

EXPLORING THE ORTHOPAEDIC PARADIGM IN AYURVEDA: A COMPREHENSIVE REVIEW OF BHAGNA CHIKITSA (FRACTURE MANAGEMENT)

Deepak Kumar Singh*

Assistant Professor, Department of Shalya Tantra, Dr Vijay Ayurvedic Medical College
Varanasi, Uttar Pradesh.

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*Corresponding Author

Dr. Deepak Kumar Singh

Assistant Professor,
Department of Shalya
Tantra, Dr Vijay Ayurvedic
Medical College Varanasi,
Uttar Pradesh.

ABSTRACT

In the vast literature of Ayurveda, orthopedic condition is well elaborated in the name of *Bhagna Chikitsa*. As per the condition *Acharya Sushruta* described, Many new techniques are well developed for the management of fracture like its etiology, classification, and various modalities of the management. *Bhagna* in ancient period were commonly faced problem occurs in war and attack by animal etc. but in the present time these are commonly as a result of Road Traffic Accident (R.T.A.). *Acharya Sushruta* explained *Bhagna* depending upon nature of trauma, shape of fracture, displacement of fracture fragment and fracture with or without wound. If it occurs in the bone, it is called *Kand Bhagna* (bone fracture); in the joint, it is called *Sandhimoksha* (dislocation). *Acharya Sushruta* defined the principle of

fracture of fracture management centuries ago are as per condition suggestive conservative or surgical treatment. Conservative modalities include *Kushabandh*, *Alepa*, *Chakrayoga*, *Taila Droni*, etc., are still relevant and used. It would be worthwhile to explore this unique feature for use in present times. The concept, theories and techniques which were practical several thousand years ago hold true even in modern era. Purpose of this article, to re-evaluate the *Bhagna*.

INTRODUCTION

An approach to human ailments is direct concern with the evolution of human being. As we all know that the most ancient practiced medical science is Ayurveda. It is the first and foremost of all the therapies of the world, since man has thought of providing an effective

remedy to the diseases suffered by him. This branch of Veda's especially Atharvaveda relates with knowledge of philosophy, medicine, and art of surgery. Ayurveda or science of life describes prophylaxis, prevention, and therapeutic principles for the ailments. The human body (*Sharira*) is described as a combination of the *Atma*, *Manas* and *Pancha Maha Bhoota*. All the living being constituents are in the form of *Dosha*, *Dhatu* & *Mala*. The most important supportive framework of the body among *sapta dhatu* is *Asthi* (bone tissue).

Orthopedics is the branch of surgery that deals with study and deformities of the bones. Orthopedic surgery has its target as to maintenance of normal mechanical function of the deformed bones. Traumatic injury management has been in practice since Vedic periods. *Ashwini Kumars* used to perform many surgeries like limb replacement, fixation of severed head etc. This science was developed, practiced, and documented by 'Famous Indian *Acharya Sushruta*' in Ayurveda is called *Bhagna Chikitsa*. Along with other surgical practices, *Acharya Sushruta* & others have described the aetiopathogenesis, symptomatology, classification and management of various traumatic musculo-skeletal injuries like subluxations, soft tissue injuries, dislocations and 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. According to *Acharya Sushruta*, he has paid attention and observed that all the bones.^[1] Do not show similar type of effect due to trauma/injury. He has classified these effects in different types of bone and correlated with the type of injury involved is mentioned below.

1. *Tarun Asthi* (Cartilage) – Bending
2. *Nalak Asthi* (Long bones) – Breaking
3. *Kapal Asthi* (Flat bones) – Cracking
4. *Ruchk Asthi* (Teeth) – Fragmentation
5. *Valay Asthi* (Curved bones) – Crack/Break of a bone

Classification of bhagna

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

Sushruta's classification^[2]

On the basis of structure involved it has been divided in two types-

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

Vagbhata's classification^[3] *Vagbhata* also has mentioned same classification like.

Sandhi Bhagna & Asandhi Bhagna.

