



Review Article

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DETAILED DESCRIPTION ABOUT RAKTAMOKSHANA

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ABSTRACT

Raktamokshana is the important and prime process of blood detoxification. It is derived from two words i.e.; '*Rakta*' which means blood & '*Mokshana*' which means leave. So the meaning of *Raktamokshana* is to let the blood out. The blood is expelled out from the body to reduce the quantity of toxic substances in the blood borne diseases (*raktaja vikara*). The process of *raktamokshana* can be traced back to the Vedic period only and not beyond that. In the *koushika sutra* of *atharvaveda*, reference of *raktamokshana* by leech application are available. Sushruta, Father of Indian Surgery, has given all the information regarding bloodletting in detail in his treatise, "*Sushruta Samhita*". To expel out the vitiated blood, seven procedures are advocated Venesection (*Sira Vedhan*), horn application (*Sringa Avacharana*), gourd application (*Alabu Avacharana*), leech application (*Jalauka Avacharana*), scrapping (*Pracchanna Karma*). Bloodletting as a method of treatment is indicated in gouty arthritis, filariasis, herpes, tumors, various skin disorders, genital infections, abscess, inflammatory condition, cellulitis, painful ulcers, and chronic ulcers resulting from snake bite. *Raktamokshana* is the one of the principle *Shodhana* therapies in Ayurveda. It widely been practised in the various clinical settings depending on the training and exposures of the physician. With renewed interest in the parasurgical procedure in the recent times *raktamokshana* has gained foremost appraisal to attempt treatment to disease of various categories. *Raktamokshana* is indicated as a therapy of choice in many diseases, formally being indicated in *rakta* and *pitta* related morbidities. Moreover the scope of this therapy is further extended to disease that is found to be refractory to conventional *sheeta- Ushna rooksha* kind of treatment. The final attribute of *raktamokshana* can be considered on its tremendous prophylactic potential to do away certain disease.

Keyword- *Raktamokshana*, Bloodletting, *leech*, *Jalauka Avacharana*, *Sringa Avacharana*, Scrapping, *Alabu*

INTRODUCTION

Before explaining about *Raktamokshana* we should know about the *rakta dhatu* and its work *Rakta* is the word originated from the word ‘*Raj Ranjane*’ meaning is to stain. If white cloth is stained with this it become red coloured hence it is called as *Rakta*. Synonyms of *Rakta* (Blood) are *Rudhiram*, *Asriga*, *Shonitam* and *Lohitam*. Most of these indicate the red colour. *Sthana* (location) of the *Rakta* (Blood) is *Raktavaha Strotas* (channel). Principle organs of this *Strotas* are liver & spleen. *Susruta* added the *Raktavahi Dhamini* (bloodvessels) *Rakta* (Blood) is very important entity in context to maintain internal environment constant. It is extremely important for the sustenance of life.¹

Importance of Rakta dhatu:²

देहस्य रुधिरं मूलं रुधिरेणैव धार्यते ।

तस्माद्यत्नेन संरक्ष्यं रक्तं जीव इति स्थितिः (Su. Su 14/44)

The *rakta* is most important nutrients of the body and *rakta* circulate all over the body so that is also called as life, so that we have to take care of *rakta dhatu* very carefully because *rakta* is life as mentioned in all Ayurveda literature.

Rakta Utpatti:³

रञ्जितास्तेजसा त्वापः शरीरस्थेन देहिनाम् ।

अव्यापन्नाः प्रसन्नेन रक्तमित्यभिधीयते ।

पाञ्चभौतिकं त्वपरे जीवरक्तमाहुराचार्याः (Su. Su 14/5, 8)

The *rakta* is formed in human beings with the help of pure *pitta (tej)* and it will colour the pure *rasa* of the body called as *rakta* that process called *ranjana*. Some *acharayas* mentioned that *rakta* will be formed by collaboration of *panchamahabhuta*.

Guna:⁴

विस्त्रता द्रवता रागः स्पन्दनं लघुता तथा ॥

भूम्यादीनां गुणा ह्येते दृश्यन्ते चात्र शोणिते ।(Su.Su 14/5,8)

The *guna* of *rakta* are *Vishrata* (Prithavi), *Dravata* (Jala), *Raga* (Agni), *Spandana* (Vayu), *Laghuta*

(Akas) These Are Panchabhautika Property.

Shuddha Rakta Lakshana:⁵

इन्द्रगोपकप्रतीकाशमसंहतमविवर्णं च प्रकृतिस्थं जानीयात्

The colour of *Shuddha rakta* is like *indragopa* and neither very thin nor thick are these property of *Shuddha rakta*.

मधुरं लवणं किञ्चिदशीतोष्णमसंहतम्।

पद्मेन्द्रगोपहेमाविशशलोहितलोहितम्। (Ah. Su.27/1-2)

The property of Suddha rakta according to acharaya *Astang Hridaya* are *Madhur, Lavana*, mild cold and colour like *indragopa*.⁶

Rakta Dusti lakshana:

Doshas	Dusti lakshana
<i>Vata dosha</i>	फेनिलमरुणं कृष्णं परुषं तनु शीघ्रगमस्कन्दि च वातेन दुष्टं <i>Phenila</i> , Grey in colour, Black in colour, fast in clotting, dry in nature,
<i>Pitta dosha</i>	नीलं पीतं हरितं श्यावं विस्मनिष्टं पिपीलिकामक्षिकाणामस्कन्दि च पित्तेन दुष्टं, Blue, yellow, green black in colour with foul smell.
<i>Kapha Dosha</i>	गैरिकोदकप्रतीकाशं स्निग्धं शीतलं बहलं पिच्छिलं चिरस्वावि मांसपेशीप्रभं च श्लेष्मदुष्टं, Colour like <i>gairika, snigdha</i> , cold, thick in nature, viscous, appearance as <i>mamsa and peshi</i> .
<i>Sannipataj</i>	सर्वलक्षणसंयुक्तं काञ्चिकाभं विशेषतो दुर्गन्धि च सन्निपातदुष्टं <i>Tridoshas yukta</i>

Pathological Aspect of Raktadhatu:

Pathological aspect of *Raktadhatu* includes the *Vridhhi* (hyper state/increment of *Raktadhatu*) & *Kshya* (hypo/ waning of *Raktadhatu*). Due to increment of *Raktadhatu* (Blood) individuals characterized by, erysipelas, spleen, abscess, various skin infection, gout, haemorrhagic disease, abnormal growth, gingivitis, jaundice, syncopal attack, & red eyes. Blood may see at skin & urine. Some another symptoms also described by *Susruta* i.e redness of eyes, skin & engorgement of blood vessels. Due to malnutrition & improper diet causes deficiency of *Raktadhatu* (Blood). Due to waning of *Raktadhatu* (Blood) person's shows rough, cracked, lustreless dry skin. *Vagbhat* added some symptoms i.e craving for sour, cold food & collapsing of veins. *Rakta dhatu* (Blood) is considered as fourth *Dosha* (body humours). But in fact it is not followed the criteria of *Dosha* (body humours) hence it is difficult to include in category of *Dosha* (body humours). Many reason are enumerated for rejecting to consider as *Dosha* (body humours) to *Raktadhatu* (Blood). Some of that are it is an entity which is not responsible for the formation of *Prakruti*. Another reason is that it is not capable of vitiating any other body entity however it is vitiated due to *Dosha*. *Raktadhatu* (Blood) is an important entity in context to continue the life because it carries all important nutrients which are required for the body. Not only *Susruta* but also *Charak* never denied importance of *Raktadhatu* (Blood) in treatment. Volume of *Raktadhatu* (Blood) is 8 *Anjali*. Waning or increment in volume of *Raktadhatu* (Blood) leads to pathology of *Raktadhatu* (Blood). Due to indulgence of oily, pungent food, due to hot climate, malnutrition, improper diet causes the pathological variances in *Raktadhatu* (Blood). In embryonic life, *Raktadhatu* (Blood) plays an important role in formation of liver, spleen, lungs, colon, kidneys & heart. When *Raktadhatu* in balanced state *Visuddha Raktadhatu* (pureblood) individuals is characterized by cheerful healthy complexion, energetic active sense organ, proper inclination of sense organ towards their subjects, proper digestion, unobstructed natural urges healthy nourishment of body . A little wasting will not hamper function of *Raktadhatu* (Blood) immediately if *Raktadhatu* (Blood) is in excellence condition. Patient will have strength to fight the pathogenesis.

