

A REVIEW STUDY OF ASTHI SHARIR W.S.R. TO BHAGNA CHIKITSA**Soni Gaurav¹, Manohar. J², Lahange Sandeep³**¹PG Scholar, ²Assistant Professor, ³Lecturer,PG Department of *Sharir Rachana*, National Institute of Ayurveda,

Jaipur, Rajasthan, India

ABSTRACT

An approach to human ailments is as old as the evolution of human being. The most ancient practiced medical science is *Ayurveda*. The *Ayurvedic* philosophy is specific pertaining to the body constitution. The human body (*Sharira*) is described as a combination of external factors the *Atma* (soul), *Manas* (mind) and *Pancha Maha Bhoota*. In all the living beings the matter and energy is existing in the form of *Dosha Dhatu & Mala*. The most important supportive framework of the body among these is *Asthi* (Bone tissue). The branch of surgery that deals with deformities of the bones is known as Orthopedics. Trauma management has been in practice since *Vedic* periods. This part of the treatment in *Ayurveda* is called *Bhagna Chikitsa*. It was at its peak optimum level during the period of ancient famous Indian surgeon, *Sushruta*. The Ayurvedic literature contains definition of *Bhagna*, its etiology, classification, general features, special features, and prognosis.

Keywords: *Asthi, Bhagna, Bhagna Chikitsa***INTRODUCTION**

An approach to human ailments is as old as the evolution of human being. The most ancient practiced medical science is *Ayurveda*. It is the fore runner of all the therapies of the world, since man has thought of providing an effective remedy to the diseases suffered by him. This being the branch of *Veda's* it relates with knowledge of philosophy, medicine, and art of surgery. *Ayurveda* or science of life describes prophylaxis, prevention, and therapeutic principles for the diseases.

The *Ayurvedic* philosophy is specific pertaining to the body constitution. The human body (*Sharira*) is described as a combination of external factors the *Atma* (soul), *Manas* (mind) and *Pancha Maha Bhoota* (five mega elements). In all the liv-

ing beings the matter and energy is existing in the form of *Dosha Dhatu & Mala*. The most important supportive framework of the body among these is *Asthi* (Bone tissue). The branch of surgery that deals with deformities of the bones is known as Orthopedics.

Orthopedic surgery has its aim as "maintenance of normal mechanical function of the deformed bones". Trauma management has been in practice since *Vedic* periods. *Ashwini Kumaras* used to perform surgeries like limb replacement, fixation of severed head etc. The same science was developed, practiced, and well documented by 'Famous Indian sage *Acharya Sushruta*'. This part of the treatment in *Ayurveda* is called *Bhagna Chikitsa*. Along with other

surgical entities, *Acharya Sushruta* & others have described the aetiopathogenesis, symptomatology, classification & management of various traumatic musculo-skeletal conditions (soft tissue injuries, subluxations, dislocations & fractures etc.) in much elaborated way.

EFFECT OF TRAUMA ON ASTHI (BONES):

The word *Bhagna* is derived from the word *bhanj-dhatu* and *Katupratyaya* meaning to break *Bhanj* means motion, which once again means to break. The bones sustain trauma in different ways. *Acharya Sushruta* has paid due attention to this fact and observed that all the bones¹ do not show similar type of effect due to trauma. He has then classified these effects in different groups and correlated with the types involved the same is mentioned below.

1. *Tarunasthi* (Cartilage) – Bend
2. *Nalkasthi* (Long bones) – Break
3. *Kapalasthi* (Flat bones) – Crack
4. *Ruchkasthi* (Teeth) – Fragmented
5. *Valayasthi* (Curved bones) - Crack or Break

CLASSIFICATION OF BHAGNA

The classification of *Bhagna* which is given by *Susruta*, *Madhavakara*, *Chakradatta*, *Bhavaprakash* and *Gadanigraha* resembles each other. *Vagbhata's* opinion differs in this regard. *Charaka* has not given any classification.

