



**RAKTAMOKSHAN- AN ANCIENT AYURVEDIC PARASURGICAL PRACTICE AND
ITS APPLICABILITY IN CONTEMPORARY CLINICAL PRACTICE: A REVIEW**

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ABSTRACT

Ayurveda is about ten thousand year old science. There are several surgical and parasurgical procedures mentioned in ancient ayurvedic texts which are applicable today by making few technologic modifications to traditional use of them. One such parasurgical procedure is *raktamokshan* (bloodletting). Acharya Sushruta, father of Indian surgery, considered *rakta* (blood) as a fourth *dosha* (bodily humour necessary to carry out physiological functions) as it is responsible for nourishment of body and our efforts should be towards maintaining its health. Vitiating of *rakta* leads to varying pathologies. *Raktaj* (blood borne) and *pittaj* (bodily humour responsible for metabolism and transformation) diseases that cannot be cured by medication are treated by bloodletting. It is very ancient yet less accredited application of ayurveda. Leech therapy, venesection, cupping therapy which are gaining name today are all described as a subtype of *raktamokshan* in ayurveda thousands of years back. Nowadays, a lot of trained ayurvedic practitioners are practising *raktamokshan* (bloodletting) therapy. The present study enlightens the scientific practice of these procedures by acharyas as well as modern technologic advances applied for their use.

KEYWORDS: *Raktamokshan*, jalauka, Siravedha, ghatyantra, *bloodletting*.

INTRODUCTION

Acharya Sushrut, father of Indian surgery mentioned several surgical and parasurgical procedures at various contexts. *Raktamokshan* (bloodletting) being one of them. *Dhatus* (tissues) are the entities that retain body, mind and *prana* (life).^[1] *Rakta* is second *dhatu* formed in sequence. Few *acharyas* consider *rakta* as a fourth *dosha* (physiological humour necessary for life) keeping in mind its significance in sustaining life.^[2] According to our ancient literature, the *kshaya* (depletion) and *vridhhi*(restoration) of dhatus depend upon *rakta*.^[3] It is the pillar of entire body.^[4] *Doshadhatuasraya-ashrayibhava* (Mutual Interdependence of *dosha*and *dhatu*) accredited to Acharya *Vagbhata* says that *vata* resides in *asthi*(bones), *pitta* resides in *rakta* (blood) & *sweda* (sweat), *kapha*resides in rest of the *dhatu*.^[5]

Raktadhatu (Blood) in untainted or healthy status looks like fiery gold which turns red after putting in fire; *Indragopa* (red colored insect), red lotus or like *AbrusPrecatorius* (*Gunja*).^[6] *Raktadhatu*(Blood) is

anushansheeta(neither very cool nor very warm). It is sweet; unctuous, red in colour, heavy and has a characteristic smell.^[7] *Rakta* is a *teja* and *jalamahabhuta* predominant *dhatu*. Acharyas dictate maintenance of life processes & supporting the body as the main functions of *rakta*. To further emphasize the importance of *rakta*, it is considered one of the *pranayatna* (seat of life) by *acharyas*.^[8] It means something essential for sustaining life.

Raktavahastrotas play an important role in metabolism of *raktadhatu*. The principle organs are *yakrita* (liver) & *pleeha*(spleen).^[9] Patency of *strotas* (conduits) are obligatory for unrestricted circulation of blood. Any vitiating inbetween leads to *strotodushti* (aberration in channels) in form of *atipravritii* (undue excess formation), *sang* (obstruction), *siragranthi* (growth inside conduits) and/or *vimarg-gaman* (leaving its own channel and entering unusual channel).^[10] It leads to varying diseases as summarised in Table 1. The coagulation factors essential for clot formation are

synthesized in liver. Spleen filters & cleanses blood, creates new blood cells in fetal life and stores platelets which are released in case of severe bleeding. The endothelial layers of blood vessels are considered as *raktadharakala*. It plays significant role in formation and storage of *raktadhatu*. The normal endothelium degrades adenosine diphosphate and inhibits platelet aggregation. Injury to endothelium leads to expression of adhesive molecules & procoagulant activities leading to formation of clot.^[11]

