



## ANATOMICAL EXPLANATION OF ABSORPTION OF SNEHA DRAVYA IN SIROBASTI KARMA

Shrimali Dipakkumar Jayantkumar<sup>1\*</sup>, Vikash Bhatnagar<sup>2</sup>

<sup>1</sup>P.G. Scholar, <sup>2</sup>Assistant Professor, Dept. of Sharir Rachana, National Institute of Ayurveda, Amer Road, Jaipur, India.

**KEYWORDS:** *Sirobasti*, Scalp, Emissary veins, Intracranial sinuses.

### ABSTRACT

Ancient scholars of *Ayurveda* have described head as a root of the body and explained the diseases related to *Sira*. According to *Aacharya Sushruta* in this region there are 37 *Marmas* (vital points), which indicate its importance. For the diseases of *Sira* many treatment modalities are explained like, *Sirobasti*, *Sirodhara*, *Siroabhayang*, *Pichu* and *Nasya*. Among them *Sirobasti Karma* is very effective in mental disorders and many scalp related problems but its mode of action and the route of oil absorption is not clearly explained in classics. The route for oil absorption can be explained scientifically by the knowledge of anatomy of scalp. The scalp is made up of five layers: skin, superficial fascia, aponeurosis, loose areolar tissue and pericranium. The oil used in *Sirobasti* is absorbed transversally into the scalp through the skin. The connective tissue layer of scalp is rich in blood vessels and nerves. In the loose areolar tissue of scalp, emissary veins are present, these veins are valve less and connects the superficial veins of the scalp with the diploic veins of the skull bones which drains into the intracranial sinuses. By the knowledge of this venous drainage system of Scalp we can explain the systemic effects of *Shirobasti* therapy thus *Sirobasti* therapy can be used effectively for various scalp related problems and mental disorders.

### \*Address for correspondence

Dr. Shrimali Dipakkumar  
Jayantkumar

P.G. Scholar

Dept. of Sharir Rachana,

National Institute of Ayurveda,

Jorawar Singh Gate, Amer road,

Jaipur.

Email: [djshrimali5936@gmail.com](mailto:djshrimali5936@gmail.com)

Contact no. 07820885676

### INTRODUCTION

In *Ayurveda* the human body is divided into six parts and this concept is described as a *Shadang Sharir*. The head is called *Uttamang* by *Aacharya Charaka*. *Uttama* means best, which denotes its importance.<sup>[1]</sup> *Aacharya* has described head as a root of the body and very deeply explained the diseases related to *Sira*. According to *Aacharya Sushruta* in this region there are 37 *Marmas* (vital points) which indicate its importance.<sup>[2]</sup> In treatment aspect of disease *Aacharya* has described *Shodhana Chikitsa* which is a purification process of the body. The body purification processes are called *Panchakarma* in *Ayurveda*.

*Sirobasti* is a very important therapeutic measure of *Ayurveda*. It can be classified in *Bahya-Snehan Karma* which is a pre-therapeutic measure of main *Panchakarma*. *Aacharya Vagbhatta* has classified *Sirobasti* in *Murdha taila* along with *Sirodhara*, *Siroa-bhayang* and *Pichu*.<sup>[3]</sup> The word "*Basti*" is used here to indicate, "to retain or to hold", thus in *Sirobasti* the oil is made to retain on the scalp for a prescribed time. This procedure is highly effective in combating diseases related to scalp, neurogenic diseases like dementia<sup>[4]</sup> and also many lifestyle disorders just as, insomnia, attention-deficit hyperactivity disorders (ADHD), psychological disorders, mental stress etc. This technique is also very famous in *Keralliyam Panchakarma*. *Sirobasti* is very much effective therapy but anatomical basis of its mechanism is unexplained so here this attempt is done to explain it.

### Procedure of *Sirobasti*

*Sirobasti* procedure can be described further under the following headings.