INTRODUCTION ABOUT RAKTAMOKSHANA

Raktamokshana is one among panchakarma. It is unique contribution of Ayurveda where number of diseases which cannot be easily cured by other treatment modalities can be cured by *raktamokshana*.

- **Why Charaka ignored-**

- 1- Here there is no *Doshas* that is eliminated
- 2- *Dhatu* for any if there is *Doshas* is drone out

- **Parayayanam-**

Asrukasturti, shonitamokshana, raktanirharana, raktashravana

- **Aim of raktamokshana-**

1) *Dustaraktanirharana*

2) To prove *shiravyadha* as *aagrachikitsa*.

As *rakta* is a vehicle to carry & transport nutrients, metabolites, oxygen etc. because of various *nidana* & *doshadusti* there will be *rakta dushti* occur so *rakta Dusti* leads to various types of disorders like *kustha, visarpa, pidika, mashaka* etc.⁷ which can be managed by *raktamokshana*. With this regards *acharya sushruta* developed this unique technique.

Importance of Raktamokashana:

तद्दुष्टं शोणितमनिर्हियमाणं शोफदाहरागपाकवेदना जनयेत् (Su.su.14/29)

If impure blood is not drained out of body then it will cause *shopha, raga, daha, paka* and *vedana*.

Effect of Raktamokashan⁸:

“त्वग्दोषा ग्रन्थयः शोफा रोगाः शोणितजाश्च ये ।।

रक्तमोक्षणशीलानां न भवन्ति कदाचन Su.Su.14/34

Those undergoing *raktamokshana* as a routine will never suffer from skin disorders, *granthi and shopha*

वेदनोपशमार्थाय तथा पाकशमाय च ।

अचिरोत्पतिते शोफे कुर्याच्छोणितमोक्षणम् ।।

सशोफे कठिने ध्यामे सरक्ते वेदनावति ।(Su.Chi.1/27, 28)

Raktamokashan should be done for *vedanashamana, pakashamana* (to prevent putrification) and in case of long lasting *shopha*.⁹

Types of Raktamokashan:

1) **Ashastrakruta-** (without using any sharp instrument)-

a) *Jaloka* - application of leeches.

2) **Shastrakruta-** (with instrument)-

a) **Prachana-** bloodletting through multiple incisions.

b) **Alabu-** vaccum extraction by using bottle guard.

c) **Shrung-** sucking through the mouth of cow's horn.

d) **Siravyadhana-** vein puncture

According to depth of disease:¹⁰

“अवगाढे जलौका स्यात् प्रच्छन्नं पिण्डिते हितम् ।।

सिराऽङ्गव्यापके रक्ते शृङ्गालाबू त्वचि स्थिते (Su.Sha.8/26)

In *uttana/pindita* (superficial)-*Pracchanna karma*

- In *Avaghada - Jalouka*
- In *avaghadatama - alabu*
- In *avaghadatara - shringa*.

According to doshadusti-¹¹

“तत्र वातपित्तकफदुष्टशोणितं यथासंख्यं शृङ्गजलौकालाबुभिरवसेचयेत्, सर्वाणि सर्वैर्वा (विशेषस्तु विस्राव्यं शृङ्गजलौकालाबुभिर्गृहीयात् (Su.su.13/4)

DOSHA	RM
✓ In <i>vatadusti</i>	<i>Shringa</i>
✓ In <i>pitta Dusti</i>	<i>Jalouka</i>
✓ In <i>kapha Dusti</i>	<i>Alabu</i>

If there is *sarvadehika* (whole body) *rakta Dusti* then *shiravyadha* is the line of treatment. If any circumstances are not favorable then one can go with any one from the above.

Indications and Contraindication of Raktamokshana

S	INDICATIONS ¹²	CONTAINDICATIONS ¹³

	<p>“कुष्ठविसर्पपिडकामशकनीलिकातिलक लकन्यच्छव्यङ्गेन्द्रलुप्तप्ल ीहविद्रधिगुल्मवात- शोणिताशोऽर्बुदाङ्गमर्दासृग्दररक्तपि त्तप्रभृतयो रक्तदोषजाः” Su .Su 24/11 <i>Kustha, Vishrapa, Pidika, Nilika, Vyan ga, Tilkalak, Dadru, Pliaha vidradhi, Gulma, Vatasonita, arbuda, Raktapradar.</i></p>	<p>“अथाविस्त्राव्याः - सर्वाङ्गशोफः, क्षीणस्य चाम्लभोजननिमित्तः, पाण्डुरोग्यर्शसोदरिशोषिर्गर्भिणीनां च श्वयथवः ॥२४॥” <i>Sarvangshopha, Ksheena, Pandur ogi, Arsha, Udarroga, Shosha, Garbhini, The Person Who has less Strength, Daha Roga, Paralysed Pateints, Shwasa, Kasa, Adhimantha,</i></p>
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Samyakayoga of Raktamokashana:¹⁴

सम्यग्गत्वा यदा रक्तं स्वयमेवावतिष्ठते ॥

शुद्धं तदा विजानीयात् सम्यग्विस्त्रावितं च तत् (Su.su.14/32)

Blood stops by itself after adequate flow is the indicative of proper raktamokashana.¹⁵

लाघवं वेदनाशान्तिर्व्याधेर्वेगपरिक्षयः ॥

सम्यग्विस्त्राविते लिङ्गं प्रसादो मनसस्तथा ॥३३॥ Su.su.14/33

Feeling of lightness in the body, pain relief, subsiding of severity of disease and cheerfulness of mind- are the symptoms of proper raktamokshana.

Heenayoga of Raktamokashana:¹⁶

तद्दुष्टं शोणितमनिर्हियमाणं शोफदाहरागपाकवेदना जनयेत् (Su.su.14/29)

If vitiated *rakta* is not let out in sufficient quantity then it will produce *shopha*, *raga*, *daha*, *paka* and *vedana*.

Chikitsa- do *gharshana* of *Ela*, *Karpura*, *Kustha*, *Tagar*, *Patha*, *Devadaru*, *Vidang*, *Chitraka*, *Trikatu*, *Gruhadhuma*, *Haridra*, *Karanjaphala churna* along with *saindhava* or *tilataila* on *vranamukha*.

Atiyoga of Raktamokashana-¹⁷

अत्युष्णोऽतिस्विन्नेऽतिविद्धेऽशैर्विस्रावितमतिप्रवर्तते,

तदतिप्रवृत्तं शिरोऽभितापमान्ध्यमधिमन्थतिमिरप्रादुर्भावं धातुक्षयमाक्षेपकं दाहं पक्षाघातमेकाङ्गविकारं हिक्कां श्वासकासौ पाण्डुरोगं मरणं चापादयति (Su.su.14/30)

Siravyadha if done during extreme heat, if sudation has been done in excess, if done in excess quantity and if done by unskilled person then blood flows out in excess quantity and it will produce headache, blindness, *adhimantha*, *timira*, depletion of tissues, convulsions, *daha*, *pakshaghata*, *ekangvikara*, *hikka*, *swasa*, *kasa*, *pandu roga* and death.

