

A CONCEPTUAL REVIEW OF JALAUKAVACHARANA (LEECH THERAPY)

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ABSTRACT

The basic Ayurvedic treatment is based on two principles viz. Shodhan chikitsa (elimination Therapy) and Shaman chikitsa (internal medicine). Shodhan Chikitsa deals with five purificatory procedures popularly known as Panchakarma. Acharya Susruta included Raktamokshana in Panchakarma and described it as the best procedure because it eliminates all three vitiated Doshas viz. Vata, Pitta & Kapha. The first description of Jalaukavacharana (leech therapy) is available in Sushruta Samhita written in 800 B.C. Recently, many pieces of research have proved that leech saliva has a variety of bioactive compounds including anti-thrombin (Hirudin, bufrudin), antiplatelet (calin), factor Xa inhibitors, antibacterial and other property. The main

objective of the present article is to explore the procedures of leech therapy and research works done over a few decades on the application of leech therapy in different medico-surgical diseases. The procedure of leech therapy is documented from authors' observations and information, and its application in different diseases is gathered from various published works of the last ten years. Many clinical pieces of research show that leech therapy is beneficial in various medico-surgical diseases. Leech therapy or Jalaukavacharan is an ancient Ayurvedic bloodletting technique that has the great potential to manage many inflammatory, ischemic, and infectious diseases. Leech's saliva contains many biologically and pharmacologically active compounds that exert anticoagulant, antiplatelet, anti-inflammatory, and anti-edema effects in the host's body. Arthritis, venous congestion,

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vascular diseases, abscess, ischemic heart disease, gangrene etc. can be successfully managed by leech therapy.

KEYWORDS: Jalaukavacharana, Raktamokshana, leech therapy, hirudin.

INTRODUCTION

According to Ayurveda the disequilibrium of Tridoshas viz. Vata, Pitta and Kapha is the root cause of all the diseases. Even the definition of health in Ayurveda focus on the equilibrium of the Doshas, Agni, Dhatu & Mala. Hence, the basic Ayurvedic treatment is also based on two principles viz. Shodhan chikitsa (Elimination Therapy) and Shaman chikitsa (Internal medicine). In Shaman chikitsa vitiated Doshas are brought to equilibrium by the internal administration of herbomineral medicines. While in Shodhan chikitsa the vitiated Doshas are expelled out of the body by the means of Panchakarma. According to Acharya Sushruta the Panchakarmas are Vamana (emesis), Virechana (purgation), Basti (enema), Nasya (instilling medicines through nose) and Raktamokshana (bloodletting). Among these five, Acharya Sushruta has described Raktamokshana as the best procedure because it eliminates all three vitiated Doshas viz. Vata, Pitta and Kapha. Broadly there are three different methods of Raktamokshana namely; Sira-vedh in which bloodletting is done through the prominent superficial veins with the help of simple scalp- vein cannula, Jalaukavacharana with the help of Leech and Prachhan karma which is done by taking multiple Incisions on a particular site. For different Doshas different instruments are used for bloodletting:

1. Shring (by sucking blood with the help of animal horn) for Vata dosha
2. Jalauka (using Leeches) for Pitta dosha and
3. Alabu (removing blood with the help of empty dried bottle gourd or Ghatyantra) for Kapha dosha.

Jalaukavacharana is a unique method of Raktamokshana. It comes under Ashastra' category of Raktamokshana. Acharya Sushruta has described Jalauka under the heading of Anushastra (para surgical procedures).

Leeches have segmented bodies like that of an earthworm and have two suckers, one at each end, caudal (back end) and rostral (front end). The mouth (front end) contains three jaws which can break the skin of the hosts to suck their blood and leave a Y shaped bite mark.

There are two species of therapeutic medicinal leeches- *Hirudo medicinalis* and *Hirudo mychaelsenii*. In India, *Hirudo medicinalis* of Phylum-Annelida, class-Hirudinea, are used for bloodletting. These leeches are dark brown in color and have 6 longitudinal stripes running along the body. Their bodies are 2 to 3 inches long, convex and wrinkled transversely, tapering at each end. During feeding it can suck around 5 to 15 ml. of blood.

Its saliva contains several bio-active substances including: anticoagulants, anesthetics, vasodilators and prostaglandins. Hirudin a potent anticoagulant inhibits conversion of fibrinogen to fibrin, thus prevents blood clotting.

MATERIAL AND METHODS

All the material related to this article has been collected from Classical Ayurvedic texts like Brihatrayi and Laghutrayi. Various published research articles on Leech therapy were also searched for this conceptual study.