### Materials required for *Sirobasti*

Rexene/ leather (*Charmapatta*) (75cm-20 cm) - 1

Black Gram flour (*Masha*) - 200gm

*Taila* - 1.5 litre

Cotton ribbon (120cm-10cm) - 2strips

Spoon - 1, Vessel - 1

Oil for *Abhayanga* - 100ml

Soft towel - 2

Hot water bath - 1

Armed chair of knee-height - 1

Therapist - 2

**Purva Karma (Pre-therapeutic measures):** Cleanly shaved head is preferred to carry out this procedure to enhance absorption of medicine. Morning hour at the time of sunrise is the ideal time for *Shirobasti* but modification can be done according to requirement of diseases.

**Sambhar Samgraha (Collection of instrument):** It includes the preparation of the *Charmapatta* (leather strap) and *Masha* (black gram) pasted to the *Charmapatta* and 2 stripes of cloths. Now a day's some automatic gazettes are used on behalf of the *Charmapatta*.

**Pradhana Karma (Main procedure):** It includes; *Bastiyantara Dharana, Taila Dharana*, Observation of *Samyaka Yoga Lakshana*, Removal of *Taila* and *Basti Yantra*.

Patient is made to sit erect on a chair; one strip of cloth, smeared with *Mashakalka* is pasted around the head, above the ear. Then leather sheet of about 12 *Angula*<sup>[5]</sup>, applied with *Masakalka* at the bottom of its inner surface of, is tied around the head, so that the lower part of the leather sheet is attached to the strip of the cloth. The two ends of the leather sheet are attached together by using *Masha Kalka*. Another strip of cloth pasted with *Masha Kalka* is wrapped on the leather sheet. Now the *Basti Yantra* is ready.

Then the suitable medicated oil, warmed by keeping in hot water is poured on the inner surface of leather cap slowly and carefully. The quantity of oil should be 2 *Angula* above the scalp<sup>[6]</sup>. Care must be taken to keep the temperature of oil constant.

Time should be according to the predominance of *Dosha* or appearance of *Samyak Snigdha Lakshana* such as *Vaktrastrava* (watering in mouth), *Nasikotklesh* (moisture in nose), *Karna Strava* etc. Time according to *Dosha* is as follows.

In *Vata* predominance diseases 10,000 *Matrakala*, In *Pitta* predominance diseases 8,000 *Matrakala*, In *Kapha* predominance diseases 6,000 *Matrakala*, In *Svatha* 1,000 *Matrakala* of *Sirobasti* should be done.<sup>[7]</sup>

After the prescribed time for *Karma*, the oil from the *Bastiyantara* with *Bastiyantara* should be removed.

**Pashchat Karma (Post-therapeutic measure)**

*Mridu Abhyang* is done over the head and *Skandha Pradesha*.<sup>[8]</sup>

**Duration**

Maximum duration of *Sirobasti* is considered as one time in a day continue for seven consecutive days. <sup>[9]</sup>

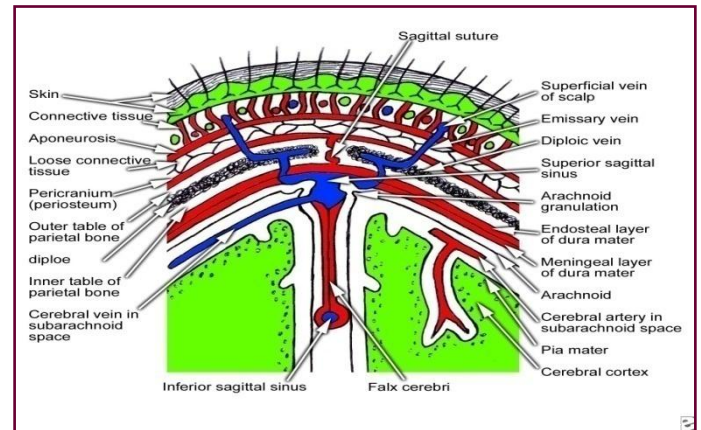
**Anatomy of Scalp<sup>[10]</sup>**

The scalp consist of skin and subcutaneous tissue that cover neurocranium from the superior nuchal lines on the occipital bone to the supra-orbital margins of the frontal bone. Laterally the scalp extends over the temporal fascia to the zygomatic arches. The scalp consist of five layers that are firmly bound together:

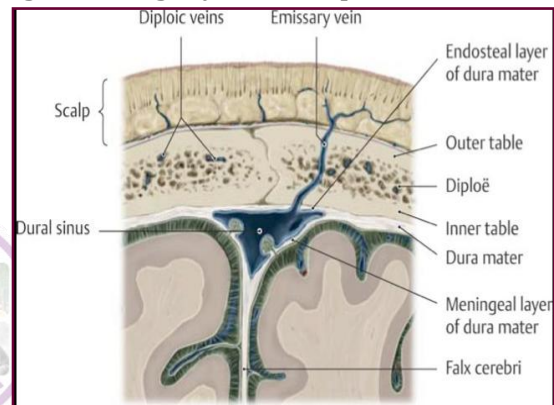
1. **Skin:** It is thin except in the occipital region and contains many sweat and sebaceous glands and hair follicles. It has a abundant arterial supply and good venous and lymphatic drainage.
2. **Connective tissue:** It forms the thick, richly vascularised subcutaneous layer that is well supplied with cutaneous nerves.
3. **Epicranial aponeurosis:** The broad, strong, tendinous sheet that covers the calvaria and serves as the attachment for muscle bellies converging from the temporal bones on each side. Collectively, this structure consist the musculo-aponeurotic epicranium.
4. **Loose connective tissue:** It is a sponge-like layer including potential spaces that may distend with fluid as

a result of injury or infection. This layer allows free movement of the scalp proper, the first three layers, over the underlying calvaria.

**5. Pericranium:** A dens layer of connective tissue that forms the external periosteum of the neurocranium.



**Fig.1 Showing Layers of Scalp with its contents**



**Fig.2 Showing Layers of Scalp with its contents Routes of Transdermal Absorption**

There are three mechanism for transdermal delivery; the intracellular route, the intercellular route and the shunt route. In intracellular route molecules passes directly through the cells of stratum corneum. In intercellular route molecules passes between intercellular spaces. The shunt route is a cleaver bypass system in which molecules pass through structures that originate in the dermis and span the entire height of the epidermis, as sweat glands, sebaceous glands, and hair follicles. The area of scalp and face is a great location for absorption because these areas are plentiful in sweat glands, sebaceous glands and hair follicles.<sup>[11],[12]</sup>

**Factors affecting Transdermal Absorption.**

The Factors affecting are surface area of the application, location of the skin application, exposure time, temperature, substances use for application and molecular size of absorbent.<sup>[13],[14],[15],[16]</sup>

Regarding location of the skin application, areas with the thinnest epidermal layers is prove to be the best areas of transdural absorption. These locations includes face, scalp, neck, and wrist.<sup>[11],[12]</sup>

So from these all facts we can understand that the skin of scalp area is the best area for the absorption.

**Use of oil for Sirobasti**

The layers of the skin are; Stratum Corneum, Stratum Lucidum, Stratum Granulosum, Malpighial layer, Papillary layer, Reticular layer, Subcutaneous tissue and Muscular layer. The first four forms the epidermal layer of skin and residual forms dermal layer. The keratinized nature of the epidermis is primarily designed to prevent desiccation thus, the skin is relatively lipophilic/hydrophobic barrier. *Aacharyas* know this fact very well and that's why they use *Sneha Dravya* for *Sirobasti*.

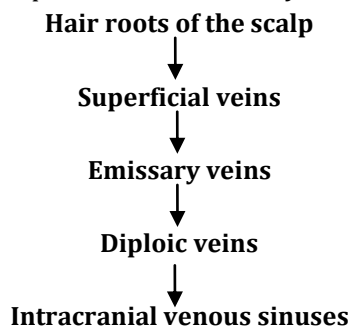
Fatty acid substances are basically of two types, animal origin and vegetable origin. On the basis of their chain length fatty acids are of four type.