Chikitsa:

- 1) *Gharshana* with *priyangu*, *yasthimadhu*, *lodhra*, *patang*, *rasanjana*, *shalmalipushpa*, *shankha*, *shuktika*, *yavachurna*
- 2) *Gharshana* with *Shala*, *Rala*, *Arjuna*, *Erimeda*, *Meashringi churna*
- 3) *Avacharana* of *samudrafen* or *laksha churna*. After that do *bandhana* of *khauoma* or *karpas*.
- 4) *Sheetal padartha acchadana aadravastra*, *kamalapatra* etc., *sheetalbhojana* like *dugdhapana*, *sharkara* etc., *sheetal nirvasa sthana shayana*, *sheetal aushadhi lepana*.
- 5) Even after all these *upacharas* if blood flow does not stop then do *dahana karma*.
- 6) *Kakolyadi ganokt aaushadhi kashayapana* along with *sharkara*. In short *atiyoga* of *raktamokshna* do *shitaprayoga*, *ushnaprayoga*, *dahana*, *rakta rodhak aaushadhi prayoga*, *avapeedana* and *bandhana*.

Raktamokshanottara Karma:¹⁸

सुतरक्तस्य सेकाद्यैः शीतैः प्रकुपितेऽनिले ॥

शोफं सतोदं कोष्णेन सर्पिषा परिषेचयेत् ॥ Su.su.14/45

To stop the blood flow after *Raktamokshana* do *Sheetal karma* like *seka* etc. which causes *shopha* and *suchivatavedana* because of *vataprakopa*. In such condition do *parisheka* with *ghrita* on that *sthana*.

A. SIRAVYADHA-¹⁹

उष्णं समधुरं स्निग्धं गवां शृङ्गं प्रकीर्तितम् ॥

तस्माद्वातोपसृष्टे तु हितं तदवसेचने ॥(Su.Su.13/5)

Shiravyadha is a type of *sarvadhehika raktamokshana*. It is explained by *sushrut acharya* in *shareera sthana*. *Siravyadha* (Vene-puncture) of *Raktamokshana* (Blood-letting) is an important *Anushalya Karma* (Para surgical procedure), it is “*Aardhachikitsa*” (Half treatment) as covering a wide range of indications like *Basti*(Ayurvedic enemas). According to *Ashtanga sangraha* *Siravyadha* (Venepuncture) is half the treatment or full treatment in *Shalyatantra* because blood is the base for all diseases and there is no other *Dushyas* i.e. tissue that get vitiated than blood in patients of such diseases.

Paryayanama- *Ashravishruti, Shonitamokshana, Vistravana, Avasechana.*

Shiravyadha mahatva:²⁰

सिराव्यधश्चिकित्सार्थं शल्यतन्त्रे प्रकीर्तितः ॥

यथा प्रणिहितः सम्यग्बस्तिः कायचिकित्सिते(Su.Sha.8/23)

While explaining the importance of *siravyadhana* *acharya sushruta* says in *shalyatantra* *siravyadhana* is considered as half *chikitsa* just like *basti chikitsa* in *Kayachikitsa*. A number of diseases are narrated by *Sushruta* and *vagbhata* which are likely cured by only *siravyadhana chikitsa*.²¹

स्नेहादिभिः क्रियायोगैर्न तथा लेपनैरपि ।।

यान्त्याशु व्याधयः शान्तिं यथा सम्यक् सिराव्यधात् (Su.sh.8/22)

The different methods of treatment like *snehana* etc. and *lepana* etc.do not relieve the diseases as easily as the proper *raktamokshana* does.²²

Sira/vessels:

There are 700 *siras* present in the body which spread all over the body and keep lubricating like a field being watered similar to the ribs on leaves *nabhi* is the *moola* from there are *siras* get division in three direction of *siras* i.e. up, down, side.

शोणितावसेकसाध्याश्च ये विकाराः प्रागभिहितास्तेषु चापक्वेष्वन्येषु चानुक्तेषु यथाभ्यासं यथान्यायं च सिरां विध्येत् ।।४।।

प्रतिषिद्धानामपि च विषोपसर्गे आत्ययिके च सिराव्यधनमप्रतिषिद्धम् (Su.sh.8/4,5)

Shira vyadhana should be done with experience and discretion in the diseases which have been described as curable by *raktamokshana*, in some diseases in their prodromal stages as well as which have not even been mentioned. *Shiravyadhana* should be done in cases of contraindication of *shiravyadhana* in emergency and in poisoning which are *Jirna Jwara, Vishamajwara, Dhatugatajwara, Abhighatajanyajwara, Gulma, Vidradhi, Pramehapidika, Udararoga, Rajayakshma, Gandmala, Dustavrana, Kaphaja Arbuda, Apache, Updamsha, Arsha, Bhagandara Grudhrasi, Shleepad, Pakshaghat, Unmad, Apsmar, Mukharog, Kantharog.*

According to *vagbhat*,

- 1) Below 16 yrs and above 70 yrs.
- 2) Without *snehan* and *swedana*
- 3) After excess *swedana*
- 4) *Aakshapitta, Swasa Kasa*

Indications for Venesection (*siravedha*):

Blood let out circulating venous blood, Results are immediate and long lasting and Care should taken to prevent excess bleeding, along with that Emergency setup should be made ready if in need to meet shock and other contingencies. Those diseases which are not cured by using cold or hot treatments as per

Ayurveda, are cured by venesection. Some are listed below:

- Benign tumors,
- Generalized disease like psoriasis
- Chronic headache
- Insomnia
- Liver disorder
- Psychiatric disorder
- Aching limbs
- lumps,
- glandular swellings
- Insanity
- Epilepsy
- Abscess
- Pain in flanks, heels, wrists
- Dysentery
- Goiter
- Sciatica
- Cervical lymphadenitis
- Sinusitis of the knee
- Burning sensation in soles and feet
- Rheumatoid diseases
- Curved nails

Contraindications for Siravedha:

Contraindications of Siravyadha⁻²³

बालस्थविररूक्षक्षतक्षीणभीरुपरिश्रान्तमद्यपाध्वस्त्रीकशितवमितविरिक्तास्थापितानुवासितजागरितक्लीबकृशगर्भिणीनां कासश्वासशोषप्रवृद्धज्वराक्षेपकपक्षाघातोपवासपिपासामूर्च्छाप्रपीडितानां च सिरां न विध्येत्, (Su.sh.8/3)

- Who have not gone through unction and sudation treatment, who had abundance sudation
- Those influenced by infections of *vata* birthplace.
- Pregnant ladies, ladies in puerperium
- Heartburn
- Draining problems
- Dyspnoea, Cough,
- Looseness of the bowels,
- Vomiting
- Ascites,
- Anemia,
- Who have been taking greasy material and who are right now going through the five purificatory treatments.
- Dehydration,
- Acute fever,
- Paralysis,
- Piles,
- Whole body swelling,
- Children
- Convulsions
- The individuals who are exhausted, apprehensive,
- starved,
- fasting,
- Impotency.

Contraindicated vein:

Number of *Avedhya Siras* : *Avedhya Siras* are which should not be punctured

Out of 400 *siras* of *Shakhas* 16 should not be punctured, out of 136 of *kostha siras* 32 should not be punctured and out of 164 above shoulder 50 *siras* should not be punctured.(su sh 7/11)

- ✓ 16/400 = *Jaladhara* (4), *Urvi* (8), *Lohitaksha* (4) these are of *sakshagata siras*.
- ✓ In *Parshwa*, *Parshwa sandhi*(2) and upward rising (2)
- ✓ In *Udara* veins above the penis (4) which is near the line of hair.
- ✓ *Uras* area there are 40 veins out of 18 veins which should not be punctured i.e. *heart*(2),*Stanmoola*(4), *Stanrohita* (4) ,*Apalaap* (4) ,*Aapasthaba* (4)

Those veins which are imperceptible, noticeable yet are distant to instruments and those veins which are imploded ought not to be penetrated as they would represent disappointment.