Raktamokshan (bloodletting) is considered best therapy in blood borne and *pittaj* diseases as *pitta* has similitude with *rakta* because of *sansargata* (close relation between two), *pradushanata* (vitiated by *pitta*) and *gandhavarna-anuvidhanata* (acquires its odour and colour).^[12] Bloodletting can be done by several procedures depending upon the pathology. *Siravedha* (venesection) is done in deep seated or generalised vitiation of *rakta*. *Shringa* (animal horn), *alaabu* (dried gourd), *ghati* (bell shaped earthen pot) are applied for numbness or tactile loss. *Jalauka* (leech) is applied if disease is in sub-cutaneous region. If disease is in skin or in form of localised swelling, *pracchan* (scrapping) is done.^[13]

Various procedures of bloodletting are mentioned in ayurveda alongwith indications and contraindications for each. Every procedure has detailed description which can be divided in to pre-, during- and post procedure do's and don'ts. The need of the hour is to make it accessible to masses by opting modern techniques and parameters.

METHODOLOGY

The present study is conducted after thoroughly undergoing

1. Critical reference of ayurvedic texts especially *brihatrayee* in relation to *rakta* and *raktamokshan* as a modality.
2. Recent advancements in procedures by which bloodletting can be done.
3. Relevant internet search like ncbi, researchgate, google using keywords *Raktamokshan*, *jalauka*, *Siravedha*, *ghatiyantra*.
4. Various articles concerned with bloodletting therapy and its applicability in today's world.

A correlation is made between ayurvedic and contemporary concept of bloodletting. And a compilation of particulars is made in light of modern view of *raktamokshan*. Role of bloodletting therapy as adjuvant to present line of management of blood borne diseases is appreciated.

DISCUSSION

Three basic physiological entities considered to be pillars of life are *vata*, *pitta* and *kapha*. All have different functions in body. *Kaphadosha* is responsible for growth and maintenance marking its anabolic or synthetic activity. *Pitta dosha* is responsible for all type of metabolic activity at the GI tract as well as cellular level.

Vatadosha is responsible for movement at muscular as well as nervous system level. Sushruta being the father of surgery gives much importance to *rakta*. Pure blood is considered as pillar for life. Amount of *raktadhatu* in body is 8 *anjali* (the maximum volume one can bear in both hands brought together).^[14] Because impure blood can cause diseases it should be removed from body time to time.

Pitta resides as *ashrayi* (dependent) in *rakta* (blood) and *sweda* (sweat).^[15] When *pitta* is vitiated and cannot be treated by *pitta* alleviating medicines, bloodletting is helpful. It is therapy for both vitiated *rakta* and *pitta* as both are acquaintances. *Vata* and *kapha doshas* are also responsible for *raktadushti*. Properties of vitiated *rakta* by three *doshas* are given in Table 2.^[16] Bloodletting removes impure blood vitiated by imbalanced *doshas* from the body.

Acharyas classify several methods of bloodletting as *Siravedha* (venesection), *shringa* (horn of animal), *alaabu* (dried gourd or long fruit of cucurbitaceae family), *ghati* (a medium sized bell like instrument with one end open), *pracchan* (superficial phlebotomy) as per severity and depth of conditions.

It can be done using sharp or blunt instruments as mentioned in flowchart 1.^[17]

A. Using sharp instruments: It includes *prachhana* and *Siravedha*

1. *Prachhana*: literal meaning 'quick sharp incisions'.
2. *Siravedha*: directly puncturing a vein with a needle.

B. Using blunt instruments: *Shringa* (horn of animal), *alaabu* (dried gourd or long fruit of *cucurbitaceae* family), *ghatiyantra* (a medium sized bell like instrument with one end open); all three instruments are used after *pracchan* (superficial phlebotomy). The principle of action is generation of negative pressure and increase in blood circulation to that localised area. Application of *jalauka* (Leech therapy) is one of the procedures included under *ashastrakrita* (without using sharp instruments) *raktamokshan*.