Apart from these classifications in *Madhukosh tikakar* further divided the *Bhagna^[4]* on the basis of their clinical manifestation as-

1. *Savrana Bhagna^[5]* - Fracture with the wound i.e. bone comes outside of the skin just after injury.
2. *Avrana Bhagna* - When bone is fractured but no visible wound on the skin is seen.

The joint dislocations have further been classified in to six varieties and the bone fractures are subdivided in to twelve types. *Sushruta's* classification is universally accepted. *Vagabhata* has given some different terminologies for fracture varieties as he has mentioned *Vellita* in place of *Kanda Bhagna*. *Darita* instead of *Patita* and *Shoshita* in the place of *Chinna*.

Acharya Madhavakara has also used other terminology like *Vichurnita* instead of *Churnita*, *Asthichallita* in the place of *Asthichallita* and *Majjagata* in the place *Majjanugata*. *Acharya Madhavakara* has described *Chinna^[5]* are of two types:

1. *Ekamanuvidaritam*
2. *Bahunuvidaritam*.

Acharya Sharangadhara has described the eight varieties of *Bhagna*. These are similar to *Sushruta's* type. 1. *Bhagna prista* 2. *Vidarita* 3. *Vivartita* 4. *Vishlishata* 5. *Adhogata* 6. *Urdhvagata* 7. *SandhiBhagna* 8. *Tiryaka kshipata*.

Clinical features

The history of fracture can be made out by history and clinical findings. The clinical signs described in Ayurvedic texts stand as mentioned in modern surgical text book of fracture. He has mentioned signs and symptoms as general and specific features.

General features of *kanda bhagna^[7]*

- *Shvyathubahulyam* (Marked swelling) - Generally fracture, whether it is of any type,

there will be moderate to severe swelling.

- *Sparshasahisnutvam* (Tenderness) - Tenderness is such a sign that it is consistently present in all types of fractures.
- *Avapidyamane shabda* (Crepitus) - Presence of crepitus is a sure indicative of fracture, can confirm diagnosis clinically.
- *Vividhavedanapradurbhavah* (Different types of pains) - the fractured bone prior to its reduction and immobilization produces variety of pain. This depends on multiple factors such as nature of trauma, bone fractured, displacements of the fragments, and nature of soft tissue injury.
- *Sarvasu Avasthasu Na Sharmalabha* (Inability to get comfort in any position) - Fracture gives pain and discomfort to the patient till immobilizing it. The uneasiness is such that patient remains restless in every posture of fractured part.

Features of individual *kanda bhagna*^[8]

1. ***Karkataka***: The fracture which has a shape similar to crab is known 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 of fracture, bone projects upwards like the ear of horse is called as *Ashwakarana*.^[10]
3. ***Churnitam***: The fractured *Asthi* is found to be crushed into fragments or the powder form. This *Bhagna* can be spotted clinically by presence of crepitus.^[11]
4. ***Pichhitam***^[12]: 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 variety, the periosteum is splintered off, where the fracture segment slightly elevates into one side,^[13] as the bark gets away from the main stem.
6. ***Kanda Bhagna***: In this variety of fracture the shaft of the bone is fractured. The fractured part shows abnormal movement.^[14]
7. ***Majjanugatam***: In this type of fracture, one fragment gets impacted into another bone causing displacement of bone marrow, then it is said to be *Majjanugatam*. It may be resulted due to violence activity. This type of fracture is difficult to diagnose because the

signs and symptoms like 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 angulated.^[15]
9. **Vakra:** The *Asthi* get bent, but not broken, especially in *Tarun Asthis* 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 at multiple sites 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 of *Bhagna* mostly occurs in small bones and teeth etc.

Bhagna chikitsa

Four principles^[15] of treatment given by *Acharyas* as:

1. *Anchana*- Traction application.
2. *Pidana*- Manipulate by local pressure
3. *Sankshepa*- Opposition and stabilization of fractured part of bone.
4. *Bandhan*- Immobilization.