NIRUKTI: The word leech comes from an old English word 'laece' meaning 'physician'. In medieval England, leeches were linked with healing because of the etymology of the word.

जलमासामायुरिति जलायुकाः, जलमासामोक इति जलौकसः ॥९॥

In Ayurveda, Leeches are called Jalauka because the basis of their life, the site of their dwelling, and the source of their nutrition is Jala (water).

TYPES OF JALAUKA (LEECHES)

Jalaukas are divided into two types-

1. Savisha Jaloka (Poisonous)- *Hirudo detrimental*
2. Nirvisha Jaloka (Non- poisonous)- *Hirudo medicinalis*

Savisha (Poisonous Leeches): These Leeches born from the urine, excreta and putrefied (decayed) dead bodies of poisonous fish, insects, worms, frogs and live in dirty water. These are red, white or very black in colour, are over active, stout and slimy, and have varied rainbow like lines on their back. These should be rejected.

There are six Savisha (Poisonous) Jalaukas:

तत्र सविषाः- कृष्णा, कर्बुरा, अलगर्दा, इन्द्रायुधा, सामुद्रिका, गोचन्दना चेति ।

1. Krishna: Black in color (similar to that of powder of Anjana (Antimony)), large headed

2. Karbura Grey, broad like Varmimatsya (fish), abdomen is segmented and bulging.
3. Alagarda: hairy with large flanks and black mouth.
4. Indrayudha: have stripes on their back.
5. Samudraka: blackish yellow; have flowery patterns on body.
6. Gochandana: lower part is divided into two halves like scrotum of bull and with very small mouth.

Bite of these six kinds of leeches leads to profuse swelling, itching, fainting, fever, burning sensation, vomiting, toxicity and debility.

Nirvisha (Non-poisonous Leeches): These are born in clean water are non-poisonous (Nirvisha). They are bluish black in colour like algae, have spindle shaped body with dark back and yellowish belly. They are strong, voracious and drink blood quickly. They are born from putrefied (decayed), Padma (Lotus), Utpala (White lotus), Nallina (slight red lotus), Kumuda (lily), Saygandhika (highly fragrant lily), Kuvalaya (red lily), Pundanke (very white lotus), Saivata (algae).

There are six Nirvisha (Non-Poisonous) Jalaukas.

अथ निर्विषाः- कपिला, पिङ्गला, शकुमुखी, मूषिका, पुण्डरीकमुखी, सावरिका चेति ।

1. Kapila: Dark brown colored with slightly reddish flanks (like Manashila); back is unctuous (oily) and has the color of Mudga (slightly green).
2. Pingala: Reddish brown with round body and moves quickly.
3. Shanku mukhi: Brown color (like Liver), suck blood quickly and have long and pointed mouth.
4. Mushika: Brown color, resembles the shape of mice and have unpleasant odor.
5. Pundarikamukhi: Greenish color (like Mudga) with broad mouth (like lotus flower).
6. Savarika: Reddish pink color (like lotus petal), oily in nature; eighteen angula (36 cms.) long & are used to treat cattle.

These Nirvisha leeches are found in provinces like Yawana (Arab countries), Pandya (South India), Sahya (Central India) and Pautma (region around Mathura in Uttar Pradesh).

Rearing of Leeches

Leeches are best collected during the autumn or rainy season. They are collected from or ponds/streams that contain lotus and spirogyra, with moist leather or meat piece and should

be kept in fresh water, in a big jar. These are fed on algae and powdered dried meat of aquatic animals and tubers. Placing straw and aquatic plants in these jars helps in creating an appropriate environment. The water and food materials in the pot should be changed once in every three day and leeches should be transformed to another pot after every seven days.

Now a days Leeches are purchased from companies that function as leech farms.

Leeches unfit for use

स्थूलमध्याः परिक्लिष्टाः पृथ्व्यो मन्दविचेष्टिताः । अग्राहिण्योऽल्पपायिन्यः सविषाश्च न पूजिताः

॥१८॥

Leeches which have big abdomen, ugly in appearance, very thick (in width), slow in movement, which do not bite, drink very little blood and are poisonous should be rejected.

Indications of Jalaukavacharana: In recent years, various clinical as well experimental studies have been conducted globally to evaluate the efficacy of leech therapy in various ailments.

Classical indications: Gulma (abdominal lump), Arsha (piles), Vidradhi (abscess), Kustha (skin diseases), Vatarakta (gouty arthritis), Galroga (throat disorders), Netraroga (eye disorders), Vishavikara, Visarpa (erysipelas).