Certain specified conditions are also mentioned where bloodletting needs to be done.

Indications of bloodletting: Diseases occurring due to vitiation of blood and *pitta* shall be dealt with bloodletting. These include abscess, pain because of *vata*, skin diseases, inflammation, filariasis, poisoning, all types of growths/tumors, erysipelas, sexually transmitted diseases, breast diseases, odontitis, uvulitis.^[18] These disorders include vitiated *rakta* in their pathogenesis which is to be removed by bloodletting.

Contraindications of bloodletting: Pregnancy, fasting, generalised oedema, chest injury, severe malnutrition, dehydration, anaemia, acute asthma, immediately after *vamana*, *virechan* and *basti*.^[19]

Leech therapy

Ancient perspective of leech therapy: Leech therapy is very ancient yet less accredited concept of Ayurveda. It requires proper selection of patient and leeches, purification, maintenance of leeches in earthen pots as mentioned in ancient texts. Acharya Sushruta has defined two types of leeches- poisonous and non-poisonous with each having six subtypes. *Hirudo medicinalis* is used most commonly for therapeutic purposes nowadays.^[20] Non-poisonous types are used for bloodletting. Application of poisonous leeches causes, oedema, itching, fainting, fever, burning, vomiting and intoxication. He has mentioned use of leech in children, women, elderly, princely and other subtle patients as it is the mildest form of bloodletting.^[21]

Technique of Jalauka Application^[22]

A. *Purva Karma* (Pre-Procedure)

1. Proper *snehana* (oleation) and *swedana* (sudation) of the patient.
2. Cleansing of Leech by pouring the Leech in water mixed with turmeric powder.
3. Site of application preparation: Cleaning of part of the body to which leech is going to be applied.

B. *Pradhana Karma* (Chief Procedure): Prick the skin with a sharp and sterile needle before application of leech so that drop of blood comes out and then apply the Leech through. It is to be covered by wet cotton cloth. Apply *madhu* (honey), *ghrit* (ghee), or butter if leech is not sucking blood from the site.

C. *Paschata Karma* (Post Procedure): After sucking sufficient blood, they separate from the area on their own. 3-4 leeches are applied at effected area usually. If the patient feels pricking, itching or discomfort at the site of leech application it means leech has started sucking fresh blood. It is when leech should be removed from the site.

1. **Patient care:** There is oozing of blood from wound created by the mouth of leech after detachment. It is checked by use of *Yastimadhu* (*Glycyrhizaglabra*) or turmeric powder or application of digital pressure or tight bandaging with the cotton cloth.
2. **Leech care:** *Vamana* (Stimulation of emesis) of the leech also has to be done so that it can be applied to the same patient for subsequent procedure. Leech is pressed from hind to front end for emesis or turmeric powder is applied over leech's mouth. After *vamana*, leech is put in fresh water in clean jar.

One leech usually sucks 5-10 ml of blood.^[23] Feeling of lightness in body, alleviation of pain, lessening in severity of the disease and joyful mind are the symptoms of proper *vishravan* (bloodletting).^[24]

According to a study done to establish efficacy of leech therapy in management of osteoarthritis (*Sandhivata*), it was observed that there is a significant decrease in symptoms including pain, stiffness, and tenderness on application of leech therapy in *sandhivata*.^[25] Recent advances in leech therapy have led some researchers to believe that purified extract obtained from especially salivary glands of leech show an antimicrobial activity against many Gram-negative/positive pathogens. They reported that leech extract had a high antibacterial activity against *Shewanella* and *Aerococcus viridans* while a lower activity was observed against *Escherichia coli*, *Salmonella typhi* and *Staphylococcus aureus*. They concluded that leech extract could be used in the treatment of bacteria-induced illnesses including arthritis, foodborne disorders, and nosocomial infection.^[26]

