration is corrected and venous valvular dysfunction is also pacified. Thus, it breaks the pathogenesis of "varicosity" at cellular level and helps in wound healing.
- 2) Seethodaka oil and dashangalepa have both vedanashamaka and vrana ropana property. Hence, it helps in healing of wounds and relieves pain too. However, a multi centric comparative clinical trial along with valvular studies is needed to evaluate impact of "Leech Therapy" on promoting wound healing w.s.r. to Varicose ulcer..

Conclusion

With "Leech therapy", the none healing Varicose ulcer completely healed within 30 days. On the basis of this case study, we can roughly conclude that Ayurveda can give a ray of hope in the treatment of varicose veins and ulcer. None of the complications like severe bleeding, wound infection or hypersensitivity were observed during the therapy. "Leech Therapy" proves to be effective, time saving, affordable and acceptable treatment. Through treating none healing "Vericose

ulcer" is a difficult task, we have managed to treat it with "Leech Therapy" along with conventional (Ayurvedic) methods of wound care. A multi centric comparative clinical trial along with valvular studies is needed to establish this unique treatment protocol.

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