



## SURVEY ON LEECH THERAPY PRACTICES IN AYURVEDA CENTRES OF INDIA

Gururaja<sup>1</sup>, Sneha A<sup>2</sup>, Sudeepa<sup>3</sup>, Rajkiran<sup>4</sup>

<sup>1,3,4</sup> Faculty, Department of Shalyatantra, <sup>2</sup> Student, IV Professional BAMS, Muniyal Institute of Ayurveda Medical Sciences, Manipal, Karnataka, India

Corresponding Author: [gurushalya@yahoo.co.in](mailto:gurushalya@yahoo.co.in)

<https://doi.org/10.46607/iamj0810022022>

(Published Online: February 2022)

### Open Access

© International Ayurvedic Medical Journal, India

Article Received: 25/01//2022 - Peer Reviewed: 08/02/2022 - Accepted for Publication: 09/02/2022



## ABSTRACT

*Jalaukavacharana* is a procedure where leeches are used for treatment. It is explained in detail in *Sushruta Samhita*. Leech therapy is practiced extensively in *Ayurveda* centres. The standard operative procedure explained in *Sushruta Samhita* is not practiced in *Ayurveda* centres due to practical difficulties. This survey study was carried out to know the present status of Leech therapy practices in India. **Methodology:** A questionnaire was prepared based on *Sushruta Samhita* and present practices. Questions related to pre-operative, operative and post-operative methods of leech therapy were formulated. It was arranged in Google forms and sent to different *Ayurveda* doctors practicing leech therapy. 31 practitioners responded to the survey. Results obtained were discussed in this study. **Discussion:** Even though no major complications after leech therapy was observed this survey says that most of the practitioners do not follow proper pre-operative investigations, prophylactic measures are not taken properly and leeches are reused by almost all participants. **Conclusion:** There is a need to develop a standard operative guideline for leech therapy by *Ayurveda* authorities.

**Keywords:** Leech, Leech therapy, Jalaukavacharana.

## INTRODUCTION

*Jalaukavacharana* or Hirudotherapy where leeches are used for treatment purposes. It is well explained in *Ayurveda*. *Acharya Sushruta* standardized the procedure of leech therapy in his book *Sushruta Samhita*. Explanation about the collection, identification, storage, maintenance, preparation of leeches for treatment, method of application and post-operative management of leeches are available in *Sushruta Samhita*. Leech therapy is indicated in pain sensitive patients as leech bite does not cause pain. It is also indicated in blood vitiated by *pitta dosha* and vitiation is at deeper planes.<sup>1</sup>

Hirudotherapy is practised not only in Asia but also in European countries, Australia and America. It is often used in reconstructive surgeries to improve capillary circulation.<sup>2</sup> Transmission of infection has been noticed after leech therapy.<sup>3</sup> Survey studies conducted at Leech therapy units of France university hospitals stressed measures to prevent infectious complications before application to the patient, have to be better applied and guidelines of good practices should be followed.<sup>4</sup> Standard guidelines for the collection, usage and disposal of leeches has been set in European and American centres.<sup>5,6</sup> Leech farms are also present in many countries for the supply of leeches.<sup>7</sup> Food and Drug Authority of USA considers leeches as the medical device it has to be stored, used and discarded according to the guidelines of medical devices.<sup>8</sup>

In India, leech therapy is practised at different *Ayurveda* centres. Leech collection, storage and therapy practices vary from centre to centre. Standard operative procedures or guidelines for practise are not available regarding the storage and use of leeches for therapy in India. So, this survey has been carried out to study the present status of leech therapy practices in India.

### Methodology:

A detailed questionnaire was prepared based on *Sushruta Samhita* and current leech therapy practices. Validation of the questionnaire was done by distributing it to experts in the field of leech therapy and necessary corrections were made. Total 25 questions were formulated related to the selection of leeches for

therapy, purification of the leeches, pre-operative, operative, post-operative methods and common disease conditions where leech therapy is advised. Questions related to the collection of leeches and storage of leeches were not included in this study. The later questionnaire was arranged in Google forms and the link was sent to different *Ayurveda* doctors practising leech therapy through what's app and email. *Ayurveda* surgeons, *Shalyatantra* and *Panchakarma* faculties of *Ayurveda* colleges and *Ayurveda* doctors practising Leech therapy were permitted to participate in this survey. Recipients were requested to respond to the questionnaire within 10 days. A reminder was sent after 5 days. It was sent to more than 200 members. The study was carried out in May 2021.