Other indications

- **Venous disease, varicose veins:** Leech therapy is effective in the management of complicated varicose veins, decreases the oedema and hyperpigmentation. Leeches are also used after breast surgery to relieve venous congestion at the nipple. It treats post phlebitis syndrome in which venous valves are obliterated by deep vein thrombosis.
- **Peripheral vascular diseases:** Leech therapy is effective in management of Burger's disease as it relieves the inflammation and thrombosis. It is also effective in other peripheral vascular diseases.
- **Hemorrhoids:** Jalaukavacharana is a very effective alternative treatment in the management of thrombosed hemorrhoids. Bdelin present in the saliva of leech acts as anti-inflammatory agent hence reduce inflammation and maintains normal circulation which in turn recovers bluish-black discoloration. Anesthetic agent present in saliva of leech reduces pain and tenderness giving symptomatic relief.

- **Osteoarthritis:** Leech therapy causes rapid reduction of pain associated with osteoarthritis of knee and is an effective and safe treatment in symptomatic management of degenerative knee.
- **Gout (Vatarakta):** Leech therapy is effective in relieving pain, swelling, erythema present in acute gout. It also reduces characteristic symptoms like Sandhisoola (joint pain), Sandhishopha (joint swelling), Sandhivaivarna (erythema), and Sandhidaha (burning sensation at joint).
- **Non healing ulcer:** Leech therapy is effective in the management of pain in the treatment of healing ulcers.
- **Diabetic foot ulcer:** Leech application is significantly effective in the management of diabetic foot ulcer.
- **Leech therapy in Reconstructive Surgeries:** The primary indication for use of leeches in the field of plastic and Reconstructive Surgeries is to prevent Venous congestion of Flaps used for soft tissue coverage of defects. Leeches have been used in constructive surgeries like ear, nose, lip and digit replantation, surgeries of maxillofacial region, breast flap (Mammoplasty) etc.
- **Eczema (Vicharchika):** Jalaukavacharan is effective and is proved statistically significant.
- **Psoriasis:** The important observation found there is a significant decrease in the characteristics like erythema, thickening, scaling and true area percent of the scalp affected by psoriasis.
- **Abscess:** Leech application is significantly effective in the management in periapical abscess.
- **Hematoma:** leech application provides significant relief in pain, discomfort and swelling size of hematoma without any side effect or complication.

Contraindications of Leech Therapy (Jalaukavacharana)

Leech Therapy is not recommended under the following medical conditions and diseases:

- Absolute Hemophilia.
- Anticoagulant medication eg. Warfarin, Heparin, Marcumar. (Aspirin and Clopidogrel are not contraindicated).
- Severe Anaemia.
- During chemotherapy (or people who are on immunosuppressive medication).

- Individuals with HIV infection.
- Severe allergic diathesis (allergy to foreign Proteins).
- Hypotension.
- Mental disorders during acute episodes.

Method of Jalaukavacharana

Purva Karma (before procedure)

- **Preparation of Patient:** First the patient is selected and his general health is examined. Contraindicated conditions should be ruled out. Mornings are the preferred time to apply leeches. The leeches are applied with patients sitting or supine, in a way that exposes the affected part comfortably. Oleation should be not allowed just before application of leech. The desired site is properly washed with cold water.
- **Preparation of leeches:** Before use, leeches are smeared with a paste of mustard and turmeric, which acts as a disinfectant and increases their appetite and blood-sucking ability. The disinfected leeches are kept in a fresh jar of water for half an hour prior to use and use of disinfectant or soap should be avoided.

Pradhana karma (main procedure)

The desired site is cleaned with wet gauze. The leech should be taken out from its jar and is held at its neck with fingers. Its mouth is placed precisely over the affected part. The leech's tail should be held until it begins to draw blood, at which time it can be gently released. When it starts sucking the blood, elevates its neck assuming the shape of a horse shoe. Once Leeches start sucking the blood, they are covered with wet gauze & cold water is poured on them from above time to time, so as to make Leech comfortable during sucking. If a leech refuses to bite by its own, in such condition a drop of milk or ghee or prick induced bleeding may be required so as to facilitate the sucking procedure. When Leech becomes fully satisfied, it leaves off the skin of the patient & drops itself down. The Jalauka first sucks only the vitiated blood. Itching or pricking pain at the site of application indicates that the leech is now sucking the pure blood. When sucking pure blood leech should be removed. If it does not withdraw, a little turmeric powder or common salt powder should be sprinkled on the sucking part of the leech. Leeches normally absorb about 5-10 ml of blood.