Susruta's classification²:

On the basis of structure involved the skeletal injuries have been divided in two types-

1. *Sandhimukta* (Joint Dislocation)
2. *Kandabhagna*. (Bone Fracture)

Vagbhata's classification³: *Vagbhata* has mentioned same classification in different words like-

1. *Sandhibhagna*

2. *Asandhibhagna*.

Apart from these classifications in *Madhu-koshvyakhya* further divided the *Bhagna*⁴ on the basis of their clinical manifestation as-

1. *Savrana Bhagna*⁵ (**compound fracture**)-Fracture with the wound i.e. bone comes outside just after injury.
2. *Avrana Bhagna* (**closed fracture**)-When bone is Fractured but no visible wound on the skin is seen.

The dislocations have further been classified in to six varieties. And the fractures are subdivided according to type of injury in to twelve types. The *Susruta's* classification is universally accepted. *Vagabhata* has given different terminologies for some varieties. He has mentioned *Vellita* in place of *Kandabhagna*. *Darita* instead of *Patita* and *Shoshita* in the place of *Chinna*. *Acharya Madhavakara* has also used some other terminology like *Vichurnita* instead of *Churnita*. *Asthichallita* in the place of *Asthichallita* and *Majjagata* in the place *Majjanugata*. He has described *Chinna*⁶ is of two types:

1. *Ekamanuvidaritam*
2. *Bahunuvidaritam*.

Acharya Sharangadhara has not followed *Susruta's* classification but he has described the eight varieties of *bhagna*. These are similar to *Susruta's* classification.

1. *Bhagna prista*
2. *Vidarita*
3. *Vivartita*
4. *Vishlishata*
5. *Adhogata*
6. *Urdhvagata*
7. *Sandhibhagna*
8. *Tiryaka kshipata*

CLINICAL FEATURES

The presence of fracture can be made out by history and clinical findings. The clinical signs described in *Ayurvedic* texts

stand as mentioned in any modern surgical text book. The *Susruta's* contribution in this aspect is so perfect that it has hardly any room for alteration even today. He has mentioned signs and symptoms as general and specific features.

GENERAL FEATURES OF KANDABHAGNA⁷

Shvyathubahulyam (marked swelling) - generally fracture, whether it is hairline or comminuted, it will be associated with moderate to severe swelling.

Sparshasahisnutvam (tenderness) - tenderness is such a sign that it is invariably present in all types of fractures.

Avapidyamane shabda (crepitus) - presence of crepitus is a definite indicative of fracture, can confirm diagnosis clinically.

Vividhavedanapradurbhavah (Different types of pains) - the fractured bone before its reduction and immobilization produces variety of pain. This depends on nature of trauma, bone fractured, displacements of the fragments, and nature of soft tissue injury.

SarvasuAvasthasu Na Sharmalabha (Inability to get comfort in any position) - Fracture gives to pain and discomfort to the patient till immobilizing it. The discomfort is such that patient remains restless in any posture of fractured part.

FEATURES OF INDIVIDUAL KANDABHAGNA⁸

1. Karkataka: The fracture which has a shape similar to crab is named as *karkataka*. The case where the fractured bone is depressed at its two articular extremities and bulges out at the middle, resemble the shape of gland is called as *karkataka*⁹.

2. Ashwakarana: In this type fractured *Asthi* projects upwards like the ear of horse is called as *Ashwakarana*¹⁰.

3. Churnitam: The fractured *Asthi* is found to be shattered into fragments or the powder form. This *Bhagna* can be detected clinically by presence of crepitus¹¹.

4. Pichhitam¹²: In this type of fractures, the *Asthi* is compressed between the two opposite forces, it gets expanded transversely and marked swelling occurs.

5. Asthichallita: In this type of fracture, the periosteum is splintered off, where the fracture fragment slightly elevates into one side¹³, as the bark gets away from the main stem.

6. Kanda bhagna: In this type of fracture the shaft of the bone is fractured. The fractured part shows abnormal movement¹⁴.

7 Majjanugatam: In this fracture, one fragment gets impacted into another causing displacement of bone marrow, then it is said to be *Majjanugatam*. It may be resulted due to force of violence. This type of fracture is very difficult to diagnose because the signs and symptoms like transmitted movements crepitus etc. are absent due to impaction.