### Results:

Overall, 31 Responses were received. Most of the participants were from South India and are either faculties in *Ayurveda* colleges or *Ayurveda* doctors who practice leech therapy. Results were analysed and it is as follows

Selection of leeches for therapy: 22 participants answered that Leeches were selected for treatment based on their activity and size. 4 participants gave more importance to the activity while the other 4 gave importance to size and one answered as nothing is followed.

Leech purification: 16 participants marked that they purify the leeches just before application while 13 do it one hour before and one participant on the previous day. One participant marked that purification is not done before application. 22 participants answered that they purify by keeping the leeches in *Haridra jala* for less than 15 minutes, 7 told that they purify by keeping the leeches in *Haridra Jala* for 15-30 minutes while 2 answered as more than 30 minutes.

Prophylactic measures to prevent cross-infection: *Ayurveda* medicines were used by 21 participants to prevent infection, nine participants answered that they do not give any medicines while one answered as antibiotics were used before leech therapy.

Haematological examination: Haematological investigations like bleeding time and clotting time were done

by 18 participants while 13 answered as no investigations will be carried out before leech therapy.

Preparation of the site: 16 people answered that the site of application will be prepared by cleaning with water while 10 participants answered the need for needle prick and 3 told about the use of a drop of blood, 2 answered that they rub the area with coarse powder.

The body surface of the leeches should be kept moist while they suck the blood. 29 participants answered that they use wet gauze to cover the leech surface while sucking, 2 answered that nothing will be done.

Criteria to end the sucking by leeches: 22 participants answered that they will wait for spontaneous fall of leeches while 6 answered that they use irritant substances like *haridra* to make the leeches detach. 2 answered that they give importance to the comfort of the patient while one answered as all 3 factors will be considered.

Post bite site management: 27 participants answered that they use *Ayurveda* medicines for the dressing while 4 answered as plain dressing will be done. Out of this, all answered that they use Turmeric powder for bite site management. Some other medicines mentioned are *Yasti Madhu churna*, *Shatadhouta ghritha*, *Madhu ghritha* and *Lodra churna*.

Duration of Bleeding from the bite site after therapy: Average duration of bleeding observed was 1-6 hours by 18 participants while 10 participants noted bleeding for 6-12 hours duration. 3 participants answered as more than 12 hours.

Complications after therapy: Bleeding from the site was observed as the major complication by 11 participants, 8 participants answered as itching while 4 had both of these. Ulceration and Skin rashes are the other complications noted.

Post-operative management of leeches: 26 participants answered that after the procedure they use turmeric powder to make the leeches vomit the blood. 3 participants were told only manual squeezing of the leeches will be done to vomit the blood. The remaining participants answered as both methods will be followed. All participants marked that they would keep the used leeches in a separate jar.

Reuse of applied leeches: 28 participants told that they reuse the leeches while 3 answered as they will not reuse the leeches. Out of these 23 participants answered that they will reuse the leeches on the same patients. 5 participants as on other patients also. 16 participants answered that they will give a 1-month gap before reuse while 4 answered 3 months. Response varied from one week to six months.

Frequency of reuse: 15 participants answered that leeches are reused 1-3 times. 4 answered as 4-6 times. 9 answered that they will reuse till the leech dies.

Leech therapy records: 10 participants answered that they maintain the indent, stock and procedure records for leech therapy. 12 people answered that they maintain stock and procedure register is maintained remaining 9 answered that they will maintain only procedure register.

Common conditions: According to the survey 5 common conditions where leech therapy is advised are 1. Skin diseases like Eczema, Pimples, Alopecia, Psoriasis, 2. non-healing ulcers like Varicose ulcer Diabetic foot, 3. Varicose veins of the legs, 4. Inflammatory conditions like cellulitis, 5. Osteoarthritis of Knee. Along with this, some have answered that it is used in Thrombosed haemorrhoids, Glaucoma, Post Herpes neuralgia, Blepharitis conditions.

## DISCUSSION

This study was planned to know the present status of leech therapy practices in *Ayurveda* leech therapy centres in India. Questionary was prepared based on *Sushruta Samhita* and current practices in leech therapy. This study included questions related to the procedure of leech therapy starting from the selection of the leeches for therapy to common conditions where leech therapy is practised. It does not include questions related to the Collection and storage of leeches. 31 centres participated in this survey. Most of the participants are from South Indian states. Questions were divided into three categories.