Mode of action of leech therapy and its modern day application:

Leeches have biologically active compounds in their secretions especially saliva. Recent researches unveil the presence of bioactive peptides and proteins in its saliva. These include antithrombin (hirudin, bufrudin), antiplatelet (calin, saratin), factor Xa inhibitor (lefaxin), antibacterial (theromacin, therozymin). During feeding on blood, leeches secrete a complex mixture of different biologically and pharmacologically active substances into the wounds. Leeches saliva is rich in antithrombotic agent hirudin. So it is effective in management of cardiovascular diseases which effect heart, veins and arteries. Leech's saliva has inhibitory action on thrombin. It also increases blood flow to the localised area temporarily. It also has inhibitory action on Xa coagulating factor. Thus it blocks the coagulation cascade and proves to be a fibrinolytic agent.^[27]

Microsurgery is carried out under microscope to anastomose small blood vessels, veins and arteries during reconstruction or replantation of tissues or amputated parts. Leech biting of the part induces blood oozing, secretion of bioactive enzymes, anticoagulants and vasodilators thus preventing venous congestion of that part. The duration of leech therapy post-surgery is variable and depends upon the recovery of patient. Besides this, leech saliva is known to have analgesic, anti-diabetic, anti-microbial and antimetastatic activity in favour of which several researches have been conducted.

Siravedha (Venesection): Acharya Sushruta has described 700 *sira* in the body. 400 *sira* are in appendages, 136 in trunk region, 164 in head and neck region. Out of these 98 *sira* are *avedhya* (not suitable for venesection).^[28] While in rest of *sira*, blood can be drawn as per pathology. Certain diseases in relation to site of *vedhan* (venesection) are described as given in Table 3.^[29] It is contraindicated in weak, pregnant, infants, old age and patients suffering from diseases like anaemia, immediately after *panchkarma* (detoxifying therapies), emaciation, high fever, epilepsy, paralysis, fasting and

syncope as patient's *bala* (strength) is already compromised. Bloodletting will further aggravate *vata* and lessen strength in such patients as the fate of *rakta* is unstable after *raktamokshan* and special attention has to be given to strength of *agni* (basic metabolism).^[30] *Kutharika* (axe shaped blade), *vrihimukha* (trocar), *aara* (awl), *vetaspatra* (scalpel) are some of the instruments mentioned in ancient texts used for *suchivedhan karma* (puncturing or cutting vein).^[31] These are replaced by accessible bored needles in contemporary practice.

Application of *Siravedha* in modern day: Venesection shall be performed by trained ayurvedic physician only as it can have complications if not done suitably. Procedure includes internal and external *snehana* (oleation) by medicated ghee or oil. After that generalised or localised *swedana* (sudation) depending upon condition is done. Liquid or light semi-solid diet having rice and water in proportion 1:6 is given to patient before procedure.^[32]

For main procedure, a day is selected when weather is favourable neither too hot nor too cold as it may interfere with vasoconstriction or dilatation. The patient is asked to lie down. After selecting the proper vein, area is sterilised by spirit swab, tourniquet is applied so the vein becomes prominent. No. 18 needle or scalp needle is used to puncture the vein and blood is allowed to flow. If venesection is done in proper way the patient will feel generalised or localised lightness, pain will be diminished, symptoms of disease will be minimised and he would feel blissful.

While explaining the significance of *raktamokshan*, *acharyas* say that bloodletting done at regular intervals prevent occurrence of several skin disorders (like leprosy, urticaria, dermatitis, eczema), *apachi* (lymphadenopathy), *gandamala* (inflamed cervical lymph nodes), *galganda* (goitre) and several types of swelling, oedema all diseases caused by impure blood.^[33]

Ghatyantra (Application of bell like earthen pot)