8 Atipatitam: A case where the fracture occurs throughout the plane of the bone is named as *Atipatita*. Here the fragments are completely separated and the separated fragments hang or angulated¹⁵.

9. Vakra: The *Asthi* get bent, but not broken, especially in *tarunasthi's* in children.

10. Chinnam: Fracture in which the continuity of the bone is breached at one side while the other side remains intact known as *Chinnam*.

11. Patitam: Fracture in which bone is partially fractured and cracked into multiple fissures resulting into severe pain in the affected part.

12. Sputita: In this fracture there will be pricking pain due to sharp points of bristles.

Such type mostly occurs in small bones and teeth etc.

The above mentioned classification of fractures is described by *Susruta*. This indicates his accuracy in clinical diagnosis. He has classified those varieties merely on clinical assessment, such as according to position of broken fragments, site of fracture, direction of force, and from the deformity caused by broken fragments. While classifying the types of fractures he did not include only the varieties of fracture known and compared today but also added even his minute observations like periosteal avulsion. In fact *Susruta* has viewed fractures as "Bone Injuries" in the true sense and not merely as the discontinuity in the surface of the bone.

PROGNOSIS: *Acharya Susruta* has described the prognosis of fractures in to *Sukhasadhya*, *Kastasadhya*, and *Asadhya* after considering the following points: Prognosis, Seasonal Variation, Age, Status of patient, Site of fracture, Status of *Asthi* and Type of fracture.

***Sukhasadhya*¹⁶**-According to *Acharya Susruta* the patient having fracture in *Balyakal* (childhood), *Alpa Doshyukta Bhagna* (hair-line fracture), in *Shishira Ritu*, with good nutritional status having good prognosis of Healing fracture.

***Kastasadhya*¹⁷**-*Acharya Susruta* has described that cures are affected with extreme difficulty in *Churnita Bhagna* (Comminuted#), *Chinna Bhagna* (Incomplete#), *Atipatita Bhagna* (Complete #), and *Majjanugata Bhagna* (Impacted #) and in Intraarticular Fractures.

The fractures occurring in -

- Pediatric age group
- Frail and emaciated persons

- Individuals suffering with Dermatological, Asthmatic anomalies and other supervening disorders
- A person with intemperate habits or *Vatika* temperament or who is sparing in his diet have also poor prognosis.¹⁸

The Following Fractures have Guarded Prognosis (*Asadhya*¹⁹):

- Complete fracture and dislocation of Pelvic bone with displacement.
- Comminuted (*Churnita*) fractures of iliac bone and Frontal bone.
- Dislocations of the cranial bones.
- Fracture of sternum, temporal bone, vertebral column and cranium.

The bone or joint having congenital anomaly, diseased bone, fracture of bones which was reduced properly but displaced due to improper immobilization or improper bandaging, or if the fractured part is disturbed, all these circumstances leads to failure of treatment²⁰. The fractures treated by an expert surgeon get properly united if it occurs at the first three stages of life²¹ (childhood, adolescence, adult). The management of fractures is difficulty in the patients who consumes excessive *Lavan*, *Katu*, *Kshara*, *Amala Dravyas* etc. Also one who is performing *Vyayama*, *Maithuna* etc.

COMPLICATIONS (*Upadrava*)- *Acharya Dalhana* has mentioned, the complications²² of the bone injury may be –

1. **Local**
 2. **Systemic.**
1. **Local complications** are mal-union and fragmented fracture. The variety of complication which could occur due to tight bandaging is swelling, pain, avascularisation that may lead gangrene.

2. Systemic complications are Fever, Abdominal distension, and Cessation of passages of excreta like urine and feces.

BHAGNA CHIKITSA- The ancient Ayurvedic texts have described *Asthibhagna Chikitsa* thoroughly. This includes:

1. Principles of *Bhagna Chikitsa*.
2. General Management of *Bhagna*.
3. Specific Management for different types of fractures.
4. Medicinal preparations for different kinds of fractures.
5. *Pathya- Apathya*.
6. Clinical criteria of fracture healing

Four Principles²³ of Treatment

1. **Anchan-** To apply traction
2. **Pidana-** Manipulation by local pressure
3. **Sankshep-** Opposition and stabilization of fractured part of bone.
4. **Bandhan-** Immobilization.

