



CONCEPT OF HAEMOSTASIS BY ACHARYA SUSHRUTA VIS-À-VIS RAKTASTHAMBANOPAYAS
ANUJA KITTURKAR^{1*}, SIDDANAGOUDA A. PATIL²

^{1*}Assistant Professor, Department of Shalyatantra, SBG Ayurvedic Medical college and Hospital, Belagavi.

²Professor, Department of Shalyatantra, Ayurveda Mahavidyalaya and Hospital, Hubballi.

Corresponding Author Email: anujakitturkar28@gmail.com Access this article online: <https://jahm.co.in/>

Published by Atreya Ayurveda Publications under the license CC-by-NC-SA 4.0

Submitted on- 01-05-24

Revised on- 05-05-24

Accepted on-06-05-24

ABSTRACT:

Dhatus are one among the basic constituents composing the body, These form the foundation to structure, support and sustain life. *Rakta* among them is responsible for the *utpatti*, *sthiti* and *pralaya* of the body. *Rakta* is correlated to blood which is merely a fluid connective tissue, however the utility of *Rakta Dhātu* is considerably more expansive than that of blood. The complications of bleeding can range anywhere from reduced tissue perfusion to death. Hence various techniques and methods of haemostasis have now been implemented. *Raktasthambhana* means to stop excess flow of *Rakta* because *Atyaadhika Raktasrava* may be life threatening. In *Ayurveda Chaturvida Raktastambhana Upayas* are explained. Certain *Vyadhis* as well as procedures have mentioned *rakta shrava* as a *laxana* or complication, *Acharya Sushruta* has also also mentioned the management of the same as well as various drugs and procedures which can be performed to arrest bleeding. The relevance of these techniques will be evaluated hereby.

KEYWORDS- *Haemostasis, Rakta, Raktasthambhana, Raktasthambhanopaya, Sushruta.*

INTRODUCTION

Rakta is considered a subtle factor which sustains life and it is the mainstay of body.[1] It is considered as *jeevana* [2] which refers to the manifestation and maintenance of life force. The word *stambhana* means to prevent mobility or *Cesate*. *Rakta stambhana* means to stop excess flow of *Rakta*. The *prana vayu* which circulates with blood gives all living cells life. *Rudira* is *mula* for *deha* and *sharira* is supported and maintained by *Rakta*, so it should be protected by all efforts as *rakta* is *Prana*. The three elements namely *Vata*, *Pitta*, and *Kapha* are the source of the body and keep it in balance, much like a house supported on three pillars (*Tristhuna*). When they get vitiated, they cause devastation. Similarly, *Shonita*, the fourth *Dosha*, is likewise present at the moment of the body's creation, existence, and demise. [3] *Rakta dhatu* have alternatives names such as *Rudhira*, *Asrik*, *Shonit*, *Kshataj*, *Lohit* and *asru*. *Raktavaha srotas* refers to channels involved in circulation of this *dhatu* and the *moola* of these *srotas* are *Yakrut* (Liver) and *pleeha* (Spleen)[4] If there is loss of *Rakta Dhatu* due to any reason, there will be *Kshaya* (decrease) of all other *Dhatu* and vitiation of *Vata* [5]. Hence it should be preserved with the greatest care.

A haemorrhage is an unforeseen loss of blood caused by extravasation of blood vessel. Damage to the superficial blood vessels in the skin can cause minor bleeding, ecchymosis, and petechiae. On the other hand bleeding can range from self-limiting ooze to abrupt loss of

consciousness and patient may land in hypovolemic shock. There is a potential for both internal and exterior bleeding. External bleeding may result from a natural orifice or from trauma. High degrees of clinical suspicion must be established by through history, clinical examination, laboratory investigations, imaging, and cautious monitoring of vital signs in order to rule out internal bleeding. The main goals of resuscitation are to arrest the bleeding and replace the amount of circulating blood volume. This article reviews the evaluation and management of haemorrhage w.r.t *Sushruta* and highlights its role and efficacy in present day.