1. Short- chain fatty acids (SCFA)
2. Medium chain fatty acid (MCFA)
3. Long chain fatty acid (LCFA)
4. Very long chain fatty acids (VLCFA)

The short and long chain fatty acids can absorb by skin easily because its molecules are smaller than the long and very long chain fatty acids so for the topical absorption this fatty acids are preferable. "Short chain and medium chain fatty acids are presents in ghee, milk and other natural oils"<sup>[16]</sup> this fact is known by *Ayurvedic Aacharyas* and that's why they have selected natural oils, milk and ghee for *Sirobasti* procedure.

#### Rout of oil absorbance

In *Sirobasti* medicated oil is poured over the head. The oil used in *Sirobasti* is absorbed transversally into the scalp through the roots of hairs. The dense subcutaneous tissue containing the vessels and nerves of the scalp. In the loose areolar tissue of scalp, emissary veins are present.<sup>[17]</sup> These are valve less and connect the superficial veins of the scalp with the diploic veins of the skull bones and with the intracranial sinuses. This is a route of absorption of the *Basti-Dravya*.



#### Effect of Procedure

The *Sukhoshna Dravya* usually used for *Shirobasti* which stimulates the efferent blood vessels and causes vasodilatation. Pressure is produced on the head due to *Basti Dravya* which makes tranquilising effect and relaxes patient. Pressure improves blood circulation, increases fresh oxygen and glucose supply to the brain and relaxes muscles and nerve endings.

#### Effect of *Abhayang* after *Sirobasti*

*Abhayang* is the *Pashchatkarma* of the *Sirobasti* procedure in which massage is done from the top of the head to the shoulder region. By massage the lymph movement is possible and the lymph drainage is increased in the venous system. "The lymph contains

large amount of tryptophan which is used by the pineal gland to secrete melatonin and serotonin<sup>[18]</sup> which helps to maintain equilibrium of thyroid, gonadal and adrenal activity as well as the secretion of the growth hormone. Deficiency of serotonin is responsible for irritability, depression, schizophrenia, florid hallucination, paranoia, severe headache, anxiety etc. Melatonin responsible for sedation and pleasant feeling in the human being. So the manual draining of lymph by *Abhayang* may play a major role in the psychological disorders."

#### Discussion and conclusion

The head is called *Uttamang* by *Aacharya Charaka*, and special importance is given to *Sira* by *Aacharyas*. The head is covered by the scalp and it is composed of five layers. The outer most layer of the scalp is skin. The skin of scalp is rich in arterial supply and venous and lymphatic drainage. It also contains abundant sweat glands, sebaceous gland and hair follicles and that's why it is a preferable site for good transdural absorption. Thickness of skin is a one factor which affects transdural absorption. Areas with the thinnest epidermal layers are proved to be the best areas of transdural absorption. These locations include face, scalp, neck, and wrist. So from these all facts it is proved that the skin of scalp area is the best area for absorption and that's why *Aacharya* have preferred this site for *Sirobasti*.

The epidermis of the skin is lyophilic/hydrophobic barrier so use of lipid content is preferable for better transdural absorption. The small lipid molecules are preferable for better absorption, because the long chain fatty acids decrease the absorption rate so the small and medium chain fatty acids are more preferable. *Aacharyas* know all that fact about absorption and that's why they indicate to use natural oils, milk and ghee for *Sirobasti* procedure which contain short and medium chain fatty acids.

In *Sirobasti Karma* used drug is absorbed by the venous system and treat many scalp related problems and mental disorders.

Thus the conclusion is that *Sneha* used in the *Sirobasti* is absorbed by hair roots of the scalp then from that to the superficial veins of the scalp with the diploic veins of the skull bones and with the intracranial sinuses and can treat various scalp related problems and mental disorders without any side effect, by minimal expense in view of non availability of suitable treatment modalities in the modern system of medicine.