Questions related to *Purva karma* or pre-operative procedures

Questions related to *pradhana karma* or Operative procedures

Questions related to *Paschat karma* or Post-operative procedures

Pre-operative procedures: *Ayurveda* explains the preparation of the patient and the preparation of the leeches before application. *Sushruta Samhita* explains that active leeches should be selected for application<sup>9</sup>. In practice size of the leech is also considered. 22 participants considered both activity and size for the selection. Leeches should be purified before application. Except for one, all participants accepted that they would do the purification. The timing of purification varies from purification done just before application to one hour before application and the previous day. Modern Hirudo therapy centres segregate the leeches based on their body weight. Storage water is checked for microbial growth. *Ayurveda* leech centres use different methods for the storage of leeches like the classical pot method, Jar method and Aquarium<sup>10</sup>. *Sushruta Samhita* says clean water should be used for storage and it should be changed once in three days. This may help to control microbial growth. Purification of leeches with *Haridra* is also an important step in *Ayurveda* to reduce the number of micro-organisms. Studies have shown that purification with *Haridra* will reduce the concentration of micro-organisms on the leech body.<sup>11</sup>

Preoperative measures for patients: Incidence of cross-infection after leech therapy has been reported.<sup>12</sup> Prophylactic antibiotics were used to prevent cross-infection. *Sushruta Samhita* has not mentioned the need for any medicines before or after leech therapy. But cautioned about the use of *Savisha Jalauka*. Treatment of *Savisha Jalauka* bite has been explained. Post management of leech bite wound also mentioned in *Sushruta Samhita*.<sup>13</sup> 16 respondents told that they use *Ayurveda* medicines as a prophylactic measure in leech therapy. Preoperatively haematological investigations like BT and CT were carried out by 18 participants while 13 answered as no investigations will be carried out before leech therapy. Even though leech bite leads to oozing from the capillaries it is safer to do at least BT and CT before the procedure.

Application of leeches: Leeches will catch the body surface spontaneously provided no creams has applied

over the site. If leeches does not catch *Sushruta* says to keep a drop of blood or milk over the area to attract the leeches. 16 participants answered that area will be washed with water before application and 10 answered as they need needle prick or blood to make the leeches catch at the site. Once the leech starts sucking the blood, cold water should be sprinkled, or wet gauze should be covered over its body. 29 participants told that they keep the body surface of the leech moist by covering it with wet gauze. Leeches will detach once sucking is complete. 22 participants answered that they will wait till leeches leave spontaneously after sucking. *Sushruta* says that if the patient feels pain or itching that is the indication that the leech is sucking pure blood.<sup>14</sup> Leeches should be made into detaching by applying salt or *Haridra* to their mouth if a patient develops pain. Six participants replied that they use *Haridra* or Salt for detachment if needed.

Post bite site management: 27 responded that they use *Ayurveda* drugs like *Haridra* or *Shatdhaut grita* for the dressing of leech bite wounds. While 4 responded as they do plain dressing. Some have responded that they apply *lodra churna* or *Yastimadhu churna* over the bite wound to stop the bleeding. The minimum duration of bleeding after leech therapy was observed for one hour by 15 participants and extended up to 1-6 hours by an equal number of participants. As leech saliva contains anticoagulants bleeding will continue for a long duration. But as it is capillary oozing unless it bites over the vein directly, chances of uncontrollable bleeding are remote. Bleeding and Itching was noted as two common complications after leech therapy. Skin rashes and bite site ulcerations were also noted by a few. Itching and skin rashes may be because of an allergy to leech saliva or maybe because of the use of contaminated leech. *Astanga hrudaya* says if leeches are kept in water that is contaminated by faeces and other secretions by leech may show some reaction on application<sup>15</sup>. Any systemic Complications like infection or damage to the organ has not been reported in *Ayurveda* centres.

Postoperative management of Leeches: After sucking, leeches are made to vomit the sucked blood by squeezing them from tail end to mouth end as told by

*Sushruta*. But it has been observed that just by applying *haridra* to its mouth, the leech will vomit the sucked blood. Squeezing the leeches may damage their suckers and chambers leading to the death of the leech. Almost 26 participants use *Haridra* to vomit the leeches. If leeches are kept without vomiting, *Sushruta* says that they will develop *Indramada* a type of fever leading to the death of the leech. Nobody has reported regarding the development of *Indramada*. Reuse of leeches: Reuse of leeches are not recommended by European and American guidelines.<sup>16,17</sup> But in India, Leeches are reused in many centres. 28 participants answered that they reused the leeches out of which 23 answered that they reuse it on the same patients. Leeches are reused one to three times by a maximum number of participants. It is recommended not to reuse the leeches on other patients to prevent the chances of spreading of infection. All participants answered that they maintain the leech therapy records. It is important to maintain at least a procedure record in every centre. Leech therapy is indicated in *Pittaja rakta dusti* with *doshas* situated a little deeper to the skin plane and useful in very sensitive people. Most of the people answered that leech therapy is commonly practised in Skin disorders like eczema, psoriasis, pimples and alopecia. Other conditions are varicose veins, non-healing ulcers and inflammatory conditions like cellulitis. Leeches are also used in the management of chronic pain like Osteoarthritis. Indications for *Jalaaukavacharana* are almost the same as the use of Hirudotherapy in Biomedicine.<sup>18</sup> Thus this survey study has put light on the present situation of leech therapy practices in India. Even though no complications have been reported like cross-infection in Ayurveda centres it is advisable to make some Ayurveda drugs as prophylactic medicine before application. Leeches are reused in many centres which is also a point of concern. There is a need to develop the standard protocol for leech storage, therapy, reuse and disposal of leeches in Leech therapy centres.