Acharya vagbhat mentions use of *alaabu* and *ghatyantra* in the area of numbness or loss of tactile stimulation. In treatment of *gulma* (abdominal growth/swelling/tumour), he says that after oleation and sudation when *gulma* becomes flaccid, apply *ghatyantra* over it. Once the affected area gets raised within *ghatyantra*, remove it and hold the area using cloth. Incise the area and then using special type of instruments *vimarg*, *ajpad* and *adarsh*, press the affected area. This is the ancient ayurvedic description of application of *ghatyantra*.^[34]

Markedly effective use of *ghatyantra* is seen in *Gridhrasi* (sciatica). It is characterized by the onset of *Ruja* (pain), *Toda* (pricking), and *Stambha* (stiffness), initially in *Sphika* (gluteal region) and then radiating distally to *Kati-Prishtha* (low back), *Janu* (knee), *Jangha* (thigh) till *Pada* (feet). The patients suffering from *Gridhrasi* have restricted movements due to painful

limb, affecting the daily routine activities. Marked reduction in severity of mean scores of *Ruja*, *Toda*, *Stambha*, and *Spandana* was seen in the patients after the use of *Ghatyantra* for *Raktamokshana*, which was statistically significant. *Ghatyantra* is found to be the simple and effective treatment (in adjunct to other treatment) for reducing *Ruka*, *Toda*, *Stambha*, and *Spandana* in *Gridhrasi*.^[35]

Application of *ghatyantra* (cupping) in modern day

Application of cupping can be done by various methods like dry cupping, wet cupping, moving cupping, flash cupping, needle cupping.^[36] In dry cupping, only negative pressure is created using air suction pump inside pot so as to raise the area of applicator. No prick is done over skin. In flash cupping, alcohol dipped cotton or simple matchstick is burnt inside pot/jar which heats the inside of the cup. It is then quickly inverted over area of application. Suction is created and area rises when air cools down. In wet cupping, the area of pain is cleaned with spirit swab. 3-4 skin pricks are given using no. 18 needle or small incisions are made, cup/jar after heating from inside is placed over that area, blood is collected in cups spontaneously.^[37] The basic principle of *ghatyantra* is increasing the flow of blood in the affected area. This will wash out the accumulated metabolites in that area and pain is relieved. Cupping therapy is accredited to several other ancient sciences whereas the basic principle or mode of its action was mentioned thousands of years ago in ayurvedic classic texts.

Raktamokshan as best treatment modality in certain diseases:

Acharya *Charak* has mentioned certain disorders where *raktamokshan* has to be done. In *vatarakta* (gout), bloodletting is indicated using *shringa*, *jalauka*, *suchi*, *alabu*, *pracchanand/or siravedha*. If *vata* is aggravated, bloodletting is contraindicated as it causes *rakta kshaya*.^[38] Bloodletting is considered paramount treatment in *visarpa* (erysipals) as it can't occur without vitiation of *rakta* and *pitta*.^[39] *Gulma roga* (abdominal tumors) that don't respond to any treatment is curable by bloodletting.^[40] In treatment of *unmada* (psychosis), *vishamjwar* (fever irregular in onset, symptoms and duration), *apasmara* (epilepsy), bloodletting is indicated in temporal region or border of hairline.^[41]

These are some of the procedures mentioned in thousand years old Ayurveda which can be done for prophylactic as well as therapeutic purposes. Prior to procedure bleeding time and clotting time of patient shall be assessed to exclude any bleeding disorder. Special measures should be kept in mind in case bleeding does not stop. The patient might need rest, proper fluid balance and maintenance of intravenous fluid intervention in such case.

CONCLUSION

Bloodletting is based on an ancient system of medicine in which blood and other bodily fluids were

regarded as humours that had to remain in proper balance to maintain health. *Pittadosha* and *raktadhatu* hold similitude with each other. Hence vitiation of one leads to vitiation of other. And when excess toxicity of *rakta* and *pitta* has occurred so much so that it cannot be cured by herbs or any other procedure, *raktamokshan* comes to rescue.