Duration and season for venesection:²⁴

तत्र, दुर्दिने दुर्विद्धे शीतवातयोरस्वित्रे भुक्तमात्रे स्कन्दत्वाच्छोणितं न स्रवत्यल्पं वा स्रवति ॥२७॥

मदमूर्च्छाश्रमार्तानां वातविण्मूत्रसंगिनाम् ॥

निद्राभिभूतभीतानां नृणां नासृक् प्रवर्तते (Su.Su.14/27,28)

If *siravyadha* is done on cloudy day, if punctured improperly, if affected with cold and breeze, if sudation is not done earlier, and if done after meals, then the blood become thick, does not flow out as much as required. Person suffering from intoxication, giddiness, exertion, who have suppressed the urges like flatus, faeces and urine, which are indulge in sleep and fear, blood does not flow out.²⁵

OPD Cases

क्षीणस्य बहुदोषस्य मूर्च्छयाऽभिहतस्य च ॥

भूयोऽपराह्णे विस्राव्या साऽपरेद्युस्त्र्यहेऽपि वा ॥

If you sitting on the OPD and patient coming with exhausted band huge amount of *Doshas*, and the patient is not conscious, so in that case you have to wait for to the conscious and then after you can try next day or third day, if patient came to you in morning then you have to wait till the

afternoon.

❖ **Poorvakarma (pre-operative)**

तत्र स्निग्धस्विन्नमातुरं यथादोषप्रत्यनीकं द्रवप्रायमन्नं भुक्तवन्तं यवागूं पीतवन्तं वा यथाकालमुपस्थाप्यासीनं स्थितं वा प्राणानबाधमानो वस्त्रपट्टचर्मन्तर्वल्कललतानामन्यतमेन यन्त्रयित्वा नातिगाढं नातिशिथिलं शरीरप्रदेशमासाद्य यथोक्तं शस्त्रं गृहीत्वा सिरां विध्येत् (Su.sh.8/6)

After selecting the perfectly suitable patient for *siravyadhana* do *snehana swedana* as per the classics. Allow patient to take diet consisting of liquids or gruel but counteracting the *dosha* causing the diseases should be brought at proper time and made to stay in a position which does not interfere with vital functions. The part should be positioned and tied, neither too tight nor too loose, with the help of one of the cloth, skin, inner bark or creepers and then vein should be opened with an appropriate instrument.²⁶

Size of the punctured

Barley – 0.345 in (8.8 mm)

Yana Marta – where there is muscular region

Aretha java – 4.4 mm (approx For other area and above the bone)

Rice - 5.2 millimeters

Instruments

- Scalp vein set/cannula
- Needle
- Surgical blade
- BP handle
- Curved artery forceps
- Micro pore/cannula fixate
- Measuring jar
- Cotton and gauze
- Rod/ball
- Basin and trays
- Gloves
- Cleaning solution

❖ **Siravyadha technique (*Pradhan karma*)**

Transfer the body weight on the selected part as possible and locate the elevated vein with maximum tension, Place the tip of the glass piece or surgical blade on the vein, exert a trigger force on the blade, the blood will rush out like a foundation stream. Blood is collected in the basin as required for *Samyaka lakshana* refer (*Susruta Sutra*) Doctor should tap the raised vein with his center finger to engorge it and holding the sharp instrument (*kutari*) with left hand, point

its tip to the center segment of the vein without shaking the hand. At that point the vein ought to be penetrated by tapping or squeezing the sharp instrument.

Improper procedure:

- Opening small
- Opening big
- Transverse
- Blunt instrument
- Multiple times
- Sharp and thick instrument
- Vein filled with air
- Insufficient amount
- Improper bandaging
- trembling fingers
- Vein completely cut
- Oblique punctured
- No punctured at all
- Instrument not puncturing to well
- Physician is unsteady to well
- Hitting too many times trying to the vein out
- Puncturing multiple times with small instrument ligaments, bones, joint, *mamas* etc

Warning by Acharyas²⁷

Vein is like a sleeper fish so it is very hard to do *siravedha* and you always have to use your *yukta*. If the patient's blood is not drained properly and vitiated *Doshas* left inside the body you can take care of that dosha and that disease with the help of internal medicine but is not good doing *siravedha* excessively it will increase vata and other complication for the patient.

Amount of blood to be drained

When required amount of blood collected or if the bleeding stop, the crepe bandage is released. if scalp vein set is used it is gently introduced into the selected vein. To avoid resistance of the flow and clotting of the blood inside the set $\frac{3}{4}$ of the free end of the tube is cut off. Usually, 375 ml of blood is allowed to collect during *siravedha*.

This is the most important things that we have to know, if the patient is well strong, strongly vitiated *Doshas* and age of the patient after considering all these things of the patient we have to do *siravedha*, Now usually as mentioned in our literature *one Prastha* is equal to 16 *pala* but here comes-

- *One pala* = 7 rips *ganja phalli* (non seed) 48 grams
- 16 *pala* = 1 *prastha* (768ml)

- 13.5 =1 *prastha* (540-648) *Tama mantra*
- *Ardh prastha* =312=350 ml *Madhyam mantra* (6pala+1 kasha)
- *Kola* =190-200 ml *Helena mantra*(3 pala+8masha)

Duration

- Only to be taken in two sitting never in one sitting
- Once every other day
- Once every week
- Once every month
- Once every 3 month
- Once every 6 months

Observations during Siravyadha:

Stream of blood at the point when the cut is legitimate and the blood streams out in a constant flow and stops when the tourniquet is delivered. At the point when the penetrating is deficient, a little amount of blood streams for a brief time frame like an oil spill.

On the off chance that the cut is broad, the blood will spout out and is captured with extraordinary trouble.

- **Highlights of ideal *Siravedha* –**

Stream of draining occurs for 48 minutes and stops to stream unconstrained.

Gets delicacy body, decreases force of the illnesses and gives true serenity.

- **Highlights of deficient *Siravyadha* –**

Edema, consuming sensation, redness, festering and agony.

- **Highlights of inordinate *Siravyadha***

Migraine, visual deficiency, *Adhimantha* (illness of eye), Timir (partial visual impairment), consumption of tissues, spasms, consuming sensation, hemiplegia, monoplegia, hiccups, dyspnoea, hack and demonstrates deadly if uncontrolled.

In excessive *Siravyadha*–

1. Glue of *lodra*, licorice, *patranga*, red ochre, *sarjarasa*, *rasanjana* (water concentrate of tree turmeric), *shalmali* bloom, *conch*, *sukthi*, dark gram, grain, wheat are applied.
2. Powder from barks of *Shala*, *Sarjarasa*, *Arjuna*, *Iremeda*, *Meshasringi*, *Cinnamon* and so forth is made glue with nectar and applied over the ulcer.
3. Glue of *samudraphena bhasma*, *laksha* powder with nectar applied and bound with silk material.

4. Cold food/drinks, chilled cotton sterile cushions, cold sprinkles, cold environment is valuable to capture dying.
5. Burning and soluble base application.
6. *Kakolyadi kwatha*, nectar with sugar for drinking.
7. Drinking blood of deer, pig, hare or buffalow .
8. Diet – milk with green gram, meat soup.