Haemostasis-Haemostasis is the body's multifaceted response to haemorrhage. The body's natural haemostatic mechanism can handle minor to major bleeding. Vasoconstriction, platelet plug production, and blood coagulation are its three sequential phases. The process through which blood transforms from a liquid to a gel forming a blood clot is known as coagulation. It may lead to haemostasis, which is the stopping of blood loss from an injured vessel. Three crucial processes are involved in the coagulation of blood:

- 1) During extravasation of blood a complicated series of chemical reactions involving over a dozen blood coagulation factors take place in the blood. Consequently, a complex of

activated molecules is formed and referred to as a prothrombin activator.

2) The transformation of prothrombin into thrombin is catalysed by the prothrombin activator.

3) The clot forms when fibrinogen is transformed into fibrin fibers by the enzyme thrombin, which entangles platelets, blood cells, and plasma to arrest bleeding.

MATERIALS AND METHODS.

Primary resources- *Bruhatrayee, Laghutraye*, and other classical sources along with their commentaries has been included

Secondary resources- Different articles, research papers and internet sources were considered

Methods Above mentioned materials were utilised to study the various methods employed to arrest bleeding and they have been elaborated consecutively.

Clinical features of Rakta Atipravrutti (Haemorrhage)-

Rakta being liquid in nature, the volume of the *rakta dhatu* can decrease or increase. If the volume of *rakta dhatu* decreases extremely then the *jeevana karma* is hampered and sustenance of life is very difficult. Signs and symptoms of *Rakta kshaya* are the reserve point indicators showing that there is decrease in quantity of *rakta*. The ancient *Ayurveda* scholars were also aware about complications of heavy bleeding and most of them are similar to as in modern medical science. *Shiroabhitaapa* (headache), *Andhyatwa* (blindness), *Adhimantha* (a disease

of the eye), *Timira* (partial blindness), *Dhatukshaya* (depletion or loss of tissues), *Aakshepaka* (convulsions), *Pakshaghata*, *Ekanga vikaar* (paralysis), *Trushna* (Thirst), *Daha* (burning sensation), *Hikka* (hiccup), *kasa* (cough), *Swasa* (dyspnoea) *Pandu* (anemia), unconsciousness and death are described as complication of heavy bleeding.

Rakta stambhana upayas by Acharya Sushruta

Acharya Sushruta listed four fundamental haemostatic techniques namely *Sandhana*, *Skandana*, *Pachana* and *Dahana* as principles to arrest Bleeding[6]. Certain *Vyadhis* as well as procedures have mentioned *raktashrava* as a *laxana* or complication, *Acharya Sushruta* has also mentioned the management of the same as well as various drugs and procedures which can be performed to arrest bleeding which are listed hereafter.

Techniques to arrest bleeding described by Acharya Sushruta are enlisted underneath.

Skandana- At first this method should be used. It means clotting or coagulation of blood with the help of *Hima Dravya* (cold drugs). Cold poultices were administered over bleeding wounds and a moist cloth should be placed over the patient's wound or body or cold liquid can be poured or Patient should be kept in cold environment. Reduced temperature causes vasoconstriction and induces haemostasis, Same principle is employed by using ice packs in closed wounds.

Sandhana- It literally means uniting or joining the edges of the wound is called as *sandhana*. The astringent drugs are used for this purpose. If the bleeding cannot stop by *skandana karma*, then this method should be utilised. When administered internally, astringent medications may cause mucous membrane or tissue to shrink and are frequently used to control internal bleeding or mucous secretions. In situations of uncontrolled bleeding which is not arrested by cauterisation or compression the site of bleeding vessel is ligated and divided on same principles.

Pachana- In condition of failure of *Sandhana karma* it should be done. It means ripening or digestive measures by using the *Bhasmas* (burned ash powder) to achieve haemostasis. It might be regarded as a caustic material depending on the preparation because the ashes are primarily of an alkaline character. *Kshara* application at site of bleeding causes breakdown of local tissue protein when applied topically or by dusting, which causes coagulation by chemical reaction at the site of application.