Sushruta has mentioned the principles of reducing a fracture, which is still adopted today. According to him, surgeon should apply first traction from either side of the fragments (*Anchana*), then elevate depressed fragments or depress the elevated fragments (*Peedana*). The far displaced or overlapping fragments should be brought in close contact with each other by manipulating them separately (*Sankshepana*). These four principles devote the efforts to achieve proper alignment of fractured fragments before final immobilization (*Bandhana*).

Immobilization²⁴: An adequate immobilization of the fractured limb is one of the most essential methods in the management, for this step usage of splints has been adequately described by *Sushruta*. He has selected some important tree barks for this purpose. The tree barks he has recommended are *Ashwatha*, (*Ficus religiosa*), *Vamsha* (*Bambusa*), *Kakubha* (*Terminalia Arjuna*), *Mad-*

huka (*Madhuka indica*) *Palasha* (*Butea monosperma*), *Sala* (*Shovera robusta Gaertn.*) *Udumbara* (*Ficus Racemosa Linn.*), *Vata* (*Ficus bengalensis*). Such splints were applied due to their availability without much difficulty. Other aims of selecting these specific barks are-

1. Barks were fit into the limb due to their concave inner surface.
2. Rigid and firm outer surface.
3. Inner surface being soft would act as the cushion to the limb there by avoiding pressure sore.

GENERAL TREATMENT OF BHAGNA

Sushruta instructs the surgeons before going to above steps he should follow the general line of treatment.²⁵

1) Pariseka: This means continues sprinkling of the medicine in the liquid form e.g. decoction, oil, ghee, etc. over the affected part for certain period of time. This procedure induces analgesia and also causes *Dosha shamana*. Different kinds of *Pariseka dravyas* are described on the basis of *Prakruti* of the patient and season. These are:

a) Nyagrodhadi decocotion²⁶: It is used in the patient of *Paitika Prakruti* and during summer.

b) Pancha mula Siddha dugdha: When fracture is in *Vata pradhana Prakruti* and mainly suffering from pain, then *Panchamula Siddha dugdha* is preferred for *Pariseka*. This preparation is also *Pitta Shamaka*.

c) Chakra Taila²⁷: This is used in mainly *vata* and *kapha prakruti* persons and when fracture has occurred in winter season and associated with severe pain. This preparation is *Ushna viryatmaka* and reduces the pain and swelling at the fracture site.

2) Lepa: The local application at the affected part with medicinal paste or ointment

is called as the *Lepa*. *Sushruta* has described the *Majisthadi Lepa*²⁸. It contains *Manjistha*, *Yastimadhu*, *Shalipisti*, *Raktachandana*, and *Shatadhautagritha*. This *lepa* reduces local pain and swelling. The ingredients get absorbed per cutenously and helps bone healing. After this the *Anchana* like procedures is to be followed. After completing the general measures *Aacharya* has described the treatment part of various kinds of fractures occurring in the each bone of the body.

SPECIFIC MANAGEMENT FOR DIFFERENT TYPES OF BHAGNA'S

In case of fracture associated with the **wound or a compound fracture** locally a mixture of '*Nyagrodhadi gana dravyas*' in paste form, *Madhu* and *Ghee* should be applied. Rest of management is as in case of general management.

In case of the **phalanx fracture or dislocation**, it should be first set in its natural position and bandaged with pieces of thin linen and should be then sprinkled with *ghee*. This ancient method resembles with modern management, in which the affected part is supported by bandaging it along with a splint or neighbor finger.

In case of **Foot bone fracture** the foot should be gently massaged with *Ghee*, then duly splinted up, and then bandaged with linen. Such patient should forego all kinds of movements.

In case of a **fracture of Tibia - Fibula or Femur**, the affected part should be massaged with *ghee* and traction is carefully applied along the direction of the bone carefully. After which it should be splinted with the barks and bandaged with the help of linen. A case of **fractured arm** should be treated in the same manner.