Management of complications:

- 1) In *Durviddha* apply *churna* of *ela, kustha, tagar, patha, bhadradaru, vidanga, citraka, trikatu, agaradhuma, haridra, naktamala* mixed with *taila* and *saindhavalavana*.
- 2) In *atividhasprinkle* the *churna* of *gaireeka, sarjarasa, shankha, shukti, yava, godhuma, lodhra, priyangu, madhuka, patanga* or sprinkle *churna* of *shala, sarja, arjuna* on the wound followed by tight bandaging. Patient should be covered with wet cloth. Allow to sit in cold room. Give *Kakolyadiganokta dravya sidha kashaya* added with *Makshik* and *Sharkara* to drink.

Sites for Siravyadhana-

S.N.	Site of puncture	Indications
1	<i>Lalata, upanasya, apanga</i>	Diseases of head and eyes
2	Around ears	Diseases of ears
3	<i>Nasagra</i>	Diseases of nose
4	Rhinitis	<i>Pratisyaya</i>
5	Veins in region of tongue, lips, palate and jaws	Diseases of oral cavity
6	Veins around neck, ear, temple, head	Glandular swelling above clavicle
7	Veins around thorax, head and outer canthus of eye	Psychological problems
8	Veins between flanks, breast and axilla	Abscess in thorax region, pain in flanks

9	Vein on lateral side below shoulder	<i>Chathurtaka jwara</i>
10	Veins between shoulder,over <i>triksandhi</i>	<i>Tritiyaka jwara</i>
11	Veins around pelvis	Dysentery and abdominal pain
12	Veins over phallace	Sexually transmitted diseases
13	veins of root of thigh	<i>Galaganda</i>
14	Veins 4 <i>angulas</i> above/below knee joint	Sciatica, <i>avabhahuka</i>
15	Veins 2 <i>angula</i> below <i>indrastimarma</i>	<i>Apaci</i>
16	Vein 4 <i>angula</i> above ankle	<i>Kostukksirsa,</i> <i>khanja,pangu,</i> <i>vatavedana</i>
17	Vein 2 <i>angula</i> above <i>ksipramarma</i>	<i>Padadaha,padaharsha,</i> <i>visarpa,vatarakta,</i> <i>cippa,vatakantaka,</i> <i>vicarcika,padadari.</i>
18	Vein of medial side of middle of right upper limb	Hepatomegaly and liver diseases
19	Vein of medial side of middle of left upper limb	Splenomegaly and spleen diseases

Position of the patient-

Acharya Sushruta explains about the proper position of the patient for siravyadhana as-

- ✓ **For siravyadhana in head and neck region-** patient made to sit on a stool of height one keep his legs in flexed position with the elbows on knee joints and place hands with closed fists on the manyas.a cloth should be put around the neck. Ask assistant to tie a bandage around the part not too tightly or not too loosely so that veins should become prominent.

- ✓ **Siravyadhana in leg-** leg should be properly placed on an even surface with slightly flexed position and held at little higher level. A cloth should be tied below knee joint and ankle should be pressed with hands and then siravyadhana should be performed.
- ✓ **Siravyadhana in arm-** ask patient to sit comfortably. Place his hands in a position by making fist. A ligature should be tied and then *siravyadhana* should be done.
- ✓ **Siravyadhana in grdhrasi and viswachi-** flex the knees or elbow and then do *siravyadhana*.
- ✓ **Siravyadhana in hip,back and shoulder-**patient should be made to sit with his back raised and extended with head flexed and then do the *siravyadhana*.
- ✓ **Siravyadhana in abdomen and chest-** *Siravyadhana* done with chest expanded, the body extended and head raised.
- ✓ **Siravyadhana in trunk-** both upper extremities should be hanging by sides of the body.
- ✓ **Siravyadhana in penile region-** siravyadhana should be done in penile region without bending of penis.
- ✓ **Siravyadhana in tongue-** apex of tongue should be turned upwards.hold it firmly by teeth, and vein below tongue should be punctured properly.
- ✓ **Siravyadhana in palate and gums -** *siravyadhana* should be with fully opened mouth.

Kind of blood stream in indolent of different Doshas:

- ✓ Blood vitiated by *vata* – dim earthy in color, on unctuous, clear, foamy and stream will be with power.
- ✓ Blood vitiated by *pitta* – yellowish dark tone, foul smell, not coagulated because of warmth and with rainbow-radiance.
- ✓ Blood vitiated with *kapha* – unctuous, pale, thread, disgusting and thick.
- ✓ Blood vitiated by mix of two *Doshas* – blended highlights.
- ✓ Blood vitiated by three *Doshas* – dingy and turbid.

❖ Paschat karma (Post system care):

- ✓ The tourniquet ought to be delivered gradually.
- ✓ The site is washed with cold water.
- ✓ The cut of the vein ought to be bound with Torniquat absorbed sesame oil

Samyaka Lakshanas of siravyadhana-²⁸

सम्यक् शस्त्रनिपातेन धारया या स्रवेदसृक् ॥

मुहूर्तं रुद्धा तिष्ठेच्च सुविद्धां तां विनिर्दिशेत् ॥११॥

यथा कुसुम्भपुष्पेभ्यः पूर्वं स्रवति पीतिका ॥

तथा सिरासु विद्धासु दुष्टमग्रे प्रवर्तते ॥१२॥ (Su.sha.8/11,12)

Ideal *siravyadhana* is with proper use of instruments the blood flows in a stream for some time and then stops when checked. Here *acharya* gives a smiley to vitiated blood as it looks like a yellow juice coming out of the flowers of *kusumbha*.

Causes of *hinayoga* after *siravyadhana*- *siravyadhana* is not achieved its goal in unconscious patient, tired, thirsty person, or in the person whose veins are not made prominent or who is not properly positioned.

Normal limit of *siravyadha* - allow a part of vitiated blood remain in its place instead of draining it excessively. The remaining dosa should be treated by external alleviating measures.

Maximum limit of *siravyadhana*- in a strong adult person with aggravated dosas *one prastha* has been advocated as a maximum limit of bloodletting.

Dusta Vyadhi Lakshanas:

- 1) *Durviddha*- puncture made by very thin instrument which permits little flow of blood associated with pain and inflammation
- 2) *Atividdha*- bigger than the proper size along with bleeding in the tissues and excessive bleeding.
- 3) *Kuncita*- crooked puncture have similar qualities as that of *atividdha*
- 4) *Piccita*- vein is punctured with a blunt instrument and vein becomes flattened.
- 5) *Kuttita*- vein is not located properly and punctured many times
- 6) *Apasruta*- puncture is followed by little blood flow due to cold, fear and unconsciousness
- 7) *Atyudirna*- vein is punctured by sharp instrument

- 8) *Anteviddha*- vein punctured with less discharge of blood
- 9) *Parisuska*-vein of an anaemic patient containing more vata in it.
- 10) *Kunita*- one-fourth of vein is cut and blood is flowing
- 11) *Anutthitaviddha*- vein is punctured without being prominent
- 12) *Vepita*- vein is compressed at wrong place leading to excessive blood flow
- 13) *Sastrahata*- vein is fully cut leading to functional inability and flowing excessive amount -of blood.
- 14) *Tiryagviddha*- obliquely cut vein with small intact part
- 15) *Aviddha*- vein is punctured by defective instrument
- 16) *Avyadhya*-vein which cannot be punctured
- 17) *Vidruta*- unstable vein if punctured then it is *vidruta*.
- 18) *Dhenuka*- deep vein is punctured repeatedly causing haemorrhage again and again.
- 19) *Punahpunarviddha*- repeated puncturing to a vein with point instrument, If joints, ligaments, vessels, bones are punctured then it will produce pain oedema, disability and may cause death.

Diet to be followed:

- Food and beverages which are neither exceptionally hot nor freezing, which are light and carminative are appropriate.
- Keep away from – outrage, dread, depletion, day rest, sex, driving, riding on vehicles, study, openness to cold breeze and water, delayed sitting in same spot, contrary food, admission of food when past food isn't processed, for multi month. These exercises will build *Pitta Dosha* which further vitiates blood tissue.