## CONCLUSION

*Sushruta Samhita* explains in detail standard operative procedures for leech therapy. In the present scenario lot of changes have been taken place in the storage and practice of leech therapy. This study has provided a picture of the status of leech therapy practices in Ayurveda centres in India and the need for the development of standard guidelines for the practice of leech therapy.

## Acknowledgement

This study was carried out under UG research grant obtained from Rajiv Gandhi University of Health Sciences, Bangalore, India.

## REFERENCES

1. Vaidya Jadavji TA, editor. *Sushruta Samhita* of Acharya Sushruta, with Nibandha samgraha commentary, Sutra Sthana, Jalaukavacharana, chapter 13, verse 3-7. 2nd ed. Varanasi: Chaukambha Sanskrit Samsthana; 2010. P 55.
2. Kosta Y. Mumcuoglu, Recommendations for the Use of Leeches in Reconstructive Plastic Surgery, Hindawi Publishing Corporation Evidence-Based Complementary and Alternative Medicine, Volume 2014, Article ID 205929, 7 pages, <http://dx.doi.org/10.1155/2014/205929>
3. Catherine Sartor, Fre´de´rique Limouzin-Perotti, Nosocomial Infections with *Aeromonas hydrophila* from Leeches, *Clinical Infectious Diseases* 2002; 35: e1–5 Downloaded from <https://academic.oup.com/cid/article-abstract/35/1/e1/282610> by guest on 28 January 2020.
4. Delphine Grau, Raphaël Masson et.al, Leech management before application on the patient: a nationwide survey of practices in French university hospitals, *Antimicrobial Resistance and Infection Control* (2018) 7:19, <https://doi.org/10.1186/s13756-018-0311-7>.
5. Leech therapy Guideline of the Mid Essex Hospital (United Kingdom). Available at <http://www.meht.nhs.uk/search/?q=leech>. Accessed on 20 Jan 2021.
6. Guideline of the University of Toledo Medical Centre (USA). Available at <http://www.utoledo.edu/policies/utmc/nursing/guidelines/general>. Accessed on 20 Jan 2021.

7. Biopharm Leeches, Available on <https://www.biopharm-leeches.com>, maintenance and products, visited on 2-6-2020.
8. FDA. Product classification. Available at: <https://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfPCD/classification.cfm?ID=NRN>. Accessed 28 Jan 2021.
9. Vaidya Jadavji TA, editor. Sushruta Samhita of Acharya Sushruta, with Nibandha samgraha commentary, Sutra Sthana, Jalaukavacharana, chapter 13, verse 3-7. 2nd ed. Varanasi: Chaukambha Sanskrit Samsthana;2010. P 55.
10. Gururaja D, Amrutha Ballal, Comparative Study on traditional and prevailing Leech Storage methods in Ayurveda Leech Therapy Centres, Annals Ayurvedic Med. 2021; 10 (2) 98-108.
11. Giri RV, Tantry DG, Shetty P et.al. Evaluation of the effect of haridra (turmeric) on leech gut flora: a metagenomics study. Int J Health Sci Res. 2019; 9(8):229-238
12. Matineh Pourrahi, Mojtaba Abdi, Complications of Leech therapy, Avicenna J. Phytomed,2020, May-Jun,10(3),222-234, PMID; PMC7256282, PMID:32523877.
13. Vaidya Jadavji TA, editor. Sushruta Samhita of Acharya Sushruta, with Nibandha samgraha commentary, Sutra Sthana, Jalaukavacharana, chapter 13, verse 3-7. 2nd ed. Varanasi: Chaukambha Sanskrit Samsthana;2010. P 55.
14. Vaidya Jadavji TA, editor. Sushruta Samhita of Acharya Sushruta, with Nibandha samgraha commentary, Sutra Sthana, Jalaukavacharana, chapter 13, verse 3-7. 2nd ed. Varanasi: Chaukambha Sanskrit Samsthana;2010. P 55.
15. Harisastri Paradakara, editor. Astanga Hrudaya of Vagbhata, Sutrasthana, Chapter 26, verse 45,9<sup>th</sup> edition, Varanasi, Chaukambha orientalia,2002, pp 324.
16. Leech therapy Guideline of the Mid Essex Hospital (United Kingdom). Available at <http://www.meht.nhs.uk/search/?q=leech>. Accessed on 20 Jan 2020.
17. Guideline of the University of Toledo Medical Centre (USA). Available at <http://www.utoledo.edu/policies/utmc/nursing/guidelines/general>. Accessed on 20 Jan 2020.
18. Singh SK, Rajoria K. Medical leech therapy in Ayurveda and biomedicine - A review. J Ayurveda Integr Med. 2020 Oct-Dec;11(4):554-564. DOI: 10.1016/j.jaim. 2018.09.003. Epub 2019 Jan 29. PMID: 30709686; PMID: PMC7772495.