Bloodletting can prove to be highly effective in conditions like hypertension, skin diseases like acne, urticarial, dermatitis, eczema; abscess, boils etc. therapeutic phlebotomy is done in specific conditions like hemochromatosis and polycythemia vera where excess red blood cells are removed out of body.^[42] This

is thousand years old principle of Ayurveda although less accredited to it. In modern day, a lot of trained ayurvedic practitioners are practising bloodletting therapy successfully across the country. But still its access to masses is lacking. The need of the hour is to grow awareness among practitioners as well as patients towards the fruitfulness of this therapy. It can be used as a prophylactic procedure to prevent occurrence of blood borne diseases as well as therapeutic procedures in various conditions mentioned in this study. Yoga and meditation are well embraced by western world which are the two key aspects of ayurveda. Likewise it holds in itself several other enigmas like *raktamokshan* that need to be explored for the wellbeing of entire human race.

Table 1: Types of *raktavahastrotodushti* and associated diseases.

S. No.	Type of strotodushti	Modern correlate	Diseases occurring as a result of strotodushti
1.	<i>Atipravritii</i>	Undue excessive action	<i>Asrigdar</i> (menorrhagia)
2.	<i>Sang</i>	Complete or partial obstruction of <i>strotas</i> (conduit)	<i>Kushtha</i> (skin diseases), <i>pidika</i> (<i>Acne Vulgaris</i>), <i>gudpaka</i> (inflamed anal region), <i>medhrapak</i> (inflamed penis), <i>neelika</i> (nevus), <i>vyanga</i> (melanosis), <i>tilkalak</i> (non-elevated mole), <i>dadru</i> (tinea corporis), <i>charamdal</i> , <i>shwitra</i> (leprosy), <i>pama</i> (scabies), <i>kotha</i> (urticarial), <i>pleeharoga</i> (spleen disease), <i>kamala</i> (jaundice), <i>vatarakta</i> (gout)
3.	<i>Siragranthi</i>	Growth inside conduits	<i>Arsha</i> (piles), <i>vidradhi</i> (abscess), <i>arbuda</i> (growth or swelling)
4.	<i>Vimarg-gaman</i>	Entering some other conduit after leaving its usual conduit	<i>Kamala</i> (jaundice), <i>raktapitta</i> (epistaxis), <i>vatarakta</i> (gout)

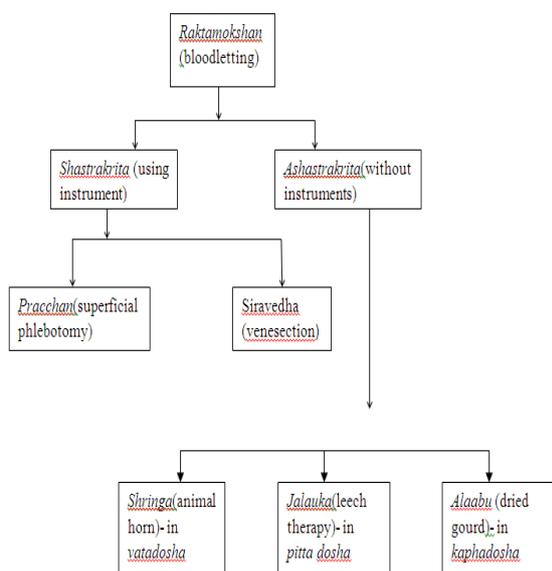
Table 2: Properties of *raktadushtias* a result of three *doshas*.

S. No.	Dosha	Properties of <i>raktadushti</i>
1.	<i>Vata</i>	Frothy, reddish-black, parched and less viscous in appearance, fast flowing and delay in clotting.
2.	<i>Pitta</i>	bluish yellow or greenish in color, pungent smelling, flies and ants revolting and takes long to clot.
3.	<i>Kapha</i>	Red ochre like in color, greasy, cold, more viscous, slimy, sluggish in flow

Table 3: Diseases in relation to site of *siravedhan*.