#### REFERENCES

1. Charaka Samhita of Agnivesh, Vol.1, Revised by Charaka and Dradhhabala with the Ayurveda-Dipika commentary of Chakrapanidutta and with Vidyotini, Hindi commentary by Pandit Kashinath Shastri, Sutra Sthana, Kiyant-Shirshiyadhya 17/12, chauhambha Sanskrit Sanstana, Varanaasi, Reprint-2012, Page no. 231.
2. Sushruta, Sushruta Samhita, Vol.1, Ayurveda Tatwa Sandeepika Hindi commentary, Edited by Kaviraj Ambika Dutta Shastri, Sharir Sthana, Pratyeka-

- marmannirdesh-sharira 6/5,Chaukhambha Sanskrit Sansthana, Varanaasi, Reprint-2012, Page no. 67.
3. Srimadavagbhatta, Ashtanga Hridayam, Nirmala Hindi commentary edited by Dr. Brahmanand Tripathi, Gandushadividhiradhayaya 22/23, Chaukhamba Sanskrit Pratisthan, Delhi, Reprinted-2014, Page no.260.
  4. Ansari Obed Ahmed, J.S.Tripathi, I.S. Gambhir, Comparative clinical evaluation of an Ayurvedic regimen in the management of Senile dementia. Int.J.res. Ayurveda Pharma. 2013;4(3): Page no.307-311.
  5. Srimadavagbhatta, Ashtanga Hridayam, Nirmala Hindi commentary edited by Dr. Brahmanand Tripathi, Gandushadividhiradhayaya 22/28, Chaukhamba Sanskrit Pratisthan, Delhi, Reprinted-2014, Page no.261.
  6. Srimadavagbhatta, Ashtanga Hridayam, Nirmala Hindi commentary edited by Dr. Brahmanand Tripathi, Gandushadividhiradhayaya 22/29, Chaukhamba Sanskrit Pratisthan, Delhi, Reprinted-2014, Page no.261.
  7. Srimadavagbhatta, Ashtanga Hridayam, Nirmala Hindi commentary edited by Dr. Brahmanand Tripathi, Gandushadividhiradhayaya 22/30, Chaukhamba Sanskrit Pratisthan, Delhi, Reprinted-2014, Page no.261.
  8. Srimadavagbhatta, Ashtanga Hridayam, Nirmala Hindi commentary edited by Dr. Brahmanand Tripathi, Gandushadividhiradhayaya 22/30, Chaukhamba Sanskrit Pratisthan, Delhi, Reprinted-2014, Page no.261.
  9. Srimadavagbhatta, Ashtanga Hridayam, Nirmala Hindi commentary edited by Dr. Brahmanand Tripathi, Gandushadividhiradhayaya 22/31, Chaukhamba Sanskrit Pratisthan, Delhi, Reprinted-2014, Page no.261.
  10. Keith L. Moore & Arthur F. Dally, Moore Clinically Oriented Anatomy, 7th edition, 2014.pag no 843.
  11. Mohammed D, Matts P, Hadgraft J, Lane M. Variation of stratum corneum biophysical and molecular properties with anatomic site. AAPS Journal. 2012;14(4):806-812.
  12. Rougier A, Lotte C, Corcuff P, Maibach H. Relationship between skin permeability and corneocyte size according to anatomic site, age and sex in man. J Soc Cosmet Chem. 1988;39(1):15-26.
  13. Menon GK, Cleary GW, Lane ME. The structure and function of the stratum corneum. International Journal of Pharmaceutics. 2012;435(1):3-9.
  14. Graham-Brown R, Burns T. Lecture Notes: Dermatology. 9th ed. Oxford, England: Wiley-Blackwell; 2007.
  15. Berthaud F, Narancic S, Boncheva M. In vitro skin penetration of fragrances: Trapping the evaporated material can enhance the dermal absorption of volatile chemicals. Toxicol in Vitro. 2011;25(7): 1399-1405.
  16. D.M.Vasudevan & Sreekumari, Text book of Biochemistry, 4th ed. Page, 153.
  17. Patrick W. Tank, Grant's Dissector Fifteenth edition, 2013. page no-228.
  18. Principles and Practice of Panchakarma; Dr. Vasant C. Patil: Chaukhambha Publications, New Delhi, Edition- fourth, 2014. Page no. 137.

**Cite this article as:**

Shrimali Dipakkumar Jayantkumar, Vikash Bhatnagar. Anatomical Explanation of Absorption of Sneha Dravya in Sirobasti Karma. AYUSHDHARA, 2016;3(1):469-472.

**Source of support: Nil, Conflict of interest: None Declared**