Significance of food system after *Siravyadha*:

- By the utilization of tourniquet, the *Doshas* navigate retrograde and influences the blood. Subsequently the patient ought to hold fast to healthy food and confined exercises till the *Doshas* return back to their own habitations and as the body has insecure blood during that period and stomach related force must be ensured.

B. *JALAUKA* -

Definition:²⁹

शीताधिवासा मधुरा जलौका वारिसंभवा ॥

तस्मात् पित्तोपसृष्टे तु हिता सा त्ववसेचने ॥(Su.Su.13/6)

जलमासामायुरिति जलायुकाः, जलमासामोक इति जलौकसः ॥ (Su.su.13/9)

Water is their life hence is known as *jalaukas*, water is their habitat hence are known as *Jalaukasas*.

Nirukti:

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

ता द्वादशः, तासां सविषाः षट् तावत्य एव निर्विषाः ॥(Su.su.13/10)

There are total twelve types of *jalauka* and are divided mainly into two groups as –

1) *Savishajalauka*=06

2) *Nirvishajalauka*=06

(1) Savisha jalauka -there are six types of savisha jalaukas, they are as follows,

1) *Krsna* - is of anjanachuranavarna and having pruthusheera.

2) *Karbura* – is like varmimatsya and having elevated ventral surface.

3) *Algaeda* - is hairy, having prominent sides and krisnamukha.

4) *Indrayudha* - have raised linear marks so appear like rainbow

5) *Samudrika* – slightly black and yellow colour, having spots on body and are look like attractive flower.

6) *Gocanadana* - looks like govishna and are with pointed mouth.

Features of savisha jalaukadamsha-

Edema, excessive itching, fainting, fever, burning and vomiting, intoxicated look of patient.

Treatment of savisha jalaukadamsha-

Pana, *lepana* and *nasyakarma* by *Mahagada Indrayudha damsha* is incurable.

(2) Nirvishajalauka - there are six types of nirvisha jalaukas, they are as follows,

1) *Kapila* - colour like *manahsila* and dorsal surfaces are slimy and coloured like mudga pulse.

- 2) *Pingala* - slightly red brown in colour, have round bodies and moves fast.
- 3) *Sankumukhi* - *yakritavarnayukta*, are fast suckers and have long elongated mouth
- 4) *Musika*- shape and colour are as like that of muska(mouse) and possess anisthagandha.
- 5) *Pundari kamukhi* - colour is like mudgavarna, and has mouth as like pundarika (white lotus)
- 6) *Savarika* - colour is like padmaparna, are slimy, and are eighteen finger-breadths in length.

Habitat of *Nirvisha jalauka*- These are found in the areas like Yavana, Pandya, Sahya and Pautana. These are originated from lotuses like *utpala*, *nalina*, *kumuda*, *saugandhika*, *kuvalaya* and *pundarika*.

Habitat of *savisha jalauka*- These are found in the putrifying urine and faeces of *savisha matsya*, *keeta*, *dardura* and dirty contaminated water.

Collection and storage of *jalauka*

- 1) *Jalaukas* are to be caught by dipping fresh skin or flesh into fresh-water pond.
- 2) *Jalaukas* are removed from piece of skin and kept in a pot containing clean water and little sludge from the pond.
- 3) Preferably preserved in a glass jar filled with fresh water and fresh mud.
- 4) Little pieces of dried meat are added to pot, as a food for *jalaukas*.

Water should be changed on every third day and the pot should be changed on every seventh day. *Jalouka* emerges from water, lives in cold and *Madhura* and such *Jalouka* are useful in pitta *Dusti*.

What type of leeches should be catches?

तासा यवनपाण्ड्यसह्यपौतनादीनि क्षेत्राणि, तेषु महाशरीरा बलवत्यः, शीघ्रपायिन्यो महाशाना निर्विषाश्च विशेषेण भवन्ति ।।

- ✓ *Yavan* and *pandya* means Arab country
- ✓ *Sahyo* - gujrat and mp
- ✓ *Pautana* - Mathura and agra area

These qualities should be observed before catching leeches Big in size, Strong, Fast moving, Drinks more.

Common characteristics of *Jaloka*

Rearing of *Leeches*

Leeches are best collected during the autumn or rainy season. They are collected from ponds/streams that contain lotus and spirogyra, with moist leather or meat piece and should be kept in fresh water, in 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 leaches should be transferred to another pot after every seven days. Now a day's *Leeches* are purchased from companies that function as *leech* farms.

Leeches unfit for use : *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.

Habitat of jaloka

शीताधिवासा मधुरा जलौका वारिसंभवा ॥

तस्मात् पित्तोपसृष्टे तु हिता सा त्ववसेचने ॥

Jalolka found in very cold place like pond, river and they produced in water and the property of *jaloka* is *madhur*. So that *jaloka* is useful for pittaj disorder.

Classical indications are-³⁰

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

नृपाढ्यबालस्थविरभीरुदुर्बलनारीसुकुमाराणामनुग्रहार्थं परमसुकुमारोऽयं शोणितावसेचनोपायोऽभिहितो

जलौकसः (Su Shu 13/3)

Nrupta - king

Adya - wealthy/nobel

Bala - children

Sthavira - Eldely

Bheeru - Anxious

Durbala – Weak

Naari –Women

Sukumaram - Soft nature people

जलौकसस्तु सुखिनां रक्तस्रावाय योजयेत् (Su. Sh 8/ 35)

Jaloka avacharan is indicated for the *Sukumar* person (that person who has less strength)

तत्र वातपित्तकफदुष्टशोणितं यथासंख्यं शृङ्गजलौकालाबुभिरवसेचयेत्, सर्वाणि सर्वैर्वा (विशेषस्तु विस्राव्यं शृङ्गजलौकालाबुभिर्गृहीयात्) (Su. Sh 8/ 4)

If you are planning to do *rakta avasechhana* then you have to decide the *Doshas* first according vitiated doshasa such as *shrung avacharana* should be done in *vataj vyadhi*, *alabu* for *kaphaj vyadhi* and *jaloka* for *pittaj vyadhi*. Because *shrung* is *snigdha* in property so that *vata* will be subsided, in case of *pittaj vyadhi jaloka* is *sita* property, and *alabu* is *ruksha* in property *kapha* will be subsided or all can be used in *sarv Doshas*.³¹

There are few example of disease in which *jaloka avacharan* should be done *Gulma* (abdominal lump), *Arsha* (piles), *Vidradhi* (abscess), *Kustha* (skin diseases), *Vatarakta* (goutyarthrititis), *Galroga* (throat disorders), *Netraroga* (eye disorders), *Vishavikara*, *Visarpa* (erysipelas)

Other indications

- Venous disease, varicose
- Peripheral vascular disease
- Haemorrhoids
- Osteoarthritis
- Gout (*vatarakta*)
- Non healing ulcer
- Diabetic foot ulcer
- Reconstructive surgery
- Eczema

Contraindications of Leech Therapy (*Jalaukavacharana*)

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

- Absolute Haemophilia
- Anticoagulant medication eg. Warfarin, Heparin, Marcumar. (Aspirin and Clopidogrel are not contraindicated)
- Severe Anaemia
- Erosive gastritis and potential gastrointestinal bleeding
- During chemotherapy or people who are on immunosuppressive medication)
- Individuals with HIV infection

- Severe allergic diathesis (allergy to foreign proteins)
- Hypotension
- Active tuberculosis
- Pregnancy
- Mental disorders during acute episodes
- Severely ill and bed ridden patients
- Extremely fearful patient

Method of Jalaukavacharana

Poorvakarma

➤ Preparation of patient

Lab investigation, should be done before doing the therapy to rule out if there any bleeding disorder or any other major disease along with that clean the affected area .