In case of **Hip joint dislocation** reduction should be done by traction and rota-

tional movements, then splint should be applied and bandaged in an appropriate manner. In case of **cracked or bruised femur fracture**, the part should be bandaged in a foresaid manner.

In case of **iliac fracture** it should be reduced by manipulative procedures including elevation of depressed fracture followed by bandaging. The patient should be treated with a *Sneha Basthi*.

Ancient *Acharyas* have described the poor prognosis of *Katibhagna*. They have advised surgeons not to treat the same. Hence patients should be treated and followed up very carefully by surgeon till the complete union of fractured bone.

In case of dislocation of **Amasa-sandhi (Shoulder joint)**, the region of *Kaksa* (Axilla) should be raised with an iron / wooden rod (*Musala*) then the surgeon should bandage the part by *Swastika Bandha* (Figure of Eight Bandage).

A **dislocated Elbow joint** first should be massaged with thumb, after which it should be pressed with a view to set in its normal position alternating with flexion or extension of the same. Then it should be sprinkled with any oleaginous substance. The same measures should be adopted in case of **dislocation of knee joint, wrist joint and ankle joint**.

In the **fractured Metacarpal bones** of the palm, the two palms should be made even and opposed and bandaged together for support. In case of metacarpal bone fracture of both the hands the splint should be applied to each palm for support. Then the affected part is sprinkled with *taila*.

In case of **fracture of the cervical spine** causing lateral flexion or shortening of the neck, traction is applied in upward direction. Then around neck an appropriate splint

should be applied and tied with the help of linen. Then the patient is advised complete bed rest in supine position for next seven days.

The **Mandible dislocation** the region is fomented thoroughly then the mandible is duly reduced its appropriate position and *Panchangi Bandha* is applied for support. *Gritha* medicated with *Madhura* (*Kakolyadi Gana*) and *Vataghana* (*Chavyadi Gana*) should be used for *Nasya*.

A depressed nose should be elevated with the help of the thin capillary rod (*Salaka*) while it should be straightened in case of lateral displacement. Then two hollow tubes should be inserted in to each nostril (to facilitate breathing) then nose is bandaged and sprinkled with *Gritha*.

In case of teared ear cartilage, *Ghritha* should be applied locally, then it should be brought in to its natural position and bandage measures and remedial agents as in the case of *Sadhyo Vrana* are adopted in the present instance.

In case of **Frontal Bone Fracture** which is not associated with any oozing out of brain matter, it should be bandaged with local application of *Madhu* and *Gritha*. The patient is advised to take only *Gritha* for further one week. In case of traumatic contusions the surgeon should apply the medicated pastes or ointments locally.

The mal-united Fractures are to be re-fractured then it should be reduced properly and treated in an appropriate manner.

The Fractures occurring at the upper part of the body should be treated with *SirobAsthi*, *Karnapurana*, *Grithpana*, and *Nasya*. The Fractures occurring at the extremities should be treated with the *Anuvāsana Basthi*.

In old dislocations the affected part is relaxed first by local application of oleaginous substances and hot fomentation. After achieving relaxation, it should be reduced with appropriate manipulative procedure.

Warning against Infection, A surgeon should exert his guard against the advent of any pyogenic infection setting in a fractured bone because of suppuration of local muscles, vessels, and ligaments lead to poor prognosis of the fracture.

In case of Tibia, Fibula or Femur fracture *Acharya* have described the special immobilization method, known as '*Kapata Shayana*'. In this method the patient should be laid down on a plank or aboard and bound to five pegs or stakes in five different places for the purpose of immobilization of affected limb. The distribution of the pegs in each case should be as follows, in femur fracture, a pair of peg should be placed at either side of the hip joint and another pair should be placed at either side of the knee joint and a peg should be placed at the sole. Thus it will cause immobilization of the affected limb. In case of tibia and fibula instead of putting pegs at the hip joint they should be placed at the either side of the ankle joint. Rest of the pegs should be placed as previous manner. The same procedure should be followed in case of fractures and dislocations of pelvic joint, vertebral column, chest and shoulder joint.