S. No.	Disease / Condition	Modern correlate	Site of <i>siravedhan</i>
1.	<i>Padadaha</i> , <i>padaharsha</i> , <i>avbahuk</i> , <i>chippa</i> , <i>visarpa</i> , <i>vatachonita</i> , <i>vatakantak</i> , <i>vicharchika</i> , <i>padadari</i>	Burning sensation in soles, tingling in soles, whitlow, erysipelas, gout, ankle sprain, eczema, fissures I sole	2 <i>angula</i> above <i>kshipramarma</i> (present in between big toe and next toe) by using <i>vrihimukhashastra</i> (trochar or thick needle)
2.	<i>Koshtrushirshaka</i> , <i>khanjta</i> , <i>panguta</i> , <i>vavedna</i>	Inflammation of knee joint, limping, lameness, pain caused by <i>vata</i>	4 <i>angula</i> above <i>gulfamarma</i> (ankle joint)
3.	<i>Apachi</i>	Swellings, growths in neck (lymphadenopathy)	2 <i>angula</i> below <i>indrabastimarma</i> (vital point in centre of calf muscle)
4.	<i>Gridhrasi</i>	Sciatica	4 <i>angula</i> above or below <i>janumarma</i> (knee joint)
5.	<i>Galaganda</i>	Tumour in neck (goitre)	<i>Urumula</i> (base of the thigh)
6.	<i>Pleeharoga</i>	Spleen disorders	Medial aspect of left arm near <i>kurparsandhi</i> (elbow joint) or at junction ring finger and little finger of left hand
7.	<i>Yakritaroga</i> , <i>kaphodar</i> , <i>kasa</i> , <i>shwasa</i>	Abdominal enlargement because of liver disorders, <i>kaphadosha</i>	Medial aspect of right arm near <i>kurparsandhi</i> (elbow joint)
8.	<i>Vishvachi</i>	Pain in arms (brachial neuritis)	4 <i>angula</i> above <i>kurparsandhi</i> (elbow joint)
9.	<i>Shulayuktappravahika</i>	Painful dysentery	<i>Shronisamantada</i> (around pelvis)
10.	<i>Parivartika</i> , <i>updansha</i> , <i>shukadosha</i> , <i>shukraroga</i>	Diseases of penis	<i>Medhra Madhya</i> (middle of penis)
11.	<i>Mutravridhhi</i>	Hydrocoele	Sides of <i>vishna</i> (scrotum)
12.	<i>Dakodar</i>	Ascites	Left side of <i>raphae</i> 4 <i>angula</i> below umbilicus

13.	<i>Anta-vidraddhi, parshvashula</i>	Internal abscess, pain in flanks	Left anterior axillary line
14.	<i>Bahushosha, avbahuk</i>	Wasting of arm, loss of movement of the arm	Middle of two scapula
15.	<i>Tritiyakajwar</i>	Tertian fever	Middle of <i>trika sandhi</i> (upper back)
16.	<i>Chaturthakjwar</i>	Quartan fever	Below scapula on either side
17.	<i>Apasmara</i>	Epilepsy	Middle of <i>hanu-sandhi</i> (temporo-mandibular joint)
18.	<i>Unmada</i>	Insanity	<i>Shankha</i> (temple), <i>keshant sandhi</i> (border of hairline), <i>vaksha</i> (chest), <i>apanga</i> (outer angle of eye), <i>lalaata</i> (forehead)
19.	<i>Jihva and dantroga</i>	Diseases of tongue and teeth	Below tongue
20.	<i>Taluroga</i>	Diseases of uvula	Uvula
21.	<i>Karna roga, karnashula</i>	Ear disorders and ear ache	Above and around ear
22.	<i>Timira, akshipaka, netraroga</i>	Partial blindness, ulceration of eye, diseases of eye	Near nose, <i>lalaata</i> (forehead), <i>apanga</i> (outer angle of eye)
23.	<i>Shiroroga, adhimantha</i>	Diseases of head, diseases of eye	Same as above



Flowchart 1: Types of modalities of raktamokshan.

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