

ANATOMICAL AND MEDICO –SURGICAL RELAVENCE OF AVEDHYA SIRA OF  
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## ABSTRACT

The science of ayurveda is well recognized system of medicine, which have unique specility in field of Shalya Tantra. Sushruta samhita is the earliest known authorities treatise on Ayurveda. Sushruta Samhita is most ancient document on branch of Shalya Tantra not merely in india but also of whole world. The concept of Ayurveda Shareer evolved 3000yrs ago. Acharya Sushruta contribution to ayurveda is most valuable. He has described different parts of body in view of medico- surgical importance. The knowledge of *Sirasharira* is of utmost importance in *Shalyatantra* as *Chikitsa* in *Basti* in *Kayachikitsa*, knowledge of *Siras* requires prime importance. It can besaid that half or an entire *Salyatantra* is equivalent to “*Siravyadha*” alone i.e. a number of diseases are likely to be cured only through this simplest technique. A proper nomenclature of *Vedhya* and *Avedhya Sira* in accordance with the contemporary science is of utmost significance in the practice of *Ayurvedic* medicine. According to Acharya Sushruta sira are seven hundred in no by these entire body is nourished constantly, kept lubricate, moistened to perform action such as flexion; contraction. Mula sira or Principle sira are forty of these ten carry, ten carry pitta, ten carry kapha, and ten carry rakta. Siravedh is one of the Para surgical procedures denoting letting of blood outside the body. Different modalities of Raktamokshan are adopted according to dosha avastha and dhatu avastha. *Siravedhana* is a very important *Ayurvedic* therapeutic procedure for various diseases involving *Rakta* and *Pitta Dushiti* but in present era it is not commonly practiced because the anatomical structure of the *Sira* for *Vedhana* is conspicuous. *Siravedhana* procedure is very elaborately defined in *Sushruta Samhita*. These are several examples of disease that can be cured by that sira vedhan process like pliha, gridhasi etc. Acharya Charak has defined Sira as “sarnat sira” in sutra sthan chapter thirty, sira have been defined those structures in which there is passive flow of the blood. According to Acharya Sushruta sira originate in the embryonic life from nabhi and they spread upwards, downwards and in oblique fashion from nabhi. Sushruta has mentioned four types of sira aruna, neela, sweta, lohita relevant respectively with dosha such as vata, pitta, kapha and rakta dosha. We can regard neela sira as the veins which collect impure blood from all over the body towards the hearts, in blood flow in these sira by slowing velocity are called saran kriya. These are basically two types one of them can be punctured caring the disease called Vedhya Sira, total ninety six vedhya sira are present in upper limb, another type of sira are Avedhya sira, these are total four in no in upper limb, total ninety eight in whole body. This is strictly prohibited for puncturing, if by mistake chikitsak these are punctured it leads to harmful result. In this article vedhya sira are very well discover wsr to anatomical structure with its medico- surgical importance involved in modern medical science, in urdhva shakhagat region.

**KEYWORDS:** Sira, vedhya, raktamokshan.

## INTRODUCTION

In vedic kala sira denotes by “Hira” and according to Yajurveda origin of Hira is Hridaya.<sup>[1]</sup> In *Atharva Veda* there is explanation related to hundreds of *Siras* which are coppery red in color conveying *Ashuddha Rakta* this indicates about venous system which conveys deoxygenated blood. in *Atharvaveda* four types of sira present in our body such as aruna, lohita, tamra and dumra.<sup>[2]</sup> According to upanishad (subalopnishad uttar

khand 4 mantra 3) sira denotes by nadi and principle nadi's are ten in number and they are originated from hridaya then they are divided and form 72000 nadis, they save our life.<sup>[3]</sup> In the classics *Acharyas* have described different synonyms and definitions of the *Sira*. Synonyms are given on the basis of similarity of structure and characters it doesn't mean that all structures are totally same. It is a method by which *Acharya* used to describe the characters of some structure. There are

various synonyms of *Sira* according to different *Acharyas*, which denotes the characteristics of *Sira* as under.<sup>[4]</sup>