Precaution

- Leeches should not be to major veins like Femoral or Jugular veins and to the delicate parts like Breast, Penis or Eye lids.
- Used Leeches should be kept in separate jars.

Paschata karma (after procedure)

- **Patient care:** After the removal of the leech, blood should be allowed to flow from the wound for a few minutes. The site is cleaned with normal saline. Turmeric powder or Satadhauta ghritha, a classical Ayurvedic herbal ghee preparation can then be applied to promote healing. The wound is then lightly bandaged for 6 to 12 hours to arrest the bleeding.
- **Care of leech:** After falling off, the leeches should be dusted over with rice powder and their mouths should be lubricated with a composition of oil and saindhav lavan. Then they should be caught by the tail-end with the thumb and the forefinger of the left hand and their backs should gently rubbed with the same fingers the right hand from tail upward to the mouth with a view to make them vomit or eject the full quantity of blood they had sucked from the seat of the disease. The process should be continued until they manifest the fullest symptoms of disgorging. Leeches that, had vomited the entire quantity of blood sucked as above, would briskly move about in quest of food if placed in water, while the contrary should be inferred from their lying dull and inert. These should be made to disgorge again. If the leech is active when placed in water, it indicates that the vomiting is proper. The used leeches are kept in separate jars/pots labeled with the details of the patient. The leech should be applied once in a week and one leech should be reserved for a particular patient to avoid cross infection.

Mode of Action of Jalaukavacharana

In modern medicine Jalaukavacharan is known as Hirudo Therapy or medicinal leech therapy (MLT). There about 650 leech species, the most frequently used leech is *Hirudo-medicinalis* which is collected from freshwater bodies. Therapeutic effect of leech is due to presence of different bioactive constituents in leech saliva. Some major constituents are Hirudin, Hyluronidase, Calin, Destabilase, Apyrase, Eglines, Bdeellins, Decorsin, Hirustatin, Lipase, Esterases and Catecholamine like Acetylcholine, Serotonin, Dopamine etc. These bioactive compounds have analgesic anti-inflammatory, Platelet inhibitory, Vasodilator, Thrombolytic, Anesthetic and anti-microbial effects.

DISCUSSION

First documented evidence of the use of leech for medicinal purpose goes back to 200 BC. Raktamokshana by means of 'Leech' comes under 'Ashastra' category as no cutting instrument is used for bloodletting. Because of its safety and high efficacy, Leech therapy is gaining greater attention globally and is considered as a supreme therapy. The saliva of leeches contains a variety of bioactive substances which act as such as vasodilators, anesthetics and analgesic properties. Thus it is more effective than topical analgesics and anti-inflammatory agents in the treatment of inflammatory and degenerative joint diseases such as gout and osteoarthritis. Venous congestion can be best treated with the application of leeches because the small blood volumes removed by leeches and the augment blood removal during the passive-bleeding phase of leech therapy decreases venous congestion remarkably. In addition to this, a broad number of anticoagulant agents present in leech saliva also help in decreasing venous congestion present in Burger's disease, varicose veins, venous thrombosis etc. leeches are also proved effective in non-healing ulcers and diabetic foot. As most of the skin diseases. Are caused by vitiation of Rakta dosha, leeches having sheet Virya according to Ayurveda, are extensively used in various skin disorders.

CONCLUSION

Jalaukavacharan (Leech therapy) is very useful in many acute and chronic disorders. And with the above discussion, it can be concluded that over the years the use of leeches evolved from a simple bloodletting procedure into a scientifically based physiologic process with rational defined clinical applications. Jalaukavacharan (Leech therapy) is an ancient Ayurvedic bloodletting technique which has great potential to manage ischemic, inflammatory, and infective disease by removing the blood in the deep-seated regions. The saliva of Leech contains numerous bioactive constituents which possess analgesic, anti-inflammatory antiseptic & antibacterial property, etc. Leech therapy is useful in the field of plastic surgery, Arthritis (Osteoarthritis and Rheumatoid Arthritis), Venous congestion, Varicose veins, Hemorrhoids vascular diseases, Thrombophlebitis, cellulitis, sciatica, inflammatory reactions, blood purification, ischemic heart disease, and hypertension. It is expected to be of paramount importance due to the ease of leech application and minimum side-effect. Leech therapy has Ayurvedic origin, but it is acknowledged by modern medicine due to its effectiveness in healing various kinds of diseases. It is also considered as wonder therapy.

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