Rub with dry Cow dung if it is not available you can use your dry hand for rubbing that area without application of oil to increase the blood flow on that area, snehana is not required for the thereafter that by Covering the eyes of the patient is preferred because some people do not like leeches or after seen blood patient can be faint .

➤ **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.

➤ Preparation of materials- Material Required For *Leech Therapy*

- | | |
|-------------------|-----------------|
| ✓ Basin | ✓ Micropore |
| ✓ Trays | ✓ Gauze bandage |
| ✓ Cotton | ✓ Pad |
| ✓ Turmeric powder | ✓ Gloves |
| ✓ Needle | ➤ water |

Pradhan karma

अथ जलौकोवसेकसाध्यव्याधितमुपवेश्य संवेश्य वा, विरूक्ष्य चास्य तमवकाशं मृद्भोमयचूर्णैर्यद्यरुजः स्यात् । गृहीताश्च ताः सर्षपरजनीकल्कोदकप्रदिग्धगात्रीः सलिलसरकमध्ये मुहूर्तस्थिता विगतक्लमा ज्ञात्वा ताभी रोगं ग्राहयेत् ।

श्रुक्ष्णशुक्लार्द्रपिचुप्रोतावच्छन्नां कृत्वा मुखमपावृणुयात् । अगृह्णन्त्यै क्षीरबिन्दुं शोणिविन्दुं वा दद्यात्,
शस्त्रपदानि वा कुर्वीत, यद्येवमपि न गृह्णीयात्तदाऽन्यां ग्राहयेत् (Su. Su 13/19)

The patient who is fit for *jalauskavacharana* is made to sit or lie down comfortably, if site of application is painless, it should be rubbed with cow dung. The *jalauka* should be grabbed and mixture of *sarsapa and haridra kalka* should be applied over it. Then for a *muhurtakala* that *jalauka* should be kept in a vessel of water so that get rid of their exhaustion. Now they may be made to stick on the site. They should be covered with wet cloth. If *jalauka* do not stick then a drop of blood or milk may be applied at the site of application. 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. 5-10 *Leeches* are applied at a time depending upon the necessity. 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 conditional 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

Other points should be take care –

- ✓ Keep the *leech* on the area
- ✓ If it does not bite, a drop of milk/ghee/blood is dropped.
- ✓ The neck of the *leeches* will be raised and suction movement. On the *leech* can also be seen which confirms that *leeches* sucking the blood.

Signs of proper biting

यदा च निविशतेऽश्वखुरवदाननं कृत्वोन्नम्य च स्कन्धं तदा जानीयाद्ब्रह्मातीति, गृह्णन्तीं चार्द्रवस्त्रावच्छन्नां कृत्वा धारयेत्

(Su.su.13/20)

When its mouth gets stuck and middle portion gets elevated as like a shape of a horseshoe it should be known that it is sucking well.

Drinking suddha rakta (Jalauka withdrawal)-

दंशे तोदकण्डुप्रादुर्भावैर्जानीयाच्छुद्धमियमादत्त इति, शुद्धमाददानामपनयेत्, अथ शोणितगन्धेन न मुञ्चेन्मुखमस्याः सैन्धवचूर्णोनावकिरेत् (Su.su.13/21)

If pricking pain or itching is produced at the site of application then it denotes bloodletting of pure blood. And so jalauka must be removed. If it does not withdrawal then sprinkle *saindhava lavana* over its mouth.

Usually it detached itself and if itching and pain are felt, indicates that pure blood is being sucked. Then the leech should be detached by sprinkling turmeric powder over its head.

Post OPD (Paschat karma)-

- **Blood removal from the *jalauka*** - when it is fallen away rice powdered should be rubbed on its body and lavana mixed with oil should be applied over its mouth. Its hind portion should be held in between thumb and fingers and it should be slowly and gently squeezed. It should be made to vomit till it shows the symptoms of complete emptying. After complete emptying leech is left open in a vessel of clean water so that it can move here and there in search of its food. The *jalauka* who do not move inside the vessel or who sinks down should be known to have vomited incompletely; and such *jalauka* should be made to vomit. The one which is incompletely vomited develops a disease Indramada. Once used *jaloka* should be reused only after seven days. Do not use if any serious disease/contagious illness is present.
- **Local treatment after *jalauka* application-** the site is wiped, cleaned bandaged with a paste made of *Bilwadi gulika* and *tulsi swarasa*, to prevent allergic manifestations or *hatadhautaghrta* should be applied over the wound or it should be compressed with a gauze soaked in it Or *kashaya, madhura, snigdha* and *seeta lepa* should be applied over the wound.

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

Mode of Action of Jalaukavacharana

Medical *leeches* have been found to secrete saliva containing about 60 different protein. These achieve a wide variety of goals useful to *leech* as it feeds, helping to keep the blood in liquid form and increasing blood flow in the affected area. Several of these secreted proteins serve as anticoagulant (such as hirudin), platelet aggregation inhibitors (most notably apyrase, collagenase and calin), Vasodilators and proteinase inhibitors. It is also thought that the saliva contain an anesthetics as *leech* bites are generally painful. The important constituents of *leech* saliva are tabulated below.

S.No.	Constituent	Action
1	Hirudine	Anticoagulant, Inhibits blood coagulation by binding to thrombin, hence preventing conversion of fibrinogen to fibrin.
2	Hyaluronidase	Breaks down the hyaluronic acid, Increases interstitial viscosity & is Antibiotic
3	Calin	Inhibits blood coagulation by inhibition of collagen - mediated platelet aggregation and adhesion , blocks von Willebrand factor dependent platelet adhesion to collagen to collagen.
4	Destabilas	Has Monomerizing activity, Dissolves fibrin leading to thrombolytic effects

5	Hirusatin	Inhibits kallikrein, trypsin, chymotrypsin, neutrophilic cathepsin G
6	Bdellins	Anti-Inflammatory. Inhibits trypsin, plasmin, acrosin
7	Tryptas inhibitors	Inhibits proteolytic enzymes of host mast cells
8	Eglins	Anti-inflammatory proteins. Inhibit the activity of alpha-chymotrypsin, chymase, substilisin, elastase, cathepsin G
9	Factor xa inhibitors	Inhibits the activity of coagulation factor xa by forming equimolar complexes
10	Complements inhibitors	Possibly replace natural complement inhibitors if they are deficient
11	Carboxypeptidase a inhibitors	Increases the inflow of blood at the bite site
12	Histamine likesubstance	Vasodilator. Increases the inflow of blood at the bite site
13	Acetylcholine	Vasodilator.
14	Anesthetics substance	Anesthetic

Maintenance of leeches³²

अथैनां नवे महति घटे सरस्तडागोदकपङ्कमावाप्य निदध्यात्, भक्ष्यार्थं चासामुपहरेच्छैवलं वल्लूरमौदकांश्च कन्दांश्चूर्णीकृत्य, शय्यार्थं तृणमौदकानि च पत्राणि, त्र्यहात् त्र्यहाद्वाभ्योऽन्यञ्जलं भक्ष्यं च दद्यात्, सप्तरात्रात् सप्तरात्राच्च घटमन्यं संक्रामयेत् (Su Shu 13/17)

- ✓ New pot should be taken
- ✓ Placed some mud inside the pot
- ✓ Put some vegetation growing for leeches to grow from the same pond from where you catches the leeches,
- ✓ 3 days replace everything

- ✓ 7 days, replace pot

Things to be consider for leeches

- ✓ Temperature should be 26-28 C, if you keep the leeches in sun in the water itself,
- ✓ Humidity 85-90
- ✓ Water pH, ammonia, 5tds, chlorinated water is dangerous for the leeches. Leeches can be collected from lake, dirty water from near the house or water fall, untreated well water etc. Bore water is not good for leeches,
- ✓ Green light =breeding

Unhealthy leeches (Ayogya jalaukas)

स्थूलमध्याः परिक्लिष्टाः पृथ्व्यो मन्दविचेष्टिताः ॥

अग्राहिण्योऽल्पपायिन्यः सविषाश्च न पूजिताः^{३३}

Jalaukas which are expanded in the middle, are dirty, flat or are dull in movement and who not stick are well.