- *Nadi-Sira* is a tubular structure as *Nadi*.
- *Strotas* - Some *Sira* have fenestration in it as *Strotasa*.
- *Dhamni* - *Sira* also contains blood as *Dhamni*.
- *Snayu* - The origin of *Snayu* and *Sira*'s is same.
- *Vasa* - *Snayu* is derived from *Meda* and *Vasa* are a one type of *Meda*.
- *Tantuki* - Some *Sira* are very minute

According to Acharya Charak "sarnat sira" denotes backflow of blood towards the heart without any force.<sup>[5]</sup> According to Acharya Charak and Kashyap origin of sira is hridaya and according to Acharya Sushruta sira originates in the embryonic life from nabhi & they spread upwards, downwards & in oblique fashion from nabhi. Acharya Sushruta also believes that the sira originating from umbilicus spread on all the directions like the spokes of a wheel. According to Acharya Sushruta sira are seven in number as a garden or a grain field is irrigated by the water by big & small channels, similarly sira by their contractility & dilatory property supply nutrition to the body. They spread all over the body just like small & minute laminas arising from the central core of a leaf. They originate from the nabhi (umbilicus) & there by spread all over the body upwards, downwards & obliquely. Modern anatomist have never tried to count the exact number of veins in human body where has Acharya Sushruta has given their precise number. He has included nerve, artery, veins & lymphatic's less than one heading. He has also accepted the theory of "Kedari Kulya Nyaya" postulated in Ayurveda in reference to the body nutrition. According to Acharya Sushruta forty principal siras are originated from nabhi, ten are vata carries, ten are pitta carries, ten kapha carries & the remaining ten are rakta carries. The vata carrying sira are situated in the specific site of vata. They are ramifying in one hundred & seventy five branches. The pitta carrying sira are situated in the specific site of pitta are found ramifying into similar number of branches. Thus total becomes seven hundred. There are twenty five pitta vaha sira in one sakthi (lower extremity). Same number is present in the opposite sakthi & both 'bahu' (upper extremity).<sup>[6]</sup> Sira carries all the Doshas that's why considered as "Sarvavaha". Some Sira is contraindicated for venesection called Avedhya Sira. As basti is important therapy in kayachikista, similarly siravedh at specific points are most effective treatment of Ayurveda surgery. Siravedhan is an ancient method of treatment. Acharya Shushrut has said it as half treatment. For the purpose of treatment our aim is to identify all the contra indicated sira mentioned in sushruta samhita present in urdhva shakha with modern anatomical structure, so that we choose this topic. Total number of the sira seven hundred in number out of these 602 Vedhya sira, ninety eight Avedhya sira, in human body.<sup>[7]</sup> Siravedhan is a type of Raktmokshan, in this process deeply rooted doshas in impure blood are