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

Immobilization

An adequate immobilization of the fractured limb is one of the most essential methods in the management, for this use of splints has been adequately described by *Acharya Sushruta*. *Acharya Sushruta* has mentioned some important tree barks for this purpose as *Ashwatha*,

(*Ficus religiosa*), *Vamsha* (*Bambusa*), *Kakubha* (*Terminalia Arjuna*), *Madhuka* (*Madhuka indica*) *Palasha* (*Butea monosperma*), *Sala* (*Shovera robusta* Gaertn.) *Udumbara* (*Ficus Racemosa* Linn.), *Vata* (*Ficus bengalensis*). Such splints were applied due to their availability.

Other aims of selecting these specific tree barks are-

1. Barks were fit into the limb due to their concave inner surface.
2. Firm and rigid outer surface.
3. Inner surface being soft would act as the cushion to the limb to avoid pressure sore.

General treatment of *bhagna*

Acharya Sushruta instructs the surgeons before going to above steps he should follow the general line of treatment.^[18] *Pariseka*: This means continuous sprinkling of the medicine in the liquid form e.g. decoction, oil/*Ghrit* preparation etc. over the affected part for certain period of time to induce analgesia and also causes *Dosha shamana*. Different kinds of *Pariseka dravyas* are described on the basis of *Prakriti* of the patient and *Ritu*.

These are:

- a) ***Nyagrodhadi decoction***^[19]: It is used in the patient of *Paitika Prakriti* and during *Grishma Ritu*.
- b) ***Pancha mula siddha dughda***: When *Bhagna* is in *Vata pradhana Prakriti* and with severe pain, then *Panchamula Siddha dughda* is preferred for *Pariseka karma*. This preparation is *Pitta Shamaka* also.
- c) ***Chakra taila***^[20]: This is used in mainly *Vata* and *Kapha Prakriti* persons and when *Bhagna* has occurred in *Sheeta Ritu* and associated with severe pain. This tail preparation is of *Ushna Virya* and reduces the pain and swelling at the fracture site.
- d) ***Lepa***: The local application at the affected part with medicinal paste or ointment is called as the *Lepa*. *Acharya Sushruta* also has described the *Majisthadi Lepa*^[21] which contains *Manjistha*, *Yastimadhu*, *Shalipisti*, *Raktachandana*, and *Shatadhautagritha*. This *lepa* reduces pain and swelling. The ingredients get absorbed per-cutaneously and help bone healing. After this the *Anchana* like *Chikitsa* is to be followed. After completing the general measures *Acharya Sushruta* has described the treatment part of various kinds of fractures occurring in the each bone of the body.

Rehabilitation

The importance of Physiotherapy in a limb injury was also valued by *Sushruta*. He has prescribed the exercises starting in lighter manner, which may be gradually increased 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.

- i. *Mritapinda Dharana*
- ii. *Lavana Dharana*
- iii. *Pashana Dharana*

Along with all these measures ancient *Acharya* also have described numerous medicinal preparations for the quicker union of the fractured bone. These *Asthisandhaniya Dravyas* not only fasten the bony union but also make it strong as they are also good for general health some of the *Asthisandhaniya Yogas* described in ancient texts are *Gandha Taila*, *Gandhaprasarini Taila*, *Chakra Taila*, *Bhagnasandhana Taila*, *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.

Pathyaapathya

A fractured patient must avoid the use of *Lavana*, *Katu Rasa*, *Kshara* And *Amla Rasa* 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 *Vranipurush*, but a case of fracture forms an exception. Clinical signs of ideally united bone^[22]

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

CONCLUSION

Ayurveda has given abundant importance to *Asthi Sharir* by describing it as *Saara* (base) of body. Classification of *Asthi* is specifically given in according to type of *Bhagna* occurring commonly in it. This description itself presents the clinical orientation of our *Samhita*'s. Further Ayurvedic literature contains definition of *Bhagna*, its etiology, classification, types,

general features, special features, and prognosis. The treatment of the *Bhagna* includes treatment principles then specific treatment for different bones, clinical criteria to assess bone healing, followed by *Pathya Apathya* (do's and don'ts).

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