The principle behind this procedure is the immobilization of the affected part, which is reduced properly. *Acharya* have the idea that the major fractures cannot be immobilized properly with the help of splints, also these bones require the immobilization for longer period, and hence they may have mentioned this procedure.

Rehabilitation:

The importance of Physiotherapy in a limb injury was also appreciated by *Sushruta*. He has prescribed the exercises starting in lighter manner, which may be gradually increased at any rate, and exercises should not be prescribed all at once in the beginning. E.g. For rehabilitation of upper limb, in the beginning mud ball is held and then a heavier substance like a lump of rock-salt and finally harder object like stones.

- 1) *Mritapinda Dharana*
- 2) *Lavana Dharana*
- 3) *Pashana Dharana*

Along with all these measures ancient *Acharya* have described numerous medicinal preparations for the faster union of the fractured bone. These are chiefly described as general tonics to provide liberal amount of proteins, fats, calcium and other minerals.

These *Asthisandhaniya Dravyas* not only hasten the bony union but also make it strong they are also good for general health some of the *Asthisandhaniya Yogas* described in ancient texts are *Gandha Taila*, *Gandhaprasarini Taila*, *Chakrataila*, *BhagnasandhanaTaila*, *Laksha Guggulu*, *Ashwagandha Chaturbhadra choorna*, *Pravala Panchamruta*, *Sudha Bhasma* etc. In addition to all these, *Acharya Sushruta* advises to take the milk of Primiparous Cow, processed with *gritha*, drugs of *Madhuragana* and *Laksha* daily during the morning hours.

Acharya Chakradutta has mentioned *Peetvaratika Churna* in chapter 49 with the *Anupan* of *Apakva kheer* for the enhancing the healing of fractured bone.

Pathyaapathya:

A fractured patient must forego the use of *Lavana*, *Katu Rasa*, *Kshara* and *Amla* articles of food and should live on strictest

continence, avoid over exposure to sun and physical exercises.

A diet consisting of *Shali* rice, meat soup, milk, *ghee*, soup of *Satina* pulse and all other nutritive and constructive food and drink, should be discriminately given to the patient. As a general rule milk should not be prescribed to a patient suffering from *Vrana* (Wound) in general, but a case of fracture forms an exception. According to some authorities hold that the lukewarm milk may be given to the fracture patient, if there is no ulcer.

A case of fracture occurring in a youth or a person slightly deranged *Dosha* or (*Alpadosa*) or in winter season is hail to be easily curable with a help of aforesaid methods. A fracture in youth gets healed in course of a month. In two months in case of middle aged man, and three months in the old aged man.

CLINICAL SIGNS OF IDEALLY UNITED BONE²⁹

1. No swelling or hardness on palpation.
2. Absence of shortening and deformity.
3. Painless and easy movements

CONCLUSION

Ayurveda has given ample importance to *Asthi Sharir* by describing it as *Saara* (base) of body. Classification of *Asthi* is specifically given in accordance to type of *Bhagna* occurring commonly in it. This description itself shows the clinical orientation of our *Samhita*'s. Further *Ayurvedic* literature contains definition of *Bhagna*, its etiology, classification, general features, special features, and prognosis. The treatment of the fracture includes treatment principles then specific treatment for different bones, clinical criteria's to assess bone healing, followed by *Pathya Apathya* (do's and don'ts).

Prospects of management principles mentioned in Ayurveda are evident from the fact that along with the general principles of fracture management an additional stress has been given on the local application of various *Lepa & Pariscechan* upon the fracture site along with number of herbal & herbo-mineral preparations mentioned for the internal usage. These measures mentioned in *Sushruta Samhita* can be explored in variety of means as the potential treatment mode in the fracture management. Such immense knowledge clearly depicts the understanding and far sightedness of our *Acharya's* as these principles are applicable in present era also with same efficacy.