removed in order to treat the disease. In a specific disease a specific Sira is to be puncture. Shushrut regards Siravedhan as "Chikitsard" means half treatment. Shushrut has compared it as Basti in Kaya chikitsa. Avedhya sirayen - in these Sira, Sira Vedhan should not be conducted. Due to the puncturing of them harmful results can be seen in our body. These Avedhya sira contains specific anatomical structure which will be discussed. Aspect of vedhya and avedhya sira can be considered as veins or neela sira. These are seven hundred sira, there are forty principal sira. Ten vata carriers, ten pitta carriers, ten kapha carriers & the remaining ten are rakta carriers. The vata carrying sira are situated in the special site of vata. They ramify in one hundred & seventy five branches. There are twenty five pitta vaha sira in one sakthi (lower extremity). Same number is present in the opposite sakthi & both 'bahu' (upper extremity). According to Acharya Ghanekar has said that the above description regarding the classification of sira, on the basis of dosha does not mean that the forty sira originate from nabhi or hridaya. By this Acharya Sushruta meant that vata vaha sira are those which are found in vata predominating areas such as Pakvashaya, Kati, Shroni, sakthi, Asthi and Sparshnendriya (skin). Similarly pitta, vata and kapha vaha sira found in pitta vaha and kapha vaha sira are found in pitta and kapha predominating areas respectively. These sira drains impure blood all over the body into heart, sira have many valves for guard the blood direction. Pitta circulating in sira creates "kanti" (luster) in the body & develops urge for food. It increases appetite maintain normal health & does other body normal functions, when vitiated pitta reaches in its own sira serious disease manifest. The pitta carrying sira are blue in color and have a warm touch. These are four hundred sira in the 'shakha' (extrimities), one hundred thirty six in koshtha (trunk) and one hundred sixty four in the region above the jatru (clavicle). Out of them, sixteen *siras* in *shakha* (extrimities), thirty two in koshtha (trunk) and fifty in the region above the jatru (clavicle) are said to be unfit for 'sira vedha' (venepuncture). With four sira are considered as Avedhya sira, those are one Jaldhara, two Bahvi and one are Lohitaksha. In this way total eight avedhya sira are present in our upper limb.

Pittavaha or neela sira are present in our upper limb. The anatomical structures considered with particular Avedhya sira.

#### AIM AND OBJECTIVE

1. To search & find out the reference in relation to sira in vrihatrayi.
2. To understand the concept of pittavahi sira in vrihadtrayi & correlate with modern anatomy.
3. To review the *Vedhya* and *Avedhya Siras* of upper extremity.

#### MATERIAL AND METHOD

1. Ancient ayurvedic classics were consulted & compiled references out of them for subject to

elaborate as well as to understand the process of sira in sushruta samhita.

2. Dissection of cadaver provides a route for the certification of siras.
3. For identification & certification of pittavahi sira, we have dissected cadaver. We got five cadavers from government Ayurvedic College Raipur, from body donation procedure. In procedure of observation through the dissection procedure.
4. Identification and certification of Avedhya Sira of upper extremity.

## DISCUSSION

Siravedh is being one type of raktamokshan therapy as per Acharya sushruta and Acharya vagbhata. It is nothing but letting of blood outside the body, which is one measure described in treatment of disease caused by raktadusti. Sushruta regards siravedh as "chikitsardh" means half treatment, sushruta compared it basti in kaya chikitsa.

**Sira in normal regimen** - Acharya charak had used the name of sira due to saran kriya. According to Abhinav Hindi Kosha, Sira have been defined those structures in which there is passive flow of anything<sup>[8]</sup>, we can mention it under the sira. Acharya charak also believes that sira originating from nabhi spread on all the directions. Those who show similarity to the description of Acharya Sushruta, also have similarity in context of number. According to Acharya Charak the number of sira is 700 as like Acharya Sushruta.

According to Acharya sushruta prana (life) resides in the veins of the umbilicus & the umbilicus is the seat/residence of the veins. The umbilicus is surrounded by sira similar to the axle hole being surrounded by spokes. The ancient views that nabhi is place of origin of sira & dhamani is based on the fact that during pregnancy the fetus is connected with mother through a cord attached to umbilicus. Thus cord consists of veins & artery arising from placenta attached to inner wall of uterus, these veins & artery branch off in the body of the fetus & supply blood & nutrition to it, at the time of birth of the child, it's cardio-vascular system with network of veins, artery & even lymphatic's will have fairly well developed after the child is born & heart becomes the chief organ of both arterial & venous network. Umbilical vessels inside the body of child slowly merge into nearby arteries & veins or even disappear. After enumerating seven hundred siras in human body, Sushruta also identify forty principal sira. Ten vata carries, ten are pitta carries, ten kapha carries & remaining ten are rakta carries. The vata carrying sira are situated in the specific site of vata. They ramify in one hundred & seventy five branches.