Dahana- *Dahana* should be done by using *shalaka* if none of the above treatment work out. *Dahana* means Burning or heat application by various sources. If haemostasis is not achieved, *Agnikarma* is the definitive option in controlling the bleeding. *Agnikarma* with *ushna tailas* is also indicated in bleeding from veins.[7] Electrocauterization is a technique often used in surgery to control bleeding and to rapidly

dissect soft tissue in surgery. The electrical resistance of these soft tissues to an electromagnetic current generates heat, this heat generated is used for cutting or coagulation of tissue and sometimes both. Presently newer sources of energy such as Laser are utilised to generate heat and serve the dual action of cutting and coagulation.

In cases of bleeding from *Guda marga Vidarigandhadigana kashaya* with *draksha, grutha, madhu* should be administered as an *asthapana basti*. After giving *ksheera bhojana, anuvasana basti* is given with *yasti madhu sadita grutha*. [8] If *rakta pravrtti* is from *mutra marga* then *Uttara basti* is given with *priyangu, rodhra, anjana, utpala, gairika, rakta chandana*, etc drugs [9]

After *siravyadha karma* if there is *atiraktasrava* then *churna* of *rodhra, madhu, priyangu, patanga, gairika, Sarja rasa, rasanjana, shalmalipushpa, shanka, shukti, masha, yava, godhuma* should be sprinkled on the wound and pressed into the wound with the tip of fingers or powder of bark *sala, arjuna, arimeda, meshashrunji, dhava & dhanvana*; ash of *kshauma*, or powder of *samudraphena & laksha* may be sprinkled

Internally the decoction of *Kakolyadigana* added with sugar and honey should be given to drink in case of haemorrhage. if there is *rakta kashya* or blood loss we must simply replace it with blood in critical cases, the whole blood of deer, antelope, camel, rabbit, buffalo or boar could be given to drink. In critical case of haemorrhage,

the whole blood of deer, antelope, camel, rabbit, buffalo or boar could be given to drink. This is justified with replacement by various transfusion methods today. Since risk assessment and the resources available at the time were taken into account, *Acharya Sushruta's* initial concept which was ultimately established as blood transfusion was executed with few difficulties. Additionally, there are numerous reports of blood being administered other than internally such as by *rakta basti* (enema) in conditions like *pandu* (anaemia) etc. External therapies by *Angulya greha avapeedana* (compression by fingers) *Pariseka* with *sheetla jala* or *kashaya dravyas*. *Pradeha* with, *madhura, snigdha sheeta dravyas* and various methods of bandaging are mentioned. Numerous types of hemostatic materials have been developed, such as hydrogels, sponges, particles, and nanofibers. The numerous forms each have unique features and application requirements, subsequently various bandages and dressing materials act as a source of compression to help arrest bleeding.

In various kinds of preparation, almost all of the plants that have been discussed here are used in traditional practices to prevent bleeding. The bioactive compounds found in plant extracts are primarily responsible for their haemostatic activity, as they are frequently engaged in bleeding control by stimulating coagulation.

DISCUSSION

Haemorrhage, often poses a threat to life if not treated promptly and efficiently. Haemorrhage

control is therefore of utmost significance. There are several different haemostasis techniques practiced in the current state of medical knowledge. However, the treatments outlined in the Ancient Indian Sciences especially by *Acharya Sushruta* are uncomplicated and less invasive while still being more efficient by posing fewer risks.

Sandana refers to the techniques for tying, bandaging, and suturing which are used to halt bleeding; These ligatures, sutures or knots enable tissue support to be held back in place and constricts the bleeding vessels which speeds up the onset of haemostasis by platelets. *Skandana* includes various cooling measures such as applications of ice or cold packs etc that tend to increase blood viscosity and vasoconstriction. *Pachana* by means of medicated powders which are chemically Alkalis and alkaline preparations produce liquefactive necrosis by denaturation of proteins and saponification of fats at site of bleeding and establish haemostasis. *Dahana* refers to applying direct heat externally that can coagulate and constricts the veins. Thus, provide the haemostasis. This process is done by electric cautery in modern medical science. Various other advanced sources of heat such as laser serve the same purpose of coagulation and arrest of bleeding.