REFERENCES

1. Susruta: Susruta Samhita: with commentaries Nibandhasamgraha by Dalhana and Nyayacandrika by Gayadasa : Chaukhamba Orientalia, Varanasi : 5th Ed. (reprint 1992), Nidana Sthana chapter 16/17
2. Susruta: Susruta Samhita: with commentaries Nibandhasamgraha by Dalhana and Nyayacandrika by Gayadasa : Chaukhamba Orientalia, Varanasi : 5th Ed. (reprint 1992), Nidana Sthana chapter 16/4
3. Vagbhata: Astanga Hridaya: with commentaries of Sarvanga Sundara by Arundatta and Ayurvedarasayana of Hemadri, Chaukhamba Orientalia, Uttar Tantra chapter 27/1
4. Madhvacharya:Madhava Nidana: with commentaries of Madhukosa by Vijay-rakshita and srikantha, edited by G.D. Singhal, S.N.Tripathi and K.R.Sharma Chaukhamba Shubrati Prakshan, Varanasi, 2008 chapter 44/1||
5. Madhvacharya:Madhava Nidana: with commentaries of Madhukosa by Vijay-rakshita and srikantha, edited by G.D. Singhal, S.N.Tripathi and K.R.Sharma Chaukhamba Shubrati Prakshan, Varanasi, 2008 chapter 44/1||
6. Madhvacharya:Madhava Nidana: with commentaries of Madhukosa by Vijay-rakshita and srikantha, edited by G.D. Singhal, S.N.Tripathi and K.R.Sharma Chaukhamba Shubrati Prakshan, Varanasi, 2008 chapter 44/5||
7. Susruta: Susruta Samhita: with commentaries Nibandhasamgraha by Dalhana and Nyayacandrika by Gayadasa : Chaukhamba Orientalia, Varanasi : 5th Ed. (reprint 1992), Nidana Sthana chapter 16/9
8. Susruta: Susruta Samhita: with commentaries Nibandhasamgraha by Dalhana and Nyayacandrika by Gayadasa : Chaukhamba Orientalia, Varanasi : 5th Ed. (reprint 1992), Nidana Sthana chapter 16/10
9. Madhvacharya:Madhava Nidana: with commentaries of Madhukosa by Vijay-rakshita and srikantha, edited by G.D. Singhal, S.N.Tripathi and K.R.Sharma Chaukhamba Shubrati Prakshan, Varanasi, 2008 chapter 44/5-6||
10. Madhvacharya:Madhava Nidana: with commentaries of Madhukosa by Vijay-rakshita and srikantha, edited by G.D. Singhal, S.N.Tripathi and K.R.Sharma Chaukhamba Shubrati Prakshan, Varanasi, 2008 chapter.44/5-6||
11. Madhvacharya:Madhava Nidana: with commentaries of Madhukosa by Vijay-rakshita and srikantha, edited by G.D. Singhal, S.N.Tripathi and K.R.Sharma Chaukhamba Shubrati Prakshan, Varanasi, 2008 chapter 44/5-6||