#### QUESTIONNAIRE ON LEECH THERAPY

1. Leeches are selected for therapy based on
  - 1.Size of the leeches,
  - 2.Activity of the leeches,
  - 3.Both,
  4. No criteria followed
2. Purification of the leeches done before application
  - 1.Yes
  2. No
3. Purification of leeches done
  - 1.Previous day of application,
  2. One hour before application,
  3. Just before application,
  4. Not done
4. Which drug is used for purification?
  - 1.Ayurveda drugs
  2. Antibiotic solution
  - 3.Nothing
5. Which Ayurveda drugs are used for leech purification?
6. How long leeches are kept in solution for purification
  - 1.Less than 15 min
  - 2.15-30 minutes,
  - 3.more than 30 minutes
7. Prophylactic measures to prevent cross infection from leech therapy is done
  - 1.Ayurvedic medicines
  2. Antibiotics
  - 3.Both
  - 4.Not done

8. Haematological examinations related to leech therapy done before application

1. Yes                      2. No

If yes mention the routine investigations performed:

9. Preparation of the site of leech application is done

1. Washing with water                      2. Rubbed with coarse powder,                      3. Application of ksheera bindu or shonita bindu  
4. Needle prick is given to draw a drop of blood

10. Body surface of leeches are kept moist

1. Sprinkling water                      2. Using wet gauze,                      3. Immersing leech and body part completely in water  
4. Not done

11. Criteria to end the sucking of leeches

1. Spontaneous fall of leeches                      2. Application of irritant substance after sufficient suck,                      3. Patients discomfort

12. Post bite site management will be done

1. Plain dressing without any application  
2. Dressing with ayurvedic drugs  
3. Dressing with antibiotic cream  
4. Other...                      Mention the drug used for dressing:

13. Average duration of bleeding continued at the site after leech therapy observed for

1. Minimum one hour                      2. 1-6 hours                      3. 6-12 hours                      4. More than 12 hours

14. Any complications observed after leech therapy- Local complications:

1. Itching                      2. Skin rashes                      3. Bleeding                      4. Ulcer/scar

15. Any Systemic complications noted

16. Post-operative vomiting of leeches performed by

1. Manual squeezing                      2. Application of haridra                      3. Not done                      4. Other...

17. Used leeches are kept separately with date of usage and patient identity

1. Yes                      2. No

18. Percentage of leech death within 7 days of 1st application.

1. 25% died                      2. 25-50% died                      3. 50-75% died                      4. More than that

19. Do you reuse leeches?

1. Yes                      2. No

20. Do you reuse leeches on same patient or different patients

1. Same patients                      2. Different patients

21. Time gap given for reuse of leeches after first application on same patient.

1. 1 month                      2. 3 months                      3. 6 months                      4. more than that

22. Time gap given for reuse of leeches on different patients

1. One month                      2. Three months                      3. 6 months                      4. More than that

23. Number of times leeches are reused

1. Only once                      2. 1-3 times                      3. 4-5 times                      4. Till death of the Leech

24. Records on leeches is maintained

- 1.All records Indent, Stock and procedure register is maintained
- 2.Only stock and procedure register is maintained
- 3.Only procedure register is maintained
- 4.No records maintained

25. Most common 5 conditions where leech application is done at your centre.

**Source of Support: Nil**

**Conflict of Interest: None Declared**

How to cite this URL: Gururaja et al: Survey On Leech Therapy Practices In Ayurveda Centres Of India. International Ayurvedic Medical Journal {online} 2022 {cited February 2022} Available from: [http://www.iamj.in/posts/images/upload/322\\_329.pdf](http://www.iamj.in/posts/images/upload/322_329.pdf)