Various drugs, drug combinations, and modes of utilization of these drugs are suggested by *Acharya Sushruta*. These mentioned medicinal plants have been utilized to control bleeding.

The haemostatic activity of plant extracts is mainly attributed to several mechanisms, including coagulation stimulation via increasing the factor XII activity and plasma fibrinogen levels. The vascular or smooth muscle constriction and platelet aggregation. Hence support haemostasis.

CONCLUSION

Hemostasis techniques such as *sheetopachara*, *gaadabandhana*, and *agnikarma*, which Acharya Sushruta discussed, are comparable to those employed today. When compared to the haemostatic procedures currently in use, the *raktastambhana* techniques stated in the *Samhitas* have similar significance to our *acharyas*. An increase in the number of deaths as a result of bleeding have been reported in the recent times. Subsequently the development of medicine has led to new discoveries such as topical haemostatic agents, infrared and Laser coagulation, Conversely, the methods outlined in *Ayurveda* are relatively inexpensive and simple to apply. Nonetheless, all current haemostasis methods are variations of the *raktastambanopayas* described by Acharya Sushruta and their fundamentals are sound till date.

REFERENCES

1. Kaviraj Ambika Datt Shastri(editor).Sushruta Samhita of Acharya Sushruta, Sutrasthana, chapter 14, verse no.44,edition reprint,Varanasi; Chaukhambha Sanskrit Sansthan;2017:73
2. Kaviraj Ambika Datt Shastri(editor).Sushruta Samhita of Acharya Sushruta, Sutrasthana, chapter 14, verse no.44, edition reprint,Varanasi; Chaukhambha Sanskrit Sansthan;2017:73
3. Kaviraj Ambika Datt Shastri(editor).Sushruta Samhita of Acharya Sushruta, Sutrasthana,chapter 21,verse no.3,edition reprint,Varanasi;Chaukhambha Sanskrit Sansthan;2017:112
4. Kaviraj Ambika Datt Shastri(editor) Sushruta Samhita of Acharya Sushruta,Sharir sthana, chapter 09, verse no.12, edition reprint,Varanasi; Chaukhambha Sanskrit Sansthan;2017:96-97
5. Kaviraj Ambika Datt Shastri(editor).Sushruta Samhita of Acharya Sushruta, Sutrasthana,chapter 14, verse no.45, edition reprint,Varanasi; Chaukhambha Sanskrit Sansthan;2017:73
6. Kaviraj Ambika Datt Shastri(editor).Sushruta Samhita of Acharya Sushruta, Sutrasthana, chapter 14, verse no.39-42, edition reprint, Varanasi; Chaukhambha Sanskrit Sansthan;2017:72-73
7. Kaviraj Ambika Datt Shastri(editor).Sushruta Samhita of Acharya Sushruta, Sutrasthana,chapter 14,verse no.36,edition reprint,Varanasi; Chaukhambha Sanskrit Sansthan;2017:72
8. Kaviraj Ambika Datt Shastri(editor).Sushruta Samhita of Acharya Sushruta, Uttartantra, chapter 45,verse no.38, edition reprint,

Anuja Kitturkar, Siddanagouda A. Patil. Concept of Haemostasis by Acharya Sushruta vis-à-vis Raktasthambanopayas.

Jour. of Ayurveda & Holistic Medicine, Vol.-XII, Issue-IV (April 2024).

Varanasi; Chaukhambha Sanskrit
Sansthan;2017:395

chapter 45,verse no.39, edition reprint,
Varanasi; Chaukhambha Sanskrit

9. Kaviraj Ambika Datt Shastri(editor).Sushruta
Samhita of Acharya Sushruta, uttatantra,

Sansthan;2017:396

CITE THIS ARTICLE AS

Anuja Kitturkar, Siddanagouda A. Patil. Concept of Haemostasis by Acharya Sushruta vis-à-vis
Raktasthambanopayas. *J of Ayurveda and Hol Med (JAHM)*. 2024;12(4):58-64

Conflict of interest: None

Source of support: None