12. Madhvacharya:Madhava Nidana: with commentaries of Madhukosa by Vijay-rakshita and srikantha, edited by G.D. Singhal, S.N.Tripathi and K.R.Sharma Chaukhambha Shubrati Prakshan, Varanasi, 2008 chapter 44/5-6||
13. Madhvacharya:Madhava Nidana: with commentaries of Madhukosa by Vijay-rakshita and srikantha, edited by G.D. Singhal, S.N.Tripathi and K.R.Sharma Chaukhambha Shubrati Prakshan, Varanasi, 2008 chapter 44/5-6||
14. . Madhvacharya:Madhava Nidana: with commentaries of Madhukosa by Vijay-rakshita and srikantha, edited by G.D. Singhal, S.N.Tripathi and K.R.Sharma Chaukhambha Shubrati Prakshan, Varanasi, 2008 chapter 44/5-6||
15. 44 Madhvacharya:Madhava Nidana: with commentaries of Madhukosa by Vijay-rakshita and srikantha, edited by G.D. Singhal, S.N.Tripathi and K.R.Sharma Chaukhambha Shubrati Prakshan, Varanasi, 2008 chapter /5-6||
16. Susruta: Susruta Samhita: with commentaries Nibandhasamgraha by Dalhana and Nyayacandrika by Gayadasa : Chaukhamba Orientalia, Varanasi : 5th Ed. (reprint 1992), Chikitsa Sthana chapter 3/15.
17. Susruta: Susruta Samhita: with commentaries Nibandhasamgraha by Dalhana and Nyayacandrika by Gayadasa : Chaukhamba Orientalia, Varanasi : 5th Ed. (reprint 1992), Nidana Sthana chapter 16/11
18. Madhvacharya:Madhava Nidana: with commentaries of Madhukosa by Vijay-rakshita and srikantha, edited by G.D. Singhal, S.N.Tripathi and K.R.Sharma Chaukhambha Shubrati Prakshan, Varanasi, 2008 chapter.44/8||
19. Susruta: Susruta Samhita: with commentaries Nibandhasamgraha by Dalhana and Nyayacandrika by Gayadasa : Chaukhamba Orientalia, Varanasi : 5th Ed. (reprint 1992), Nidana Sthana chapter 16/12-13
20. Susruta: Susruta Samhita: with commentaries Nibandhasamgraha by Dalhana and Nyayacandrika by Gayadasa : Chaukhamba Orientalia, Varanasi : 5th Ed. (reprint 1992), Nidana Sthana chapter 16/14-15
21. Susruta: Susruta Samhita: with commentaries Nibandhasamgraha by Dalhana and Nyayacandrika by Gayadasa : Chaukhamba Orientalia, Varanasi : 5th Ed. (reprint 1992), Nidana Sthana chapter 16/16
22. Susruta: Susruta Samhita: with commentaries Nibandhasamgraha by Dalhana and Nyayacandrika by Gayadasa: Chaukhamba Orientalia, Varanasi : 5th Ed. (reprint 1992), Chikitsa Sthana chapter 3/15.
23. Susruta: Susruta Samhita: with commentaries Nibandhasamgraha by Dalhana and Nyayacandrika by Gayadasa: Chaukhamba Orientalia, Varanasi : 5th Ed. (reprint 1992), Chikitsa Sthana chapter 3/118-119.
24. Susruta: Susruta Samhita: with commentaries Nibandhasamgraha by Dalhana and Nyayacandrika by Gayadasa: Chaukhamba Orientalia, Varanasi : 5th Ed. (reprint 1992), Chikitsa Sthana chapter 3/6
25. Susruta: Susruta Samhita: with commentaries Nibandhasamgraha by Dalhana and Nyayacandrika by Gayadasa : Chaukhamba Orientalia, Varanasi : 5th Ed. (reprint 1992), Chikitsa Sthana chapter 3/6

26. Susruta: Susruta Samhita: with commentaries Nibandhasamgraha by Dalhana and Nyayacandrika by Gayadasa : Chaukhamba Orientalia, Varanasi : 5th Ed. (reprint 1992), Chikitsa Sthana chapter 3/11
27. Susruta: Susruta Samhita: with commentaries Nibandhasamgraha by Dalhana and Nyayacandrika by Gayadasa : Chaukhamba Orientalia, Varanasi : 5th Ed. (reprint 1992), Chikitsa Sthana chapter 3/11
28. Susruta: Susruta Samhita: with commentaries Nibandhasamgraha by Dalhana and Nyayacandrika by Gayadasa: Chaukhamba Orientalia, Varanasi : 5th Ed. (reprint 1992), Chikitsa Sthana chapter 3/7.
29. Susruta: Susruta Samhita: with commentaries Nibandhasamgraha by Dalhana and Nyayacandrika by Gayadasa: Chaukhamba Orientalia, Varanasi : 5th Ed. (reprint 1992), Chikitsa Sthana chapter 3/70.

CORRESPONDING AUTHOR

Dr. Soni Gaurav

PG Scholar

PG Department of *Sharir Rachana*,

National Institute of Ayurveda,

Jaipur, Rajasthan, India

Email: gauravsonilko@gmail.com

Source of support: Nil
Conflict of interest: None Declared