C. SHRINGA -

Here *shringa* means *goshringa*. Length of the *shringa* must be eighteen *angula* and diameter of the base must be three *angula*. This wide is placed on the skin. The base must exactly fit at the site of *raktamokashana* like buttocks, shoulders, inner aspect of the thighs, back of the chest where hair are absent, palmar aspect of the forearm etc. but the places like foot, heel, penis, jaws, nose etc. are not suitable for *shringa* application.

As *shringa* is *ushna*, *slakshna* and *Madura*, it is used in all *vatapradhana vyadhis*. According to *acharyavagbhata*, it can be used in *vata-pitta* disorders and also in *kandu* and *suptata* in the body because of *vata-rakta Dusti*. It can be used for extraction of *twakagata sthita dushita rakta*. It is indicated in *vidradhi*, *vataavidhi*, and *mandala kustha*. It can be done after *swedana* and *lekhana*.

Dosha and Shrung

When blood vitiated with *kapha Doshas* do not use *shrung* otherwise it will create *Skandanatwa* so that proper drainage will not occur due to closer of passage.

Measurement-

The length of the *shrung* should be 18 *angula* it should also come from white cow, the part which kept on the body and part should be covered with soft cloth, cotton or any other things. The opening of the shrung should be *mugda* (Geen Gram) size.

Prachana karma (Main Procedure)-

तत्र प्रच्छिते तनुबस्तिपटलावनद्धेन शृङ्गेण शोणितमवसेचयेदाचूषणात्, सान्तर्दीपयाऽलाब्बा । (जलायुका वक्ष्यन्ते)
॥८॥

It is done by the using the mouth of *shrung* on the patient's body to suck and create negative pressure inside the *shrung* so the blood taken out of body. The cloth should be clean, thick, like gauze, it should not be so much thick it should be good to cover.

- Covers the area with its wide open end attach its narrow end to suction apparatus.
- Apply suction to mark out the area
- Make few pricks with surgical blade or niddle
- Again keep the *shrung* on the market area and create vacume inside, using the suction apparatus Vacuum pump.
- Blood Gradually collected in the *shringa*
- Torch can be lit from one side see the level of blood collected by Trans illumination.
- Usually 50-100 ml blood collected.

Alternative of shringa

Syringe with its nozzle neatly cut off. Without sharp edges or breast pump can be used instead of shrung, Plastic funnel can be used also.

Materials

- Lancet/needle/surgical/shaving blade
- Basin
- Trays
- Sponge holder
- Cotton balls
- Cleaning solution
- Gauze bandage
- Gloves
- Crepe bandage holding stick

Defintion:^{xxxv}

अलाबु कटुकं रूक्षं तीक्ष्णं च परिकीर्तितम् ॥

तस्माच्छ्लेष्मोपसृष्टे तु हितं तदवसेचने ॥७॥ Su.Su.13/7

Alabu is *Katuka Satmbhaka*, *Ruksha*, and *Tikshna* and so it is used in *kaphadusti*.

Acc.to *Acharya Vagabhat*,

- ✓ *Sthanikarakta dusti-pracchanna*,
- ✓ *Grathitarakta-jalouka*
- ✓ *Suptasthana-siravyadha*

Indication:

Kapha Dusti rakta as *Alabu* and *khada* has *katu rasa* and *rooksha*, *theekshana* properties.

When diseases will occur on superficial area then we have to use *shrung and Alabu*.

Quality of *Alabu*

अलाबु कटुकं रूक्षं तीक्ष्णं च परिकीर्तितम् ॥

तस्माच्छ्लेष्मोपसृष्टे तु हितं तदवसेचने ॥७॥

According to *Saluki*

- Length 8 *angula*
- Width 4 *angula*
- Good opening
- External part converted by thin layer of back mud

There are other opinions too

- 1) There are two openings for *shringa* and only one opening for *Alabu* at its base. Length of *alabu* is 12 *angula* and diameter of the base is 3-4 *angula*.
- 2) As *Alabu* is *katurasatmaka,ruksha,tikshna*; it is used in *kaphadusti.Kapha-vata yukta rakta dusti*,in *Avaghadhatar aavastha* of *dosas* and *twakasthitadosas*.
- 3) Preparation of *Alabuyantra*-
- 4) Select a round based bottle-gourd. Allow it to dry in sun. Make a one rupee coin sized hole at its bottom and take out all the pulp and seeds. Paint with varnish throughout its interior. The other end of bottle-gourd should be narrower than the bottom.

Principle behind the Procedure-

1/5th of the atmospheric air contains oxygen and when it is consumed by the flame of candle within a container then 1/5th vacuum will be created. This vacuum is to be occupied by fluid or solid that is available at its bottom.

Procedure- gives a small incision on skin. Without wasting any time, place a small piece of leaf by a side of the neck. Place a spirit swab on the leaf and light it with a match stick. As the swab burns up, cover it with the bottom of the *Alabuyantra*; within a few seconds flame gets vanished. The patient notices as if the skin is being squeezed into the space of *Alabuyantra*. Patient also experiences the gushing out of blood from the incision. The skin edges will be caught tight by the margins of *Alabuyantra* till the bloodletting is completed. Then slowly the base gets slackened and blood dribbles out.

Prachana karma of Alabu

- Press the mouth of the Alabu on the body and to make an impression on the area.
- Make a few pricks within the impression.
- Lit a piece of camphor and put, inside the *Alabu*.
- The *ghat* or *Alabu* place on the patient horizontal position so that there will no injury will happened with the patient.
- Blood will be collected inside due to the reverse pressure created inside.
- When the oxygen is burned up, creates vacuum and gets attached to the body.
- When the pressure equalize *Alabu* detaches
- Crystal glass etc can be used instead of *Alabu*.

Ghatyantra -

Here also the same principle is followed as that of *Alabuyantra*. This is a round glass cup with a round opening at its base almost look like a chimney with a single opening.

D. PRACHACHANA-

Indication

Some disease like *kustha*, *Visarpa*, *rajaykashama* along with localized *Dusti* of *rakta dhatu*, localized eczema, localized vein thrombosis and whichever disease are *ekdesha* or localized *Prakshana* can be done and which diseases are deep rooted, stagnated, spread all over the body.

Prachachana karma is indicated in *avasechana* of *pindita rakta* and when *vyadhi* is *twakasthita*. Along with this it is indicated in *indralupta*, *vatarakta*, *kshudrakustha* etc. diseases.

Precautions

- ✓ Prick should not be so deep
- ✓ Should be uniform from below upwards and side to side.
- ✓ Do not do so deep on bony prominence.
- ✓ Also start from the below, do not try to start from upward and try to come down because once blood start flowing you will be able to see what is below, if you go from below to up it is easier for you and you will be better able to see.

Procedure-

- 1) Wipe with a blunt instrument to promote bleeding
- 2) When the required amount of blood is let release the tourniquet.
- 3) Indicated site is to be tied by tourniquet so as to make veins engorged or prominent.
- 4) Without injuring the joints, capsule, tendons, bones and *marmastanas* give multiple incisions with *utpalapatra sastra* vertically and parallel to the course of blood vessels. Never give transverse incision.
- 5) Apply *swedana karma* on these incisions to allow the blood to ooze out.

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