According to acharya sushruta four type of sira present in our body such as vata, pitta, kapha and rakta. Aspect of vedhya and avedhya sira can be considered as veins or neela sira. These sira drains impure blood all over the

body into heart, sira have many valves for guard the blood direction. Twenty five Pittavaha or neela sira present in upper extremities. Pittavaha sira or neela sira are warm and blue in color.

## Vedhya and Avedhya Siras

Acharyas narrated as those which can be interfered with the surgical process. Puncturing of those Siras will not cause any harm to the body. It is conjointly mentioned by the Acharyas that through these veins only the safer bloodletting should be done for curing various diseases.

In a Vedic Period, there was no description with respect to Avedhya or Vedhya Siras. Although they have mentioned that in vascular injury the outflow of the blood should be checked.

In Samhita Period, Acharya Charaka has described two Vedhya Siras in reference to with the disease Unmada, Vishama jwara, and Apasmara two places i.e. Shankha Pradesh and Keshanta Pradesh. Acharya Sushruta exerts few selected fatal veins. Avedhya Siras are surgically significant since trauma during surgery proves fatal. This also infers that school of Sushruta was advanced in vascular surgery. They were alert to these Siras which require care throughout surgery.

Acharya Sushruta describes Vedhya Sira particularly in reference to the diseases which are cured by Siravyadha e.g. in the disease of Grudhrasi, the Sira of Janu should be considered as the Vedhya Sira, that becomes prominent when tourniquet after mild flexion of the knee. This suggests they are all superficial veins, which are used for Siravedha to purify the Dushita Rakta.<sup>[9]</sup>

Astanga Sangraha and Astanga Hridaya also have mentioned Vedhya Siras but they have given them in connection with the disease. No mention of specific Sira for a specific disease has been made. In this view, they included the Vedhya Sira in their relevant places of Roga and there the Sira should be visible. Though, the Avedhya Siras are the vessels which are prohibited for the Siravyadha.<sup>[10]</sup>

The vascular injuries were reported in the Vedic Literature however there was no specification of Avedhya Sira. It seems that school of Charaka took the task of Vedhya Siras for the first time, but he did not mention specifically the Avedhya Siras.

The school of Sushruta discusses the precise detailed study of Siravyadha as well as Avedhya Siras first time in the history of medicine and surgery. He mentioned 98 Avedhya Siras and said that any trauma on these structures might cause to morbidity or death.

Acharya Vagbhata also mentioned the number of Avedhya Siras as Acharya Sushruta. His idea is that apart from these 98 Avedhya Siras, those Siras which are

oblique, short, tortuous and narrow placed in the subject should also be included under this heading.<sup>[12]</sup>

In the *Sakhas*, four hundred veins are present. In the *Koshta*, one hundred and thirty-six are present and in *Urdhva jatrugata*, one hundred sixty-four are present. Among these, sixteen in the extremities, thirty-two in the trunk and fifty above the shoulders are to be considered as *Avedhya*.

**Table no 1: Number of Vedhya and Avedhya Sira.**

Anga pratyanga	Vedhya sira	Avedhya sira	Total
Shakhagata	384	16	400
Koshta	104	32	136
Urdhwajatrugata	114	50	164
Total	602	98	700

#### Individual Avedhya Siras of upper extremity

There are one hundred *Siras* in each of extremities; out of which one by name *Jaladhara*, two which are situated in deep inside known as *Urvi* and one by name *Lohitaksha* are not to be punctured. Thus sixteen *Siras* of the *Sakhas* are *Avedhya*.

*Acharya Sushruta* and *Vagbhata* are given an exact number of *Avedhya Sira* with their name and site however specific name of *Vedhya Sira* is not mentioned. While explaining, *Siravyadha* only sites of *Siravedha* in different *Vyadhi* are stated.

#### Individual Vedhya Siras site of upper extremity

*Acharya Sushruta* mentioned the *Vedhya Siras* of extremities in connection of the disease which are most probably the superficial veins of the limbs. The *Vedhya Sira* for *Viswachi* is four *Angula* above or below the *Kurpara*. The *Vedhya sira* for *Apachi* is two *Angula* below the *Indrabasti marma*.

#### Discussion on Vedhya Sira

##### □□Pleehodar

**Site of Siravedhana:** In diseases of *Pleeha*, *Sira vedhana* should be done specially in the left arm at the medial side of *Kurpara Sandhi*(elbow joint) in the centre of the arm or in the area between *Kanistika* and *Anamika* (between the left little and ring fingers).

##### □□Yakrudalyudara(kaphodara)

**Site of Siravedhana:** In diseases of *Yakrudalyudara*, *Siravedhana* should be done specially in the right upper limb at the medial side of *kurpara Sandhi*(elbow joint) in the centre of the arm or in the area between *Kanistika* and *Anamika*(between the right little and ring fingers).

##### □□Kasa-Shwasa

**Site of Siravedhana:** Same as *Yakrudalyudara*

##### □□Vishwachi

**Site of Siravedhana:** In diseases of *Vishwachi*, *Siravedha* should be done at four *Angula* above or below *Kurpara Sandhi*(elbow joint).

##### □□Apachi

**Site of Siravedhana:** In diseases of *Apachi*, *Siravedha* should be done at two *angula* below the *Indrabasti Marm*

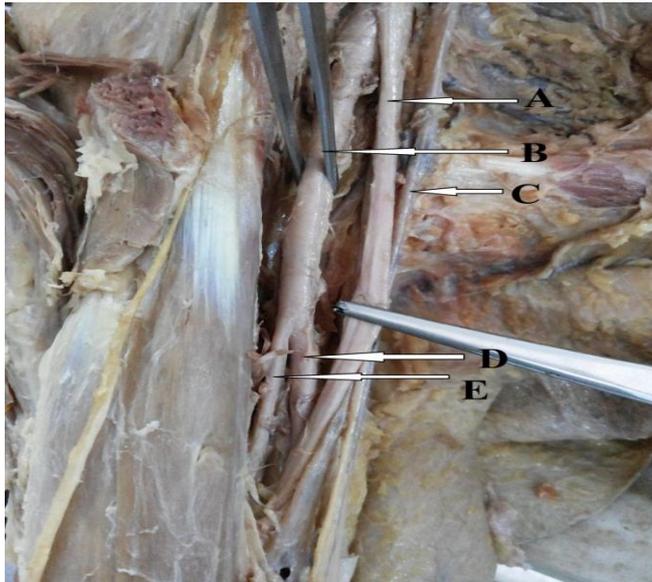
**Avedhya sira in normal regimen** – in normal regimen *avedhya sira* are the veins by puncturing them the harmful effect can be seen due to severe blood loss, eg. due to puncturing of dorsal venous plexus there is casualty can be seen. Any venesection which is direct cause of severe blood loss or falling of blood pressure can cause of death. To avoid these miss happening *Acharya* has mentioned these ninety eight restricted veins for venesection in particular regions. *Avedhya Sira* suggests that the vessels which not to be punctured or cut, as a result of when puncturing these vessels it may lead to deformity or death. Because of the pressure in arteries is more than venous pressure. By mistake of puncturing artery, there is risk of heavy, profuse bleeding which can cause to deformity or death. Nutrition of the body is carried out by arterial supply. If artery is injured then the part which is supplied will not be nourished well and deformity may occur.

When terminal part of some specific vein having many tributaries and larger veins are punctured, profuse bleeding occurs which may lead to either deformity or death. So, we may consider *Avedhya Sira* as Arteries, larger Veins and terminal part of some specific vein having many tributaries. Here we discussed about *avedhya sira* in *urdhva shakha*.

- Jaaldhara** – the name *jaaldhara* denotes formation of *jaal* of *sira* (plexus of veins). According to modern science cephalic vein is one of the most important superficial veins of upper extremities. It is principle vein of upper limb; it is superficial vein runs in the deltopectoral groove up to the infraclavicular fossa then pierces the clavipectoral fascia and joins the axillary vein. In superficial region of upper extremities circulation conducted by cephalic vein then it is form plexus of veins, so venesection or puncturing of cephalic vein causes severe blood loss there can be severity.
- Urvi** – *Urvi* is an *Avedhya Sira* as well as a *Sira Marma* situated in the middle of arm. *Acharya Sushruta* told that *Urvi (Bahavi) Sira* are 2 in numbers in each *Shakha*. *Urvi Sira* is present in lower extremity and its counterpart in upper extremity is named as *Bahavi*. *Bahavi Sira Marma*. So, site of *Bahavi Marma* can be considered as site for *Bahavi Sira*. Injury to this causes atrophy/wasting of muscles of the arm from the loss of blood. The blood loss may lead to death. It is a *Vaikalyakara Marma* and is *One Angula* in praman. *Urvi* considered as Axillary artery and Axillary vein. In upper extremities Axillary artery is continuation of subclavian artery, it is directly connected to arch of aorta then attached to heart and Axillary vein through subclavian vein directly connected with superior vena cava then attached with heart's right

atrium. Due to direct connection with heart velocity of blood is increase, so blood pressure is also high so any venesection or puncturing of these vessels

severe blood loss and again these may be seen be seen causality by puncturing.



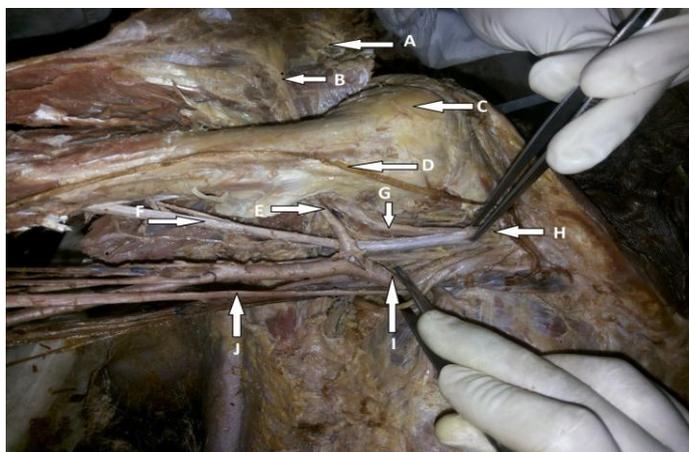
A. Median Nerve  
B. Axillary Artery  
C. Axillary Vein  
D. Brachial Artery  
E. Profunda brachii Artery

c) **Lohitaksh** – *Lohitaksha Sira* is an *Avedhya Sira* well as a *Sira Marma*. *Acharya Sushruta* told that *Lohitaksha Sira* is one in number in each *Shakha*. *Lohitaksha* is *Sira Marma*. So, site of *Lohitaksha Marma* can be considered as site of *Lohitaksha Sira*. *Lohitaksha Marma* is located above *Bahavi Marma* of upper extremity, below *Kaksha Sandhi* and *Bahumoola*. Injury to this *Marma* causes bleeding. The blood loss leads to *Pakshaghat* (deformity) and the uncontrolled bleeding leads to death. It is a *Vaikalyakara marma* and is *Ardhangula in praman*.

of axilla. The *Avedhya Sira* considered in this region is axillary vein. An Axillary vein is located between the anterior and posterior walls of the axilla. It is difficult to stop bleeding while puncturing the axillary vein. As cords of the brachial plexus lies in close proximity to the axillary vein any surgical intervention in the region may damage the cords also which may lead to the paralyzed of all the muscle of the upper limb.<sup>[11]</sup>

**Structure at considered site** - The region of *Lohitaksha Marma* can be considered as on lower part of lateral wall

of axilla. Considered as brachial veins are *venae comitantes* of brachial artery in the arm proper, brachial veins have several small tributaries that drain the muscles of the upper extremity. So rupture of these veins causes severe blood loss and leads to harmful condition.<sup>[12]</sup>



A. Deltoid Muscle  
B. Axillary nerve  
C. Humerus  
D. Cephalic vein  
E. Anterior circumflex humeral artery  
F. Radial nerve  
G. Axillary nerve  
H. Posterior cord of Brachial plexus  
I. Axillary artery  
J. Ulnar nerve

**CONCLUSION**

From above discussion following conclusion can be drawn.

➤ The *Sira* is a tubular structure sira are network of venules with big roots are minute terminals which

spread all over the body and supply nourishing material (*poshak dravya*) to whole body means *Sira* may be a vein, artery or nerve.

➤ In *Siravedhana* procedure *Rakta* is drawn from the *Sira* means the structure of *Sira* is different from nerve.

- The blood flow of the artery can't stop automatically so it can't be a *Sira*.
- The *Sirayantrana Vidhi* is not logically for the deep seated veins.
- All the above mentioned criteria are fulfilled by the superficial veins so in the context of *Siravedhana* the *Sira* is a superficial vein.
- By brief study of the anatomical and clinical importance of *siras*, we come to know that *avedhya sira* are the anatomical structures which are either deep vessels or the vessels which can leads harmful effect by puncturing them, so there are the perfect guidance for physician to avoid *vedhan* of *avedhya sira*.
- The study shown that *Lohitaksha Sira* correlated with axillary vein, *Bahvi Sira* correlated with brachial artery and *Jaladhara sira* correlated with Terminal part (near del to pectoral groove) of Cephalic vein.

#### BIBLIOGRAPHY

1. C.L. prabhakar, the recensions of *sukla ayurveda*, *Archiv Orientalni*, 40; 1.
2. Shri Ram Sharma Acharya, *Atharva Veda*, Sanskrit Sansthan, Bareilly, 2001.
3. Shri Ram Sharma Acharya, 108 Upanishad, *Brahmavarchas shantikunj*, Haridwar, 2002.
5. Yadavaji Trikamaji (editor), *Charaka Samhita of Agnivesh*, Elaborated by Charaka and Dradhabala with the *Ayurveda*
4. Tripathi Bramhanand, *Charak Samhita*, Chaukhamba Surbharati prakashan, Varanasi, Edn., *Sutra Sthan*, 2008; 30/12.
5. Srikantha Murthy K.R., *Sushruta Samhita with English translation*, Third edition, Varanasi, Chaukhamba Orientalia Publishers, *sutra sthan*, 2007; 7/3.
6. Prof. D.G. Thatte, *Sharir Rachna Vigyan*, Chowkhamba Sanskrit Series, Varanasi, 4<sup>th</sup> edition, 2013; 270.
7. Chaturvedi Dwararika prashad Sharma, *Sanskrit sabdarth kaustubh*, Lala ram narayan lal, Allahabad, 1928.
8. Shastri Ambikadatt, *Sushruta Samhita Hindi commentary*, Chaukhamba Sanskrita, Varanasi, Edn, *Sharir Sthan*, 2012; 8/17.
9. Dr Brahmanand Tripathi, *Astang Hridayam*, Chaukhamba Sanskrit pratisthan, Delhi, *sharir sthan*, 2012; 4/18-20.
10. Chaurasia B.D., *Handbook of General Anatomy*, IIIrd edition, New Delhi, CBS Publishers, 2000.
11. K. Sembulingam & Prema Sembulingam, *Essential of Medical Physiology*, Jaypee Brother Publishers (p) ltd